NATIONAL SPATIAL DEVELOPMENT CONCEPT

2030

POMOC TECHNICZNA
NARODOWA STRATEGIA SPÓJNOŚCI

PROJEKT WSPÓŁFINANSOWANY ZE ŚRODKÓW
EUROPEJSKIEGO FUNDUSZU ROZWOJU REGIONALNEGO

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Introduction

The National Spatial Development Concept 2030 (NSDC 2030) is the most important national strategic document that addresses the spatial management of the country. It has been prepared pursuant to the provisions of the Act on Spatial Planning and Development of the 27th of March 2003. The arrangements and recommendations resulting from NSDC 2030 and applicable to the preparation of voivodeship [Polish: *województwo* – a province, NUTS-2 area] spatial development plans (vsdp)[1] have also been defined pursuant to the statutory requirements.

The document presents a vision of the country's spatial development in the coming 20 years, specifies objectives and directions of the national spatial development policy that serve the purpose of its delivery as well as indicates the rules and mechanisms for coordination and implementation of public development policies that have a significant territorial impact. Hence, NSDC 2030 has many characteristics of a general development strategy, combining spatial development components with the factors of socio-economic development.

The new take on the problem of national spatial development proposed in NSDC 2030 consists in a modified approach to the role of the country's spatial policy in achieving the delineated visions of development. NSDC 2030 proposes to break with the current dichotomy of spatial planning and socio-economic planning on the national, voivodeship and local levels as well as in relation to functional areas. It introduces a correlation between the objectives of the spatial policy and the regional policy, combines strategic planning with the programming of measures under development programmes and operational programmes co-financed with EU resources, defines actions to be taken by the state in the legislative and institutional spheres with a view to enhancing the efficiency of the spatial planning system and place-based development activities (including investment projects). Moreover, NSDC 2030 mainstreams the maritime zone – so far absent from the strategic documents on the national level (Fig. 1.) – into the national spatial development considerations and extends the scope of cross-border interactions on land and sea.

The integrated approach to development issues applied in NSDC 2030 regards the space of the country as an area of diversified course and effects of socio-economic, environmental and cultural processes. Those processes are largely independent from the existing administrative structures that manage development processes. It calls for the spatial policy to depart from the traditionally defined areas of intervention, e.g. rural areas – urban areas, for the benefit of an individualised approach to various territories demarcated on the basis of socio-economic and spatial characteristics in a dynamic perspective. In consideration of the need to conduct an efficient spatial policy, an attempt has been made at systematizing numerous terms referring to the national spatial development and spatial policy, such as spatial development, functional areas – including rural and urban areas – areas with concentration of socio-economic problems and others.

In respect of implementation, NSDC 2030 proposes to:

[1] Art. 47 (2) of the Act of 27 March 2003 on Spatial Planning and Development (Dziennik Ustaw [Journal of Laws] of 2003, No. 80, item. 717 as amended) NSDC "determines conditions, objectives and directions of sustainable development of the country and measures necessary for its achievement. In particular: 1) basic elements of the national settlement network, distinguishing metropolitan areas; 2) requirements regarding the protection of environment and historical sites, taking protected areas into consideration; 3) location of the social infrastructure of national and international significance; 4) location of the structures of technical and transport infrastructure, strategic water reservoirs and water management structures of national and international significance; 5) problem areas of national significance, including areas exposed to threats that require detailed studies and plans" and Art. 39 (4) "Voivodeship spatial development plans take into account the provisions of the national spatial development concept (…)".

- gradually conduct a fundamental reorganisation of the system – within a few years to come – and introduce a range of new legal and institutional solutions that permit to create a consistent and hierarchical spatial planning and management system oriented towards the accomplishment of socio-economic objectives set in relation to space;
- determine investment priorities and entities responsible for their delivery;
- lend a more European dimension to spatial policy;
- increase the coordinating role of spatial policy in relation to sectoral policies with the strongest impact on the spatial status of the country and individual territories.

In relation to voivodeship spatial development plans, NSDC 2030 imposes an obligation to exercise the requirements and recommendations specified in Table 5. (Chapter VI.) concerning delimitation of functional areas and to implement spatial planning related measures by means of working out strategies, plans and studies of spatial development.

Owing to the strategic role of this document, NSDC 2030 does not formulate any requirements and recommendations related to the preparation and designation of public purpose[2] investment programmes and leaves this issue to – as mentioned previously – the strategic and implementation documents that remain the domain of individual ministers and local government units.

Within three months of the adoption of NSDC 2030 by the Council of Ministers, the Minister of Regional Development shall present a detailed plan of actions to be undertaken by the Council of Ministers and other public entities in order to ensure its complete accomplishment. In order to create conditions for the execution of NSDC 2030, it is necessary to design and introduce legal and institutional changes that would streamline the spatial planning system and place-based development measures (including investment projects). The action plan shall contain tasks related to the introduction of legal grounds, principles and ways for formulating and coordinating public development policies with significant territorial impact. The idea of the systemic changes under consideration is to build an integrated and multi-level coordinated planning and development system, break away from the dualism of spatial planning and socio-economic planning, ensure the transfer of development objectives defined on the strategic level to the level of delivery and to protect the public interest. The action plan shall present a schedule of works indicating entities responsible for the preparation of the changes referred to above.

Apart from legal and institutional measures, the spatial policy aiming at the achievement of objectives set forth in NSDC 2030 shall utilise financial resources (domestic and foreign) intended for investment projects under other policies, including in particular those that involve a territorial dimension. Primarily under the regional policy and related actions for the benefit of urban and rural areas as well as sectoral policies with a particular significance for the national spatial development such as the policies related to transport, marine issues, energy, ecology, climate, etc. The draft of NSDC 2030 indicates directions of investment projects without determining the structure of expenditures or the volume of financial outlays which remains the domain of strategic documents, such as the Mid-Term National Development Strategy and other integrated strategies, delivery programmes and multi-annual financial plans. NSDC constitutes – in combination with the Long-Term National Development Strategy – a framework for other strategic documents. It indicates the premises and desired directions of investments for decisions made within nine integrated strategies as well as other strategic and operational documents.

[2] Pursuant to art. 48 of the Act of 27 March 2003 on spatial planning and development (Dziennik Ustaw [Journal of Laws] of 2003, No. 80, item. 717 as amended) ministers and central bodies of government administration, within their material powers, prepare programmes containing government tasks aimed at the implementation of public purpose investments of national significance.

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Two documents significant for the Polish spatial development policy constitute important points of reference for NSDC 2030, namely: the National Spatial Development Policy Concept (NSDPC) (2001) and the Updated Concept of National Spatial Development (UCNSD) (2005)[3]. The former constitutes a unique example of a comprehensive grasp on the subject of Poland's spatial development, while the latter managed to point out numerous new important issues, such as the problem of delimitation of metropolitan areas and the need to utilise ESPON studies. It also outlined the conditions resulting from Poland's accession to the European Union.

The NSDC 2030 – responding to the challenges identified in European studies, including among others the works of VASAB[4], ESPON[5], the Visegrád Group, Bulgaria and Romania[6] – presents Poland as a coherent and competitive space against the European backdrop. NSDC 2030 can serve as a conceptual and informed Poland's contribution to the European space as expressed in documents related to the territorial dimension of the EU objectives[7] and territorial cohesion, including the Territorial Agenda of the European Union 2020 and the Europe 2020 strategy.

Vision of Development

The vision proposed in NSDC 2030 assumes a significant shift in emphasis, departing from the concept of Poland's territory as a link between the West and the East in favour of a stronger stress put on the significance of spatial conditions for the use of endogenous potential and development factors.

NSDC 2030 responds to the contemporary challenges that are ahead of the Polish territory due to the progress of European integration. Those challenges are related to global processes in which Poland participates as an EU state with an increasingly more open economy and society. Their nature is political, economic (building competitiveness, ensuring energy), environmental (preservation of biodiversity), demographic (depopulation, migration, ageing society), social (building social capital) and cultural (modified behaviour patterns). Those challenges will influence the directions and the speed of transformation of the Polish territory and the national spatial policy will only be able to affect some of them.

NSDC 2030 advances a thesis that changes in Poland will speed up within a dozen or so years. The acceleration of the development and modernisation of Poland will produce serious consequences for the spatial management of the country. The substantial increase of the scale

[3] NSDPC was crated in the legal framework of the Act of 7 July 1994 on spatial development (Dz.U. of 1994, No. 15, item. 139 as amended) and due to the time of its preparation, it did not take into consideration neither the changes resulting from the administrative reform of Poland in 1999 nor the prospect of accession to the EU. In 2005, an attempt was made at its updating. The Updated Concept of National Spatial Development (UCNSD), prepared under the supervision of Professor Grzegorz Gorzelak and adopted by the Council of Ministers on 6 September 2005 did not take sufficient account of the integrated approach to the development policy. In October 2006, the Council of Ministers decided to withdraw UCNSD from the Sejm (the lower house of the Polish parliament) and resolved to prepare a new document.

[4] VASAB – *Visions and Strategies around the Baltic Sea* – is an international cooperation programme related to integrated spatial planning in the Baltic Sea Region. The most important document is the Long-term Perspective for the Territorial Development of the Baltic Sea Region (LTP/BSR, Riga 2009). The programme associates all the Baltic countries and Belarus.

[5] ESPON – European Observation Network for Territorial Development and Cohesion. A very influential research programme of the European Commission, involving the participation of 27 EU states as well as Iceland, Liechtenstein, Norway and Switzerland.

[6] As part of the cross-border cooperation regarding spatial planning within the Visegrád Group states, an initiative was created to prepare a document for the V4 states on the basis of the discussion on the possibility and need to prepare a new edition of the European Spatial Development Perspective on the European forum extended by the new Member States. Lack of support for this initiative on the part of the 'old' EU Member States, influenced the Czech Republic and Slovakia to withdraw a similar proposal to prepare a document on spatial planning within an already defined area of the Visegrád Group countries. In June 2008, at the informal meeting of ministers of regional development in Prague, this initiative was joined by Bulgaria and Romania.

[7] One of the priorities of the Polish Presidency in the Council of the European Union was to transpose the territorial priorities contained in the Territorial Agenda 2020 – constituting a framework for the achievement of the objectives of the Europe 2020 strategy and significant for the territorial cohesion of the EU – onto the provisions of regulations, operational programmes and contracts executed as part of Cohesion Policy post 2013. 1) Territorial Agenda of the European Union adopted at the informal meeting of EU ministers responsible for territorial cohesion and urban development in May 2007 held in Leipzig; 2) Territorial State and Perspectives of the European Union – constituting an evidence-based background document to the Territorial Agenda, also subject to updating; 3) EUROPE 2020 A strategy for smart, sustainable and inclusive growth – the basis of the Cohesion Policy post 2013, a communication from the Commission dated March 3, 2010.

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and acceleration of investment processes (owing to the EU funds among others), enhanced competitiveness of the Polish economy (through increased employment in the sectors with higher productivity and added value) involving the utilisation of intellectual and social potential as well as a shift in the model of life and consumption (increased income, lowered individual energy demand, environmental considerations) will become manifest in the spatial sphere with very quick (in comparison to the recent 20 years) changes of spatial structures and their mutual relations. There will be further concentration of functions of domestic and European centres situated in the core network of growth centres as well as intensification of functional interrelations between them. Assuming that the Poland's population remains at a stable level, it can be expected that people will concentrate in developing centres and that the population will flow out of some areas including certain rural areas and small urban centres.

Those processes will cause pressure on the support being given to restructuring and reform processes on various scales: national, regional and local (large cities, depopulation areas). Apart from socio-economic threats, those processes convey some benefits which may be multiplied by an effective spatial policy that would coordinate the territorial impact of other policies. Such benefits include, among others, the search – on the regional and local levels – for possibilities of putting development potentials to new and different uses and, in effect, changing the current development trajectory (which would give a chance for the creation of better jobs) and decreasing human impact on considerable areas of Poland which, in turn, should have a favourable effect on the environment and the quality of life.

In response to those processes, the present document formulates the objective of the national spatial management policy as the utilisation of the potential of the entire area of Poland in order to achieve development objectives in compliance with the assumption of the territorially sustainable development. The efforts will focus on combining the support to competitiveness with the support to cohesion. In the temporal dimension, it means, on one hand, strengthening of development potentials of all regions in short-term (e.g. transport infrastructure) and, on the other hand, building of competitive advantages for the future. The accomplishment of this objective shall consist in the creation of conditions for further development of the network of the largest cities – the engines of growth and development processes on the national scale, including the sustainable development of rural areas – and in the introduction of mechanisms ensuring cohesion and participation in development processes of the entire Polish territory by favouring the processes of development diffusion on the national and regional scale (around the capital cities of voivodeships – and poviats [Polish: *powiat* – a district or county, LAU-1 area, formerly NUTS-4]). NSDC 2030 introduces regional policy support mechanisms on the areas that need support of development processes, the places where processes of diffusion are too weak for the full utilisation of territorial potentials. Adaptation of measures and policies to the specificity of regions and individual areas (by taking into account their identity, tradition, own strengths) will be instrumental to achieving the objective of the national spatial development policy. It requires appropriate planning tools, including physical and economic planning, as well as orderly and coherent development of growth potentials adapted to local and regional conditions. Urban areas, therefore, appear as elements of a dynamic order in which they complement each other while constituting an integral socio-economic and spatial whole.

In relation to the European territory, NSDC 2030 perceives Poland as an area which, although geographically situated in the middle of the continent, is economically lagging behind the territory of Western Europe. In the spatial context, the membership in the EU gives Poland an opportunity to improve its competitive position by increasing the degree of functional linkages with the main EU centres of economy and innovation, while at the same time bringing threats connected with the outflow of resources from individual areas which, in consequence, may lead to degeneration and spatial disintegration of Poland.

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In order to utilise fully the possibilities resulting from the currently occurring – with varied spatial intensity – process of functional integration with the major EU centres to the benefit of Poland's development, it is needed to intensify integration processes and create a network of links between the main Polish cities. On one hand, it will build up the necessary critical mass (in terms of economic, social and cultural functions) to compete with other countries and regions in the EU for the limited resources (growth factors) and, on the other hand, it will create the potential for mutually beneficial cooperation. Owing to a fairly even spatial distribution of the main cities – nodes of the network – and the inclusion of centres of lower population stature in the network, the increase of functional integration within the network will positively influence the development opportunities of smaller towns and surrounding rural areas. A network of well interlinked and cooperating cities has sufficient strength to generate its own development stimuli affecting the surrounding areas. It creates conditions for making the country's development more dynamic by way of enabling a more complete utilisation of the potential of areas situated around them (by spreading of development processes) which promotes territorial cohesion and offers a counterbalance for the present rapid increase of the capital city's dominance. Spatial activation measures have been anticipated for areas remaining beyond the direct impact of growth centres due to their limited capacity to make use of development potentials. Owing to the network development, the Polish space is becoming one of the global integration zones, entering in economic and social interactions with other zones of this kind. The network model also helps change the perception of the Polish territory in Europe – it is no longer seen as a mere transit area on the East-West and North-South axes but also as a well organised target place for business activities and living. In compliance with the vision presented in the Concept, the development is not to happen in strips but on the entire area of the country and concentrate in the nodes of the network, i.e. mainly in cities.

The network model also affects the perception of transport networks, their course, phasing of their modernisation and extension. Developing the Trans-European Transport Network (TEN-T) with proper quality infrastructure should primarily focus on strengthening the domestic links as well as on including the network of Polish cities into a system of transport connections, serving the economically strongest EU metropolises and regions.

NSDC 2030 confirms the importance of establishing functional relations with areas situated near borders. Due to the spatial directions of intensified socio-economic links, the following territories are perceived as cross-border areas (extending further than a few-kilometre belt on both sides of the border) with development opportunities: East German territory (especially Berlin and Saxony), Bohemia, Moravia and part of north-western Slovakia. The territories of Baltic and Scandinavian countries as well as the major part of Slovakia are seen as areas with more limited possibilities of functional integration. Poland's bordering on countries from outside the EU – Russia, Belarus and Ukraine – has a potentially large significance for development which cannot, however, be taken full advantage of without further processes of economic and political integration between those countries and the EU. In this context, the external EU border also constitutes a colossal barrier to the development of areas adjacent to it on the Polish side (Eastern Poland's territory).

The approach to the shaping of the Polish space presented in NSDC 2030 involves a departure from the idea of development occurring in strips – as outlined in the National Spatial Development Policy Concept[8], which was grounded in the thesis that Poland serves as a link

[8] The National Spatial Development Policy Concept (NSDPC) prepared under the supervision of Professor Jerzy Kołodziejski Ph.D. That policy concept concerned a 25-year time horizon but, in fact, it presented the planning status as in 1999 and did not take into consideration various conditions that were to emerge later on such as Poland's membership in the European Union. NSDPC was adopted by the Council of Ministers on October 5, 1999 (Monitor Polski [Official Gazette] of 2001, No. 26, item. 432). It emphasized the role of development occurring in the form of stripes, progressing from the west towards the east, and related to the fact of subjecting the system of the main communication networks to the requirements of transit across Poland. That was accompanied by a thesis of Poland's functioning as a link in the European space due to its location. Moreover, NSDPC was limited to land area, referred to relations with the neighbouring countries in a

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within Europe – in favour of the vision of functional connections between Polish growth centres and the European (mostly West European) metropolitan network. The model based on the idea of strips does not play a role in development any more. The present day development challenges require, first and foremost, a proper critical mass of the human and social capital, well organised local space (labour markets, absence of congestion, high standards of living) and an institutional tissue (legislation, administration) that is conducive to development.

sectoral division focusing on ecological, transport and energy corridors and presented the Polish-German cross-border relations as a threat (using the term "critical borderlands").

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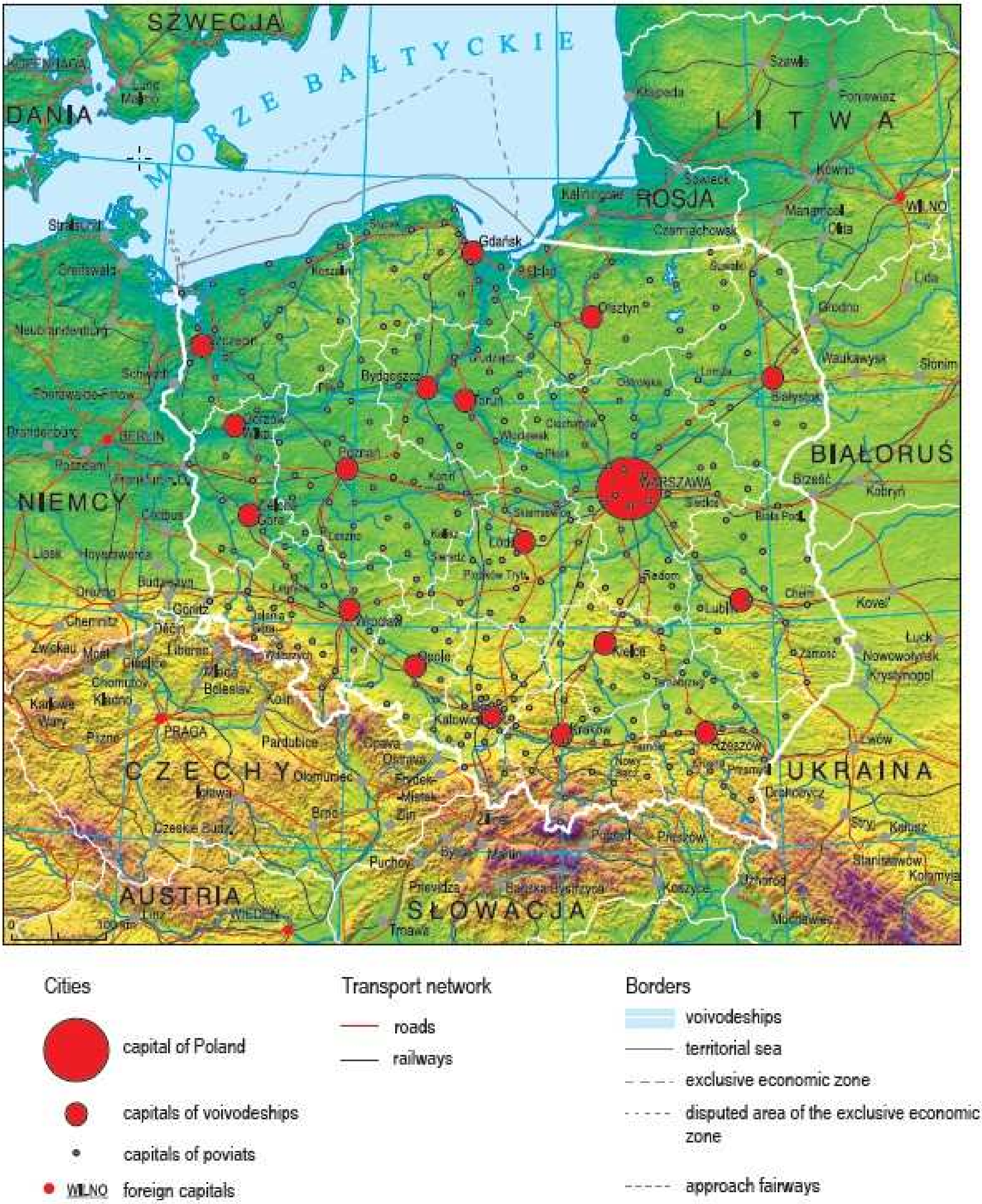
Fig. 1. Poland – land and marine areas[9]



Source: Prepared by MRD

Structure of the Document

The document has the following structure: role of the spatial policy and its relations with other policies, identification of conditions which served as the basis for the vision of the national

[9] The disputed economic area between Poland and Denmark results from the absence of delimitation of the exclusive economic zone on the sea. In compliance with the agreements between Poland and Denmark, the disputed area constitutes a 'grey zone' where both countries can conduct fishing activities. Both parties jointly decided on the applicable fishing quotas. Apart from fishery, no other economic activity takes place in that area.

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spatial development, strategic objective of the national spatial development policy and six operational objectives instrumental to the achievement of the vision as well as a part devoted to identification of types of functional areas. Every objective contains a description of the problem and proposed measures which will be elaborated in the Plan for implementing NSDC 2030. Additionally, the document contains a chapter on financing of the activities resulting from the Concept, including a description of the system and sources of funding.

Six objectives of NSDC 2030 correspond to the most important challenges to the development of the Polish territory: low competitiveness of the major urban centres and Polish regions in relation to their European counterparts, weak territorial cohesion of the country and low level of infrastructure development (especially transport and social infrastructure) in urban areas, absence of a consistent system of environmental protection, insufficient resistance of the spatial structure to internal and external threats as well as spatial disorder. Objectives formulated in the draft NSDC are interrelated and completed with a typology of functional areas – identical with problem areas within the meaning of the Act on Spatial Planning and Development – which were singled out to help make order in the planning system. Delimitation of the functional areas, therefore, serves the purpose of distinguishing functional areas of national significance, including areas exposed to threats that require detailed studies and plans. On the other hand, areas in need of public support shall be indicated in the Long-Term National Development Strategy, Mid-Term National Development Strategy, integrated strategies and other strategic and operational documents.

Each of the six objectives of NSDC 2030 (Chapter V.) contains a rudimentary diagnosis in the form of a "Problem Description" illustrating the key spatial challenges in a given thematic range. It is compliant with the analyses and data contained in the draft Long-Term National Development Strategy – Third Wave of Modernity[10] and the updated Mid-Term National Development Strategy based on the data from the report titled Poland 2011. Economy – Society – Regions. Problem descriptions are also based on conclusions from the Summary of the Report on the Status of National Spatial Development "Polish Space" prepared by the minister responsible for construction, spatial management and housing[11], which contains directions for spatial policy[12].

Part of the diagnosis consists of a dynamic set of 23 detailed diagnostic maps presenting the ovwerview of the spatial development of the country and prepared for the purposes of the Concept[13]. Comparison of maps presenting the same phenomena in consecutive periods will allow for a reliable analysis of changes and will provide grounds for evaluating trends and conducting monitoring on the basis of the Geographic Information System (GIS) as well as for planned updates of the document.

The following annexes constitute an integral part of the document: report on the preparatory work for the National Spatial Development Concept, description of the process

[10] Long-Term National Development Strategy utilises the following graphics contained in the draft NSDC 2030: Fig. 10. Directions of the Polish space integration 2010 and 2015; Fig. 19. Directions of the spatial policy measures for the improvement of internal cohesion of the country; Fig. 23. Expected development of road network in comparison to airports, sea ports and the Odra Waterway 2030; Fig. 31. Flood threats in Poland; Fig. 34. Directions of measures to ensure energy security

[11] Polish Space. Report on the Status of the National Spatial Development, the Ministry of Construction, Warsaw 2007, document adopted by the Council of Ministers on May 15, 2007.

[12] Related to the manner of shaping the structure of the Polish space to favour the spreading of development factors; urban development and reinforcement of the polycentric structure of the country with the simultaneous advancement of functional links with surrounding areas; management of the development of metropolitan areas; diversifying the development profiles of rural areas in keeping with local and regional conditions; protection and consolidation of protected areas and prevention against spatial conflicts; emphasizing the significance of marine areas; integrated approach to development; development of transport, including public transport; enhancing the coordination functions of development planning.

[13] A set of diagnostic maps constitutes Chapter VIII of NSDC 2030. The maps were elaborated on request of MRD by the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences.

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of environmental impact assessment of NSDC 2030 and a list of expert opinions prepared for the purposes of the Concept.

NSDC as an Element of the Integrated System of Development Programming in Poland and Europe

The draft NSDC 2030 constitutes an element of the new system for managing the country's development[14] whose foundations were laid down in the amended Act of December 6th, 2006 on the rules of development policy making [15].

The Government of the Republic of Poland is finalising its work on the Long-Term National Development Strategy (LTNDS) – based on the report titled Poland 2030[16] – and on the National Development Strategy Until 2020 (MTNDS), including 9 integrated strategies[17]. In the future, pursuant to the provisions of the National Development Management System, NSDC 2030 shall become an element of the Long-Term National Development Strategy with its equal treatment of the spatial and socio-economic aspects. In respect of the integrated strategies, including the National Strategy of Regional Development, NDSC 2030 shall become a guideline for the territorial dimension.

At present, attempts are made in the European Union to include the territorial dimension in the main stream of development programming. The meaning of the territorial dimension, similarly to the term "territorial cohesion", has been a topic of discussions since the mid 20th century. In 1999, the European Spatial Development Perspective[18] (ESDP) came into being, but it was not until the Lisbon Treaty[19] that the territorial dimension was put at par with the economic and social dimension. Due to the perception of spatial development as a product of domestic, European and global processes, NSDC 2030 can be seen as Poland's contribution to the discussion about the European cohesion policy, including the territorial cohesion, and the manner of considering the territorial dimension in the accomplishment of European objectives (Europe 2020[20] strategy and the Territorial Agenda 2020). Territorial balancing of development – which focuses on building development potentials of individual areas – will contribute to the achievement of priorities established in the Europe 2020 strategy. The achievement of smart, sustainable and inclusive growth must be based on the assumption that even the most remote regions should fully partake of the benefits of economic growth thereby increasing the territorial cohesion of the country. In this context, NSDC makes use of the work related to the updating of the Territorial State and Perspectives[21] and the Territorial

[14] Foundations of the Polish Development Management System, document adopted at the meeting of the Council of Ministers on April 27, 2009.

[15] The Act on the rules of development policy making was amended in December 2008 (Dziennik Ustaw [Journal of Laws] of 2009, No. 84, item. 712).

[16] Poland 2030 – Development Challenges, the Chancellery of the Prime Minister, 2009.

[17] The work on limiting the number of development strategies – from 42 documents to 9 new integrated development strategies – regards the following documents: Strategy of Innovation and Economic Efficiency; Human Capital Development Strategy; Transport Development Strategy; Energy Security and Environment; Efficient State; Social Capital Development Strategy; National Security Strategy of the Republic of Poland; Strategy for Sustainable Development of Rural Areas and Agriculture; National Strategy of Regional Development 2010-2020. Regions, Cities, Rural Areas, adopted by the Government on July 13, 2011.

[18] European Spatial Development Perspective (ESDP) – an informal document emphasizing the need to raise the importance of the spatial dimension in the regional policy of the EU, Potsdam 1999.

[19] Official name: Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community (known as the Reform Treaty in its draft version) signed at Lisbon on December 13, 2007, published in the Official Journal of the European Union C 306 and in the Journal of Laws of the Republic of Poland (Dziennik Ustaw of 2009, No. 203, item 1569). Effective as of December 1, 2009. Article 2 (3) of the Treaty stipulates that "(The Union) shall promote economic, social and territorial cohesion, and solidarity among Member States".

[20] *EUROPE 2020 A strategy for smart, sustainable and inclusive growth* – a communication from the Commission dated March 3, 2010.

[21] *Territorial State and Perspectives of the European Union – Towards a Stronger European Territorial Cohesion in the Light of the Lisbon and Gothenburg Ambitions*, an evidence-based background document to the Territorial Agenda adopted at the informal meeting of EU ministers responsible for territorial cohesion and urban development in May 2007 held in Leipzig, updated during Hungarian Presidency alongside the Territorial Agenda 2020.

Agenda[22], Leipzig Charter[23], Toledo Declaration[24], Green Paper on Territorial Cohesion[25], Position of the Government of the Republic of Poland on the Green Paper on Territorial Cohesion[26], Common spatial development document of the V4+2 countries[27] as well as the achievements of the ESPON research programme.

Course of Work on NSDC 2030

The Ministry of Regional Development (MRD) began to work on NSDC in October 2006 by appointing the Working Team[28] for the Elaboration of Theses and Assumptions for NSDC[29]. That document defined the key methodological assumptions regarding the work on the Concept and the major theses related to its content: visions, objectives and conditions. Upon its acceptance by the Council of Ministers, the proper work on the Concept commenced.

The work on NSDC consisted in the parallel cooperation of three teams appointed specifically for this purpose, the most important of them being the National Spatial Management Council (NSMC) established in 2007 and acting as an advisory body to the Prime Minister on matters related to NSDC. The composition of the Council includes scientific authorities in the field of spatial planning, planners and practitioners of urban planning. The opinion of the Council was of key significance for the individual stages of document preparation, its final structure and the decision on the final approval of the draft by the Council of Ministers.

In June 2007, the Ministry of Regional Development appointed the Team of Scientific Experts (TSE) headed by Prof. Piotr Korcelli Ph.D. and composed of: Prof. Marek Degórski Ph.D., Prof. Tomasz Komornicki Ph.D., Prof. Tadeusz Markowski Ph.D., Prof. Jack Szlachta Ph.D., Prof. Grzegorz Węcławowicz Ph.D., Prof. Janusz Zaleski Ph.D., Prof. Jacek Zaucha Ph.D. and Dr. Dominik Drzazga – the TSE's secretary. The scientific team prepared an expert version of the draft NSDC.

In July 2007, the Minister of Regional Development appointed the Delivery Team[30] (DT) to discuss the stages of work on the project on a regular basis, facilitate access to sector and local-government documents with a territorial impact as well as to propose topics requiring further analysis.

[22] *Territorial Agenda of the European Union 2020. Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions.* – an update to the document titled Territorial Agenda of the European Union 2007 – adopted on 19 May 2011 at Gödöllő (Hungary) at the informal meeting of ministers responsible for territorial cohesion.

[23] *Leipzig Charter on Sustainable European Cities* – adopted by Ministers of EU Member States in May 2007 in Leipzig, contains a number of recommendations aimed at contributing to the development of European cities.

[24] *Toledo Declaration* – adopted by EU Ministers of Urban Development at the informal meeting held on June 22, 2010

[25] *Green Paper on Territorial Cohesion. Turning territorial diversity into strength.* COM (2008) 616, adopted by the European Commission in October 2008.

[26] In response to the publication of the *Green Paper* on 24 February 2009, the European Committee of the Council of Ministers adopted the Position of the Government of the Republic of Poland on the Green Paper on Territorial Cohesion. This Position tackles the key issues concerning territorial cohesion and the future of the cohesion policy.

[27] Common Spatial Development Document of the V4+2 Countries was adopted at the meeting of ministers of the Visegrad Group responsible for the regional policy in Budapest on March 30, 2010. The purpose of the document is to coordinate spatial development and, in particular, to solve the problem of discontinuity of road and railway networks as well as to make up for the lack of connected development axes between V4+2 states. At present, the document is used by the members of the V4+2 group to update their domestic documents related to spatial planning and development.

[28] The composition of the Team included representatives of 9 Ministries: Regional Development, Construction, Transport, Interior and Administration, Environment, Marine Economy, National Defence, Economy, Agriculture and Rural Development.

[29] Theses and Assumptions accepted by the Government on June 26, 2007.

[30] The composition of the Delivery Team included representatives of the following Ministries: Regional Development, Infrastructure, Economy, National Defence, Agriculture and Rural Development, Interior and Administration, Environment and the Union of the Voivodeships of the Republic of Poland. In March 2009, the Team was expanded to include representatives of the following departments: Justice, Sport and Tourism, Health, Finance, Foreign Affairs, Culture and National Heritage and a representative of the Central Statistical Office.

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In the course of the work on the Concept, the Team collected a number of opinions, including over 40 expert reports[31], organised thematic conferences and seminars related, among others, to: environment, economy, transport, energy infrastructure, urban development, cross-border areas and marine areas with a substantial support of the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences.

In December 2008, the Team of Scientific Experts presented the Expert Draft of the National Spatial Development Concept (ED NSDC). ED NSDC contained an expert assessment of the situation and trends within spatial development in Poland, indicated the main elements of the spatial structure of the country and a vision of its development for 25 years to come. The Expert Draft of NSDC did not have a status of a government paper, however, being a comprehensive study, it had a significant impact on the preparation of the draft Concept by MRD. ED NSDC provided the basis for the public debate on the vision of national spatial development which MRD conducted in 16 regions in the first half of 2009[32] and it was confronted with the demands of the regions in respect of the future government document.

In October 2009, MRD commenced works on the preparation of the government draft of the National Spatial Development Concept 2030 which utilised the provisions of ED NSDC and took conclusions of the debate into account.

In May 2010, the first version of the government draft was prepared after consultations which had continued since September 2010 in the Delivery Team, National Spatial Management Council (position of NSMC from June 2010) and, most importantly, as part of the multi-lateral meetings with ministries represented in the DT (transport, environment, economy, health and science). In comparison to ED NSDC, the government draft of the Concept was supplemented with issues pertaining to social infrastructure and water management. The structure of the document itself was also subject to change – new chapters were added on the essence of spatial policy, key definitions and typology of functional areas. Newly added topics also included the issue of access to services of general interest aimed at increasing the internal cohesion of the country as well as the matters related to the specific character of rural areas. A diagnosis was prepared in the form of cartographic presentation of the spatial development overview of the country (diagnostic maps) and the graphic elements (illustrating the vision and objectives) in the document were entirely redesigned. Simultaneously, as part of the strategic environmental assessment, the Environmental Forecast for the Implementation of NSDC 2030[33] was prepared in 2010.

After inclusion of the recommendations resulting from the evaluation conducted in February 2010 in the draft, NSDC was subject to public consultations. The draft was discussed during thematic and trade meetings, with international fora and in the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences. Opinions were collected via an email box (konsultacje_kpzk@mrr.gov.pl). Until April, over 3 thousand comments were submitted by about 180 partners and the thematic meetings gathered nearly 500 persons.

The description of the vision of a networked metropolis was reconsidered and so were the proposals concerning the phasing of the development of the national transport network. The draft was supplemented with a chapter on financing which was of primary importance for the implementation of the actions proposed in the Concept. A synthetic part of the document was

[31] The list of expert opinions can be found in ANNEX 3. Most of them were published in "Ekspertyzy do KPZK 2008-2033" [Expert Opinions for NSDC 2008-2033] Warsaw 2008, vol. 1-4. Three additional studies on landscape, social services and water management have not been published and are available electronically together with the other expert opinions on the website of the Ministry of Regional Development: http://www.mrr.gov.pl/rozwoj_regionalny/polityka_przestrzenna/kpzk/ekspertyzy/strony/default.aspx

[32]Report on the preparatory work for the National Spatial Development Concept constitutes ANNEX 1.

[33] Report on the process of Strategic Environmental Assessment constitutes ANNEX 2.

formulated and the data provided in the document was updated. Also, some editorial changes and minor corrections were made in the contents of the document.

Participants of the consultations positively responded to the legitimate need to create an integrated National Spatial Development Concept 2030, combining elements of socio-economic and spatial planning, as well as to the necessity to continue work on the Action Plan and develop planning in functional areas. They also agreed with the claim that the sphere of spatial planning did not have a strong coordinating position in relation to sector policies (in comparison to other European countries) and that the very system of spatial planning in Poland required a profound reform.

Comments to the spatial planning system were also formulated by the National Spatial Management Council which, apart from expressing a positive opinion about it, analysed the current faulty system of spatial management and planning in the course of work on the Concept. The Council was of opinion that adoption of the Concept would contribute to the acceleration of the process of reforming and restructuring of the system[34]. Similar opinions about NSDC 2030 and the status of spatial planning in Poland were also expressed by the Committee for Spatial Economy and Regional Planning of the Polish Academy of Science. The Concept itself and the planning system in Poland were also discussed at the meeting of the Convention of the Marshals of the Republic of Poland and the Union of Polish Metropolises. The Draft National Spatial Development Concept 2030 was adopted by the Joint Central and Local Government Committee, the Committee for European Affairs of the Council of Ministers, the Committee for Computerisation and Communications of the Council of Ministers as well as by the Standing Committee of the Council of Ministers. The Council of Ministers passed a Resolution on the adoption of the National Spatial Management Concept 2030 on December 13th, 2011.

[34] Position of the National Spatial Management Council regarding the system of spatial management and planning adopted at the session of the Council on May 30, 2011.

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I. Spatial Development of Poland – Basic Definitions Used in NSDC 2030

In order to present topics covered by the National Spatial Development Concept 2030 and to ensure clear understanding thereof, it is necessary to define basic terms relating to spatial development and spatial policy. This need is due to, *inter alia*, ambiguity of laws governing this sphere.

1. National Spatial Development

In the context of NSDC 2030, national spatial development shall be construed as the way in which basic spatial structure components are distributed in the territory of Poland and as relationships between these components. Basic elements of the Poland's spatial structure, that are subject to analyses and public policy impacts, include components of the economic and social system, technical infrastructure, settlement network, (natural and cultural) landscape, as well as functional connections.

NSDC 2030 formulates a vision of Poland's spatial development in 2030 as the target for national development strategies[35] on the basis of analyses of the state-of-play of, and conditions for the spatial development; Spatial Development State-of-Play Report; and an analysis of development conditions and trends. The Concept outlines the way to achieve the vision over time, i.e. the spatial development policy, the instruments to implement it (spatial planning and coordination of policies with the biggest spatial impacts), and other instruments of legal, institutional and investment nature.

Due to the long time-frame of twenty years, the vision is formulated intuitively bearing in mind a significant uncertainty margin. Hence, it should be treated as a framework description of the desired state of spatial development in Poland that will ensure the fullest achievement of national strategic development targets.

2. National Spatial Development Policy

Spatial development policy of a country outlines the way in which the spatial development vision and national development targets will be achieved, in territorial terms, by influencing main spatial development components and ensuring coordination of sectoral instruments. As an integral part of the development policy, the spatial policy combines and coordinates nationwide measures with measures at other governance levels, including regional and local ones.

Spatial development policy is an instrument for the implementation of long-term national development strategy. It is implemented based on, and by means of:

- National Spatial Development Concept 2030,
- long- and mid-term strategic documents concerning socio-economic and spatial development (Long-term Development Strategy for Poland 2030, Mid-Term Development Strategy for Poland 2020),
- nine integrated development strategies,
- planning documents concerning:
    - regional level (voivodeship development strategy and the related province spatial development plan),
    - local level (municipal spatial development conditions and directions studies, local spatial development plans),

[35] The frame of reference for the national spatial development vision (Chapter III) is the report Poland 2030 – Development Challenges published in June 2009 by the Chancellery of the Prime Minister (CPM).

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- functional level (strategies and related development plans for functional areas, such as urban, rural, mountainous and maritime functional areas),
- investment projects laid down in development programmes and operational programmes,
- regulatory framework,
- respective institutional solutions, including the integrated spatial monitoring system.

The spatial development policy is there to:

- coordinate spatial activities of public bodies bringing together different objectives to achieve goals within the planned timeframe,
- ensure a platform for different stakeholders to achieve a common understanding of goals and actions taken in individual sectors and spheres,
- use the potential of the country, its regions and functional areas.

The body responsible for programming spatial development policy is the Government (with appropriate consultation and partnership framework ensured in the programming process). The policy is implemented jointly by all public bodies acting within their competence.

3. National Spatial Development Policy – Implementation Instruments

National Spatial Development Policy is implemented by a set of different instruments, including, in particular:

- spatial planning provisions that are binding, under respective laws, for spatial development on national, regional and local levels, or for demarcated specific territorial complexes (functional areas),
- regulatory framework,
- institutional and organisational solutions determining efficiency and effectiveness of the spatial planning system, as well as of spatial planning institutions involved in development (planning and implementation),
- investment projects set out in mid-term and operational strategies and programmes in the realm of different public policies.

3.1. Spatial Planning

Spatial planning is a management tool used to formulate aims and objectives of the National Spatial Development Policy and to set out the way of implementing it. The chief tasks of spatial planning are: to indicate opportunities for using place-specific features of an area to achieve development objectives; to determine the distribution in space and to ensure coordination in time of development activities to achieve synergies between those activities; and at the same time to preserve those features of the territory that must be protected and that ensure a foundation for long-term, sustainable development.

Spatial planning in Poland is regulated by a number of laws, in particular the Act of Parliament on spatial planning and development of 27th March 2003. It regulates types, scopes and adoption procedures for planning documents at different public administration levels.

For the purposes of NSDC 2030 the following terms were distinguished in the planning system[36]:

- national planning – the following bodies are competent to develop planning documents at this level:
  - Minister of regional development (National Spatial Development Concept),

[36] The current Act on spatial planning and management does not regulate this field in detail.

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- other ministers responsible for functional elements of Poland's development and empowered to develop respective planning documents, including the Minister of economy and Minister of state treasury responsible for planning management and protection of strategic mineral resources,

- functional planning – a separate, cross-cutting planning category necessary to ensure planning in areas with specific features unrelated with administrative restrictions, independent of national, voivodeship and local plans (functional area plans),
- regional planning – local governments of voivodeships are competent to develop planning documents at the voivodeship level (voivodeship spatial development plans),
- local planning – local spatial development studies and plans, that are based on municipal studies of conditions and directions of spatial development, determine directions to be taken in spatial structure and land use changes in gminas; respective local government bodies are competent to develop plans at this level.

3.2. Legal Instruments

Legal instruments should be construed as all laws other than spatial development plans, such as: Act on development policy, the group of Acts relative to natural environment management (majority of which have significant impact on spatial management), as well as strategies, programmes and plans adopted by the Council of Ministers that have impact on national spatial development. Those laws are the foundation of the planning procedure since they support the achievement of spatial policy objectives and ensure sound spatial development. The key condition for legal instruments to function properly in the planning system is that they must be coordinated with the spatial development policy.

An instrument auxiliary to spatial planning is the system of environmental impact assessments (EIA) whose preparation is obligatory for all planning documents. The EIA system is based on the Act of 3rd October 2008 on provision of information about the environment and protection thereof, public participation in environmental protection and environmental impact assessments[37].

An important role in the context of spatial development policy's impact on the preservation of environmental resources and the quality of living is played by the regulatory framework of establishing ecological networks, conservation planning in protected areas, water management, emissions reduction, acoustic climate in cities, etc., as well as by tools used to assess environmental burden, reduce development-related conflicts and ensure environmental compensation.

3.3. Institutional Instruments

The institutional system supports, and in fact is a prerequisite of, the correct and effective achievement of the national spatial development policy's objectives. The main components of the system include:

- implementation coordination system for the national spatial development policy comprising all public bodies involved in the planning and policy implementation process; national spatial development policy coordination consists of:
  - national coordination – the Prime Minister and Ministers responsible for regional policy, construction, spatial development and housing, as well as Minister responsible for maritime economy in respect of the development of maritime areas,
  - regional coordination – local government of the voivodeship,

[37] Dz. U. of 2008 No. 199, item 1227, as amended

- local coordination, as well as functional area coordination – the respective minister, local government or single-purpose local government associations,

- multilevel institutional system for the implementation of the spatial development policy comprising: spatial planning offices and institutions responsible for socio-economic policy implementation. At the moment the system is fragmented and does not meet its purpose which is to effectively implementat the spatial development policy,
- spatial development and spatial policy implementation monitoring system supplying information necessary to take managerial decisions at all levels of the spatial policy system,
- staff capable of development planning and management,
- multilevel task partnership,
- spatial and environmental data information policy.

3.4. Investment Instruments

Setting investments on the right course may support the achievement of spatial policy objectives. So far, the direct link between national spatial development strategies on the one hand, and midterm socio-economic strategies and operational documents, that are the basis for spending public money on development, on the other, was missing. Having regard to the postulated increased emphasis on place-based measures (or measures with significant spatial impact) within single integrated development policy, and having regard to the pool of money for modernisation and development projects that will become available over the next ten to twenty years (including EU funding), a significant portion of projected expenditures under public policies, as well as expenditures by local governments and under various "sectoral" allocation mechanisms, should be regarded as instruments contributing to the achievement of the vision laid down in NSDC 2030.

The money is budgeted in the National Multiannual Financial Plan, Budget Act, local governments' multiannual financial forecasts, budgets of public sector bodies, as well as in development and multiannual programmes – both national and co-funded by the EU. The management of programmes and investment instruments is usually bestowed on various funding administrators. It is crucial for the spatial policy management and coordination system to ensure cooperation between funding administrators and to respond to effects of place-based instruments used in different programmes. In order to achieve the spatial development vision, NSDC 2030 sets out investment directions (in descriptions of objectives), and describes, as it is the case with technical infrastructure, baseline investments broken down by implementation stages. The progress of key projects based on NSDC 2030 financed under sectoral and regional development programmes will be constantly monitored as part of the spatial policy monitoring programme.

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II. Conditions of the National Spatial Development Policy – Twenty Years Perspective

Conditions of the National Spatial Development Policy are a set of factors and processes to a little extent dependent on the government and other public bodies. These conditions should, however, be taken into the account while the National Spatial Development Policy is formulated and implemented, because they may have a significant impact on policy implementation, setting and feasibility of objectives. The conditions are related with historical factors; political, demographical and economical developments; environmental conditions; and technological changes. They are also the consequence of both current and potential future socio-economic and ecological changes. An important set of conditions is the EU legal and institutional framework. Another important condition influencing the National Spatial Development Policy is the efficiency of the national legal and institutional system that governs development processes, including spatial planning.

The conditions are multidimensional and co-dependent, therefore the division into categories is tentative.

2.1. Political Conditions

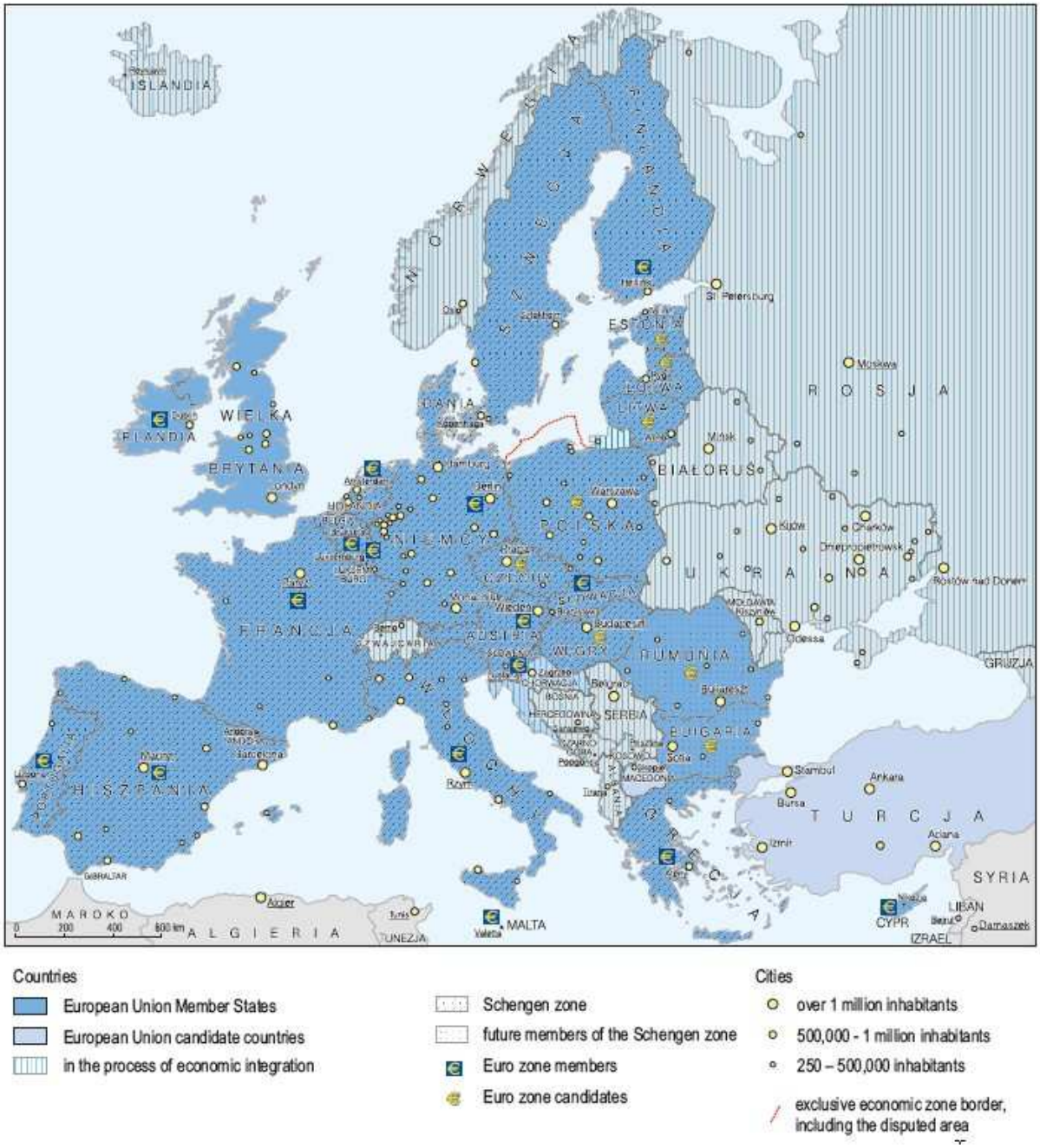
Enlargement of the European Union

After the accession of twelve new countries in the period 2004-2007, and the planned accession of Croatia and Iceland, the European Union integration process is expected to slow down in the following decades. This will influence trends in international transport routes development, as well as trends in intensified functional integration processes in Europe and its vicinity. By 2030, the Eastern border of Poland will probably remain the external border of the European Union, and social, economic and spatial developments in areas adjacent to the border will be conditioned, *inter alia*, by political changes in Belarus, Ukraine and Russia (Fig. 2.).

EU's Economic Cooperation with, and Foreign Policy towards the Eastern Europe, the Southeastern Europe and the Near East

Poland's spatial development depends significantly on the future political relations between the European Union and Russia, and, to a certain extent, on the situation in other countries of the Eastern Europe (in particular in Ukraine and Belarus), Southeastern Europe (former Yugoslavia and Albania), Turkey, the Near East and the Persian Gulf region. Those countries' investment and development needs will probably result in strengthening their economic relations with the EU that will influence the development of transport connections and enhancement of integration processes in other fields. Poland as a country lying at a distance from the economic centre of the EU, and at the same time in the geographical centre of the continent, may benefit from those processes, provided socio-economic and spatial development policies are appropriate. The development of economic cooperation and liberalisation of the visa policy between European Union and Eastern European countries will contribute to a growing demand for transport across Poland's eastern border, and thus to the development of transit infrastructure in Poland and its eastern parts in particular. The entire Eastern Poland, as well as all major urban centres capable of taking the advantage of tighter economic relations between the EU and countries lying to the east and south-east of Poland, may benefit from those processes.

Fig. 2. Poland in the European integration process 2010



Source: MRD.

Insufficient Energy Security

The need to ensure uninterrupted deliveries of oil and gas will result in a more coherent energy policy of Europe. In Poland it must entail exploration and protection of domestic resources (including those whose extraction at the moment is non-viable or challenged for ecological reasons), diversification of electricity production (including the development of maritime wind power, nuclear power, and renewable energy sources), diversification of fuel sources and ensuring secure deliveries, in particular of natural gas, as well as development and modernisation of energy infrastructure.

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2.2 Conditions Related with the Historical Spatial Structure of the Settlement Network

Spatial and Functional Structure of the Settlement System

Poland's settlement system is characterised by the regular distribution of similar-sized cities; advanced, tiered hierarchy; and small – compared to other European countries – advantage of the capital city over other regional centres. Distribution of towns, in particular small and mid-sized ones, is even (Diagnostic map 1. Chapter VIII). These are features of the polycentric system favourable for achieving sustainable development objectives: competitive economy, social and territorial cohesion and eco-development.

Thus, the existing urban settlement structure is a favourable feature of the overall spatial model of Poland facilitating the execution of public sector functions, and reducing spatial polarisation of economic and social life. However, the efficiency of the settlement system measured by connectivity of cities at different hierarchy levels is low. There are particular problems with connectivity of large cities and access from sub-regional centres to regional centres. Other inefficiencies include: lacks in technical and social infrastructure, and poor international competitiveness in higher order functions.

Major Components of the Settlement System

Major components of the settlement system are groups of cities or conurbations aggregated by their hierarchy level and size category. The first group includes centres that are crucial for Poland's settlement system and economy: Warsaw, Cracow, Gdańsk-Gdynia, Wrocław, Poznań, Katowice – Upper Silesian Agglomeration, Łódź, Szczecin, Bydgoszcz and Toruń, as well as Lublin. Those cities (apart from Bydgoszcz, Toruń and Lublin) are classified in the European Union's documents on spatial policy in the so-called MEGA category among 72 largest urban centres in the EU. However, those cities are not competitive in comparison to other similar-sized cities in the west and north of Europe in terms of infrastructure and functions. For instance, several phenomena occurring in the Upper Silesian Agglomeration require a skilful spatial development. Polish cities face different development challenges: Łódź – an incomplete transformation of the industrial structure, Szczecin, Bydgoszcz and Lublin – an incomplete functional profile accompanied by limited population and market potentials.

Other city groups comprise other provincial centres that play, apart from their regional functions, a number of nationwide functions as well: Białystok, Gorzów Wielkopolski, Kielce, Olsztyn, Opole, Rzeszów and Zielona Góra; regional centres (other than voivodeship capitals; their population usually varies between 100 to 300,000): Częstochowa, Radom, Bielsko-Biała, Rybnik, Płock, Elbląg, Wałbrzych, Włocławek, Tarnów, Kalisz and Ostrów Wlkp., Koszalin, Legnica, Grudziądz, Słupsk; and sub-regional centres with distinct subgroups comprising former province capitals and industrial centres. Cities classified to those sets differ significantly in terms of economy and infrastructure. However, their position in the settlement system is stable.

Other district centres play an important role of providing public sector functions at the local level, stimulating services and production, and stabilising local communities. Maintaining functions related with the administrative role, and by that a certain position in the national settlement system, reduces the scope and pace of spatial concentration of population and economic activity nationwide. These centres are particularly important in depopulating areas since they ensure durability and spatial continuity of settlement.

Among local centres, the most numerous category is the group of 497 small towns (with less than 10,000 inhabitants), including 311 towns with less than 5 thous. inhabitants (as of 2009). This set is highly varied. The basic dividing line may be drawn between towns with specialised functions and local service centres in rural areas. Functions of the former include: spas and recreational resorts located in mountainous areas, lake districts, at the seaside; residential and

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recreational towns and villages within direct impact zones of large cities; and specialised industrial centres in different parts of the country. The socio-economic situation of those towns is usually better that the situation in small towns that play the role of service centres for rural areas. As a consequence of transformations in agriculture, transport, telecommunications and population concentration, economic links between those local centres and their rural surroundings are changing. Their roles as service, supply and sales markets, as well as local labour markets, are being taken over by medium-sized cities.

Rural Settlement and Suburbanisation

There are visible, historical, regional differences in density of rural population, settlement unit sizes and their morphology (spatial models). Majority of villages in Poland have between 100 and 500 inhabitants. Larger villages occur mainly in southern Poland, Wielkopolska, Kujawy and Kaszuby. Depopulation affects all types of villages, being the most severe in small villages of less than 100 inhabitants, in particular those located in eastern regions of Poland at a distance from growth centres.

In zones surrounding large and medium-sized cities, the settlement is gaining in intensity, and the economic structure is becoming increasingly diverse as a consequence of: the development of non-agricultural functions, such as production, services, residential; and the increasing commuting. It is also in those areas that housing and technical infrastructure are being modernised at the quickest pace.

Settlement System Transformation Trends

In the period until 2030 the concentration of people and economic activity in functional areas of large cities, as well as medium-sized cities and adjacent rural areas, will probably continue. This process is linked with the economic globalisation present in majority of countries. In Poland one of the factors determining population concentration is international migration. The main sources of emigration are regions distant from development centres, rural areas and small towns. On the other hand, the destination for potential future immigration will be large cities and their suburbs.

Assuming that, as current demographic forecasts show, the overall population of Poland will decrease by 5-8% (i.e. by 2-3 millions) by the year 2030, one may expect the following settlement structure transformation scenario. Population of functional urban areas will grow in national, supraregional and majority of regional centres (with the exception of Upper Silesia Agglomeration, and potentially Łódź). This growth, contrary to certain opinions, will occur in large cities in eastern regions of Poland in consequence of immigration from regions surrounding those cities. The network of medium-sized cities will be stable. Diversification of small towns will continue and their aggregated population will decrease above the national average. However, in this period one should not expect individual towns to be excluded from the settlement system. Rural areas, except for zones around large and medium-sized cities, may lose in total ca. one fifth of their population as a result of emigration and negative natural movement balance. In terms of population distribution, the existing regional and intraregional differences will continue to grow.

Functional Connections Between Regions and Large Cities

A country's position in international economy is determined to a large extent by the population and economic potential of its major cities. An important role is also played by mutual relations between cities, and between cities and regions. In Poland, internal functional connections are not optimal. In spite of the polycentric settlement pattern, it is centre-oriented connections that are the most advanced due to the role of the capital. It is visible at the social and economic planes and may be illustrated by, *inter alia*, registered migrations and company

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ownership relations (Diagnostic map 3., Chapter VIII). One of the most important barriers to establishing strong connections is the substandard transport infrastructure.

Functional Connections Between Cities and Their Regions

In the globalisation era, functional connections between provincial cities and their regions are growing weaker, while connections with other major cities are improving. At the same time, direct impact of cities on adjacent areas, defined as the urban functional areas, is growing. The scope of the area is determined by urban sprawl construed as the type of housing, urban lifestyle and increasing number of commuters to city centres (Diagnostic map 4., Chapter VIII). This means that in Poland, as well as in Europe, the traditionally explicit border between the city and the countryside is becoming blurred. Rural areas, in particular ones adjacent to major urban centres, are increasingly transforming to non-agricultural functions: services and production.

Economic Functions of Major Cities

Adaptation to the system transformation in large cities and their functional areas was the easiest. This provided conditions for the development of free market economy. But also there, the progress was asymmetrical. Metropolitan functions (transport, higher education, supervisory and decision-making, administrative, touristic, industrial) must be strengthened in major cities of Poland. Large cities (with the exception of Warsaw) do not have the complete set of metropolitan functions. Decision-making functions are present mainly in Warsaw, partly in Silesia and Poznań, and to a much lesser extent in the TriCity and Cracow. As regards the economic management supervisory function, two hierarchy levels may be distinguished: Warsaw and "the rest" of the country (including all other large cities). The growing concentration of business management centres in Warsaw may disturb Poland's polycentric settlement structure. Different location of decision-making and control functions on the one hand, and production force and human resources on the other, is a symptom of a systemic imbalance.

In Poland's major cities (except for Warsaw) there are no cultural institutions with national and European range. The only city that, through promotion, achieved the status of a touristic product capable of competing with Prague or Budapest, is Cracow. Cities that attracted international institutions, apart from Warsaw, are: TriCity (institutions related with the Baltic Sea) and Szczecin (NATO). In Poland's major cities the majority (66% and more) of employees work in low and medium technology industries, and the knowledge-based economy is concentrated in Warsaw, Cracow and, partly, Wrocław and the Upper Silesia Agglomeration. The abovementioned facts demonstrate that: metropolitan functions are not fully grounded in Poland's major cities; different cities fulfil different functions; and there are benefits to be gained from combining those cities into a coherent functional organism.

Major Functions of Rural Areas

Rural areas fulfil different functions that efficiently and effectively contribute to sustainable development of Poland. In particular, they play an important role in production (agricultural and non-agricultural), environmental impact and consumption. These areas are used for different types of economic activity, primarily farming. Around 40% of Poland's population live and work in the countryside. The countryside is also a place of recreation. These functions are in line with social expectations and opinions on the role of rural areas[38]. There are still significant asymmetries in the quality of living (availability and quality of infrastructure, public services, transport and energy) between rural and urban areas, as well as differences between individual rural areas. An assessment of rural development suggests that there is a need

[38] The most important role of rural areas, according to results of the cyclic opinion poll Polish Countryside and Agriculture 2011 (Ośrodek badania opinii publicznej TNS OBOP SA) commissioned by the MARD, is food production and environment protection.

to enhance innovation and civilisation level in the countryside. In particular, the development of human capital, technical and social infrastructure, as well as all forms of economic activity in rural areas must be strengthened. Rural economic development depends also on the status of natural resources (renewable and non-renewable) and sustainable use thereof that will ensure food security. This process must entail changes in the agri-food sector (including investment and structural changes) and development of non-agricultural jobs.

2.3. Demographic conditions

Decreasing Labour Resources

Changes related with demographic regression will transpire fully after 2020 and their impact on spatial development and land use will be varied. On the one hand, the changes will play a stabilising role, as the impact on nature will decrease, and on the other, they will force spatial concentration of the economy and settlement system. In accordance with the forecasted population and demographic structure changes (Diagnostic map 5., Chapter VIII), by 2030 there will be medium to high population increase in poviats surrounding the majority of voivodeship capitals, while the highest decrease is expected in the following parts: Sudety, Wysoczyzna Bielska and Białostocka, parts of Warmia and Mazury adjacent to the Kaliningrad Oblast, and Roztocze Południowe. Decreasing labour resources will entail the need to mobilise those resources that were not fully used so far. This will lead to the increase in the percentage of occupationally active people. Methods to increase employment will include higher pension age, removal of pension and allowance privileges, removal of laws enabling early retirement, incentives to continue professional career, to raise qualifications and to get involved in life-long learning[39].

New Migration Destinations

Poland's economic growth will be accompanied by decreasing emigration to EU Member States. Growing attractiveness of the Polish labour market for foreigners will contribute to the gradual increase of immigration from non-EU countries. One may assume that within the next ten to twenty years Poland will become an immigration country. Immigration will, to a certain extent, mitigate labour shortages, and insignificantly influence demographic processes. Currently, inhabitants of villages and cities with population below 100,000 are the predominant subset of all emigrants. Immigrants, on the other hand, settle in large agglomerations. This trend in a long-term perspective will contribute to an even greater settlement network concentration, i.e. concentration of people in large cities and their suburbs. Appropriate (cultural and economic) integration policy, as well as spatial development policy, may prevent the accumulation of negative social and economic processes in certain districts of large cities.

Increased Mobility Leading to Population Concentration in Urbanised Areas and Subregional and Local Depopulation

Potential reduction of labour resources will hinder growth opportunities for centres and regions specialised in labour-intensive industries. On the other hand, demographic changes in connection with mobilisation of labour resources will result in increased mobility due to higher labour demand (Diagnostic map 6., Chapter VIII). Solving urban governance issues and the development of public transport will have a positive impact on the growth of economically strongest centres and their functional areas – the main population concentration areas. The current subregional and local depopulation processes will accelerate. The biggest population concentration will occur in functional areas of the major urban centres. Labour availability in those areas will improve.

[39] Poland 2030. Development Challenges, CPM, Warsaw 2009.

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2.4. Economic Conditions

Growing Importance of Innovation

One should expect the current global economy developments to continue, including growing co-dependence of global economic processes. Even the relatively strong macroeconomic shock, i.e. the recent crisis that transpired in 2008, did not change those trends. Assuming the current, or slightly more stringent, internal market protection measures, one may expect the relocation of traditional low-tech and labour-intensive industries to countries with relatively cheap labour and low environmental protection standards to continue. In countries with relatively high quality of living, high occupational mobility and high touristic mobility the role of knowledge- and innovation-based, energy-efficient and green economy will grow (green growth). In spatial terms, this may mean further development potential concentration in the so-called core of Europe accompanied by simultaneous gradual shift of focus towards Northern and Central Europe. This opens new economic and spatial development opportunities for Poland, in particular its agglomerations in the north, west and south-west.

Restructuring of Traditional Industries

The increasing integration of Poland's economy with the global one will cause changes of the former, including changes in its spatial structure (Diagnostic maps: 7. and 8., Chapter VIII). Economic importance of regions and areas with traditional industries (coal mining, agriculture, material- and labour-intensive industries) will relatively decrease, unless they improve productivity, or develop other sectors with higher added value that will supplement the traditional ones or replace them altogether. Relocation of enterprises representing relatively simple manufacturing sectors may affect, in particular, smaller towns and one-industry towns, as well as less developed parts of Poland. On the other hand, the development of networking and of enterprises operating in the sector of services and advanced consumer goods will favour large cities and their adjacent functional areas.

Increasing Demand for Knowledge and Information Technologies

This factor will be the reason of increased importance of the policy supporting the development of those spatial structures that are favourable for the absorption of knowledge and diffusion of innovation and that at the same time facilitate functional connections. The experience of the current crisis also demonstrates the important role of spatial policy in reducing vulnerability of national structures to negative external shocks by focusing national development potentials, networking those potentials and forming clusters. This will be possible, provided that the role of educational and scientific infrastructure systems will be enhanced and strengthened; and that the constantly and rapidly progressing information processing technologies will be systematically implemented. This will facilitate the building of an efficient access system to e-knowledge and other modern information technology-based services (Diagnostic map 9., Chapter VIII).

Increasing Demand for, and Accessibility of Transport Services

Population concentration in urbanised areas and further concentration of economic activity based on establishing and developing global economic co-dependencies accompanied by increasing purchasing power of the people and growing mobility of the labour force will enhance the demand for transport services (Diagnostic map 10., Chapter VIII). It will support the development of cities and change the transport system structure contributing to the further increase in importance of: international, interregional and inter-agglomeration railway passenger transport; urban passenger transport, including ecological public transport systems; and on the functional level – passenger transport by agglomeration railways (Diagnostic maps: 11. and 12., Chapter VIII).

On the other hand, the key factors for cargo transport will include the location of intermodal centres and terminals, including maritime terminals, and inland ports serving agglomerations and sea port areas. This means, that appropriate land must be set aside for those needs in all local planning documents.

Budgetary Expenditure

In the context to the recent economic crisis and the size of public debt in all countries, an important determinant of the scale of public investments, in particular infrastructural projects, over the next ten to twenty years in European countries and in Poland will be the size of expenditure from public (state, local-government and other bodies') budgets on fixed costs (in particular social expenditure), as well as budget deficit reduction programmes. Those factors may have impact on amounts set aside for public projects, including size and scope of European Union's structural assistance allocated to Poland in the future programming periods. The need to obtain additional capital for development without the pressure on public debt limits will raise the importance of Public-Private Partnership (PPP) projects, including projects co-funded by the EU. Those factors will be of primary importance for transport project development opportunities in neighbouring, non-EU countries.

2.5. Technological Conditions

Development of Energy-Saving Technologies

Growing energy prices in the long-term perspective (*inter alia*, due to shrinking resources), accompanied by fast growth of Asian economies, economic instability in countries producing oil and natural gas (Diagnostic map 13., Chapter VIII), as well as the EU energy policy will force countries to use energy-saving technologies and to limit energy-intensive industries. In this situation, it will be areas capable of generating energy from renewable sources and achieving low greenhouse gas emissions that will benefit from this development. The shift towards knowledge-intensive and high added value economy will mean a reduction of the energy barrier to spatial development (Diagnostic map 14., Chapter VIII). New technologies will allow solar energy and non-conventional hydrocarbon resources to be added to the energy sources spectrum at a lower unit cost.

Development of Advanced Energy Generation

Growing fuel prices will drive the technological advancement in energy generation and exploration of cheaper resources, as well as strengthen energy-efficient modes of transport. If the increase of fuel prices remains moderate, the changes will be evolutionary and adaptive. At the same time, technological advance in connection with energy and climate policies may have significant impact on extraction and processing costs of fuels, as well as energy costs from renewable sources. For Poland, the development of clean or low-emission fuel combustion technologies (coal, lignite, biomass and gas) is the most important.

Technological Developments in Transport

Increasing oil prices and active climate policy will probably drive faster technological changes in road transport, which may mean the development of infrastructure for modern electric cars and infrastructure adapted to new logistic needs. In this context, as well as in connection with the expected further concentration of economic activity in urban areas, there will be a greater need for the development of public railway transport between and within agglomerations. At the same time, air traffic centralisation will progress. The expected replacement of traditional fuels for inland and sea transport with low-sulphur and gaseous fuels may increase – in the context of the planned achievement of zero-emissions economy[40] – the demand for water transport services.

[40] *White Paper: Roadmap to a Single European Transport Area Towards to Competitive and Resource Efficient Transport System COM (2011) 144 final, European Commission 28.3.2011.*

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Further development of information technologies will, to a certain extent, condition changes in the demand for passenger transport. The demand may go down in certain segments.

2.6. Cultural Heritage Conditions

Historical objects and landscapes in Poland are a testimony of many cultures and epochs. Distribution of such objects is presented on Diagnostic map 18. (Chapter VIII). The map merely illustrates the saturation of Poland's territory with registered historical objects and suggests that symbolic and promotional functions of those resources are underused, in spite of their pro-growth potential.

Cultural heritage – both material and related with non-material values – is a part of the nowadays space. It includes not only single objects, or groupings thereof, but also the entire spatial units, i.e. objects with their surroundings. These units should be subject of studies and protection, even if there are no signs on the land's surface – as it is the case with many archaeological locations – that would allow the units to be highlighted in the symbolic functions development scenario. Inherited objects must fulfil current utilitarian functions corresponding to their potential and protection requirements, otherwise they become derelict, collapse, lose value and cause irreparable loss to growth potential and national heritage.

Over the next twenty years the role of cultural heritage in spatial development processes will grow. Increasing wealth of the society and cultural transformations will cause both tangible and intangible cultural heritage assets to play a more important role in development. Location of those assets and the ability to include them in the development process will have a positive impact on economic concentration, population concentration, the rank of culture and tourism.

2.7. Natural Environment Conditions

Spatial development policy aiming to ensure Poland's development with the least amount of ecological conflict must take into the account nature's resistance in areas covered by the planning process. The policy must therefore recognise the need to protect, explore and develop existing natural resources, including flora and fauna, landscape, and mineral deposits, and to recreate lost resources. It must also recognise cultural heritage conditions. All those features influence the current and future competitiveness of regions, the ability to generate sustainable, green jobs, and the quality of living in urban areas. Water resources, biodiversity and landscape diversity, soils, minerals and renewable energy sources are crucial to country's spatial development.

Water Resources

Poland's total water balance depends on the amount of precipitation in its territory, temporal distribution of precipitation, as well as natural and artificial water retention capabilities. Water resources in Poland are not distributed evenly. Central Poland has the most scarce water resources.

Availability of water whose quality is appropriate for the intended purpose, determines development opportunities and barriers. 62 million m^3 is Poland's water resource defined as the amount of water discharged by rivers to the Baltic Sea. Nearly one half of the amount originates from groundwater [41]. Ca. 38% of Poland is affected by drought and excessive water resources exploitation (Diagnostic map 15., Chapter VIII).

In order to ensure that future needs are met, one must look at significant fixed water needs of natural structures, increasing water consumption in urban areas, increasing water consumption due to functional changes in rural areas and changing needs of agricultural

[41] *Ocena projektu dokumentu rządowego KPZK 2030 w zakresie zagadnień właściwych gospodarce wodnej, w tym również wodno-ściekowej oraz infrastrukturze przeciwpowodziowej [Assessment of the draft governmental document NSDC 2030. Focus on water management, water supply, waste water management and flood prevention infrastructure]*, M. Maciejewski, J. Wiśniewski, J. Zaleski.

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production. This means that it is necessary to increase retention and focus in the future on saving water and to reduce the fluvial outflow to the sea. Water quality is significantly influenced by unsolved sanitation problems in urbanised rural areas[42], large-area pollution from agriculture, industrial waste water and salty water from mining pits.

Biodiversity and Landscape Diversity

Poland has higher nature assets and higher biodiversity than the majority of other European countries (Diagnostic maps 16. and 17., Chapter VIII). Due to overlapping impacts of long-term settlement, natural resources extraction and traditional extensive farming, the territory of Poland is a mosaic of nearly virgin areas (Białowieska Forest), natural landscapes (large forest compounds, wetlands, maritime and mountainous landscapes, etc.), cultural landscapes (farmlands and urban areas) and locally degraded areas (open-cast mines, post-industrial areas and landfills). Often, urban nature enclaves and areas adjacent to many cities, including functional areas of voivodeship and regional centres, display high nature value as well. Higher than average density of land parcel boundaries resulting from highly fragmented land ownership (observed in Podgórze Karpackie, in the territory occupied by Russia in the 19th century and in Kaszuby) forms a characteristic landscape of traditional agriculture (Diagnostic map 18., Chapter VIII).

Other Natural Resources

Poland is a significant producer of minerals, even though in the last decades mining went down[43] due to depletion of the most easily available deposits, growing mining costs and collisions with other spatial development components. At the same time, mining methods of aggregate and other minerals that have significant environmental impact are less and less acceptable for the public. (Mineral deposits with the highest significance for Poland's economy are illustrated by Diagnostic map 19., Chapter VIII.).

Existing soil resources are used primarily for farming. Heavy metal pollution occurs locally. Only 3% of farmland is affected by excessive heavy metal content. An important factor in farming is erosion by water, wind, as well as droughts occurring in large areas. (Diagnostic map 21., Chapter VIII.).

In the context of climate change, it is important to generate energy using renewable resources. Primary renewable energy sources (RES) in Poland are: wind and biomass. Other sources, including surface waters, are marginal. There is little overlap (Diagnostic map 20., Chapter VIII) between zones with the best conditions for the development of individual types of RESs, thus circumstances for the development of decentralised renewable energy generation for local and regional needs are favourable. Barriers to the growth of wind energy include: lack of appropriate transmission grid arrangements; ramp events; and the requirement to protect bird migration corridors and landscape. Poland's significant low-temperature geothermal energy resources may be used for heating and tourism. Geothermal resources may be the cornerstone of local development strategies for economically weak areas, just like therapeutic waters and peloid (peat) are the cornerstone of economies of spas. Poland may become a serious biomass energy producer due to general availability of biomass sources. The energy may be used for scattered rural households, villages and small towns.

Climate Change

Expected climate changes by 2030 will have little impact on spatial development in Poland. Climate changes may have impact on the settlement network, farming and certain other economy sectors in certain areas, e.g. sea coast, Żuławy, river valleys and mountainous areas.

[42] National Waste Water Treatment Programme is expected to be completed in ca. 2015.

[43] Bilans gospodarki surowcami mineralnymi Polski i Świata [Mineral resources – extraction and use in Poland and worldwide], Kraków 2011 (ed. T. Smakowski, R. Ney , K. Galos), Mineral Resources and Energy Management Institute, PAS; commissioned by the Ministry of Environment.

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Indirect impact of climate change, taking the form of standards and laws, in particular preventive ones and ones concerning the organisation of municipal management, will be more significant. There will be more investments in water management facilities and more costs connected with damage caused by natural calamities (Diagnostic map 22., Chapter VIII). Significant threats caused by the forecasted temperature increase of ca. 1,5°C will have negative impact on economic and population growth in the affected areas. Growth barriers may occur in regions with high carbon economies and with high water needs for the purposes of municipal management and agriculture. Fig. 3. compares the vulnerability to climate change of Polish voivodeships and of NUTS 2 areas in other UE Member States.

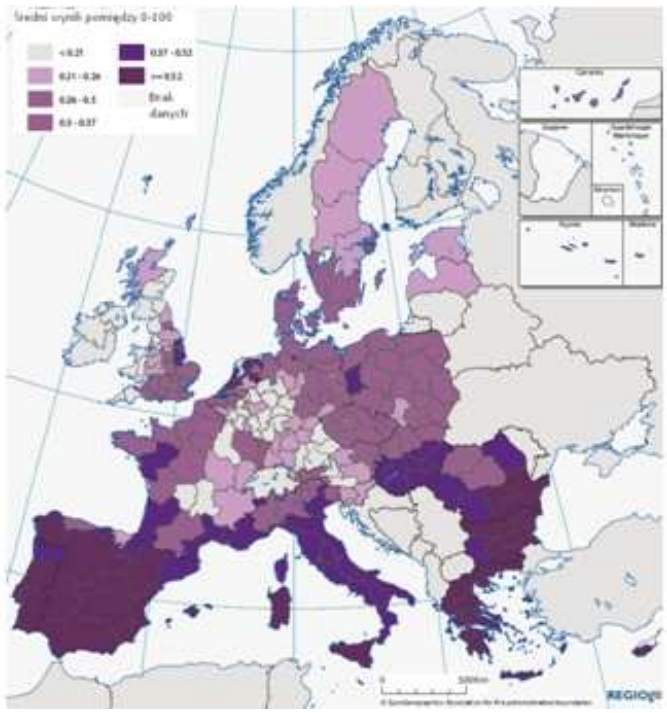
Water resources management on both sides of state borders running across river basin districts will play a more important role in preventing potential cross-border water conflicts. Water quality management and flow rate control in case of flood and low water risks will be increasingly important.

2.8. Conditions related with EU Development Objectives

EU Objectives by 2020. Increasing Global Competitiveness

The European Union set out growth priorities by 2020 (smart, sustainable and inclusive growth)[44].

Fig. 3. Vulnerability to climate change – NUTS 2 level



Średni wynik pomiędzy 0 – 100	Average score 0 – 100
Brak danych	No data

Source: An Assessment of Future Challenges for EU Regions. Climatic Challenges for European Regions. Directorate General for Regional Policy, EC, March 2009, SEC(2008) 2868 *final.*

To a greater extent than in the past, EU challenges are formulated in the context of global challenges (economic turbulence, globalisation, climate change, demographic change and energy), and to a lesser extent in the context of internal challenges (building single market and development inequalities).

[44] According to Communication from the Commission: Europe 2020. A European strategy for smart, sustainable and inclusive growth, March 2010.

Due to the crisis of trust and recent economic problems of certain EU countries, a new strategic management system is being set up. In this system, EU funds and national public policies will be linked to efficiency assessment of mechanisms used to achieve priorities and objectives of the Europe 2020 Strategy, also in terms of stability of financial systems. It will be an annual, Europe-wide assessment. Availability of funding for different policies, including the cohesion policy, will be made conditional on the achievement of objectives and implementation of structural reforms previously consulted with the European Commission.

Importance of the Territorial Dimension of EU Policies

The increasing impact of global processes and the role of Europe-wide objectives do not contradict the place-based approach to achieving the objectives. On the one hand, there is an increasing pressure on finding sectoral instruments, and on the other, there are the Lisbon Treaty provisions setting out territorial cohesion objectives and place-based policy approach[45] in development processes. The willingness to act for territorial cohesion and to develop territorial governance expressed by EU Ministers responsible for spatial planning in the Territorial Agenda of 2007 took on a different meaning in the context of the financial and economic crisis, as it forced EU Member States to look for tools to focus resources and improve economic governance. The new cohesion policy promotes territorial cohesion with a special role for cities, functional geography, areas with specific geographic and demographic problems, as well as macroregional strategies as components of new programmes. The cohesion policy perceives local networking of partners from urban and rural areas as an effective implementation tool of the Europe 2020 Strategy. From Poland's point of view, place-based EU policies and integrated approach to problem solving is the condition for effective achievement of EU internal objectives (such as building single market, and achieving social, economic and territorial cohesion), and of maintaining participative nature of the European Union itself. This means, that Poland must become more active on the European level, in macro regions (Baltic, Central, Eastern and Danube Europe) and internally to prepare itself to implement and promote its own development vision of Europe and areas adjacent to Poland (Figure 12. and 13.). Poland's activity will consist of participation in the preparation of a common EU spatial development document (postulated by Poland) and macro-regional strategies, and formulation of proposals concerning different EU policies with the biggest territorial impact (e.g. cohesion, transport, energy, agricultural and maritime policies).

Cohesion Policy Transformations (after 2013)

EU cohesion policy, that for the last few decades served Europe as a tool to achieve internal cohesion, will change in terms of internal procedures (in order to improve its efficiency, effectiveness and to ensure its greater contribution to the achievement of EU's overall goals and increased complementarity with other EU policies and national measures), thematic and geographic framework. For Poland, this will mean the need for more effective and better targeted interventions in certain key regions and thematic areas. Poland will continue to be the largest beneficiary of cohesion policy until 2020, and afterwards the influence of this policy on development processes, including spatial development, will go down. Thus, the role of national instruments will grow gradually. Those instruments will: be based on cohesion policy methodology; take advantage of state institutions' greater pro-growth capacity; however, they will be financed from the national budget and will be aimed to achieve primarily national growth objectives.

[45] The new EU regional policy paradigm comprises: territorial policy impact, focus on using all regions' potentials, cooperation between different levels within the multi-level governance framework, functional approach to defining spatial units (intervention areas). The key document is the report *An Agenda for a Reformed Cohesion Policy*, Fabrizio Barca, 2009.

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TEN-T Network Development

One of the EU's key policies that may have a significant impact on Poland's spatial management is the European Transport Policy, and in particular its key component setting out the Trans-European Transport Network (TEN-T). The form of the TEN-T network established taking into the account transport needs of the entire European Union, and good quality investment projects are the key to improve EU growth opportunities, increase connectivity and improve competitiveness of cities. A well-designed set of investment priorities negotiated with the EU may contribute to the development of national and international functional connections. With the new infrastructural extensions to the TEN-T network that will cater for all of Poland's crucial transport connections, it will be possible to implement regional and international transport projects. The EC's plan to divide the TEN-T network into the core network comprising crucial strategic and economic nodes of the EU, and the comprehensive network ensuring access to all EU regions is intended to achieve countries' internal cohesion and ensure effective international transport.

2.9. National Legal and Institutional Conditions

National spatial policy legislation and institutions are the condition for national spatial development policy, as well as the subject of it. The set of conditions includes those legal and organisational measures that were present before the NSDC 2030, as well as those that the Concept will influence indirectly to a small extent. In this context, conditions will include, first of all, the reorganisation of the development management system in Poland that started a few years ago. NSDC 2030 is one of the elements of the reorganisation package. The Government, as a consequence of the reorganisation, decided to strengthen the link between socio-economic planning and spatial planning. The need to change the regulatory framework of principles and measures of the national spatial development policy (on different implementation levels) and the improvement of effectiveness of public institutions involved in spatial and place-based policies should be perceived, like it is the case in the National Regional Development Stategy 2020, as an integral element of NSDC 2030 (more on the subject: Objective 6., Chapter V.).

Towards System Reorganisation – Implementation of the Integrated Development Management Model in Poland

NSDC 2030 will be implemented in Poland by means of a new strategic development management system. The integrated system concept developed in the Ministry of Regional Development described in the Foundations of the Polish Development Management System[46] assumes, that a hierarchic system of strategic documents will be built with the Long-Term National Development Strategy as the principal document defining long-term challenges and strategic goals of the state. Tier two will comprise Mid-Term National Development Strategy 2020 establishing the framework for nine integrated mid-term strategies. Those strategies will ensure complementarity of sectoral policies. Implementation tools of development strategies will include operational and national programmes executed by the public administration at all levels.

Link between the Socio-Economic Planning System and Spatial Planning To Achieve Development Objectives

Changes at all system levels will result in overcoming the current dualism of strategic programming that separates spatial development from socio-economic development. It will be achieved by incorporating spatial development policy elements into the core strategic documents. In order to optimise the system, integrated and comprehensive documents will also incorporate the spatial dimension of processes and development objectives.

[46] Premises for the development management system in Poland, document adopted by the Council of Ministers of 27th April 2009.

On the regional level, consistency between socio-economic and spatial planning will be strengthened by the requirement to ensure consistency between development strategies and operational programmes on the one hand, and Voivodeship Spatial Development Plans (VSDPs) on the other. One of the most important systemic solutions influencing regional policy implementation will be the coordination between regional spatial planning offices responsible for the development of VSDPs and authorities managing regional programmes.

Inconsistent, Impermanent and Extensive Spatial Planning Regulatory Framework

It is a general opinion that the legal system governing spatial planning in Poland is unsatisfactory. The fact that the system is regulated by several dozens of acts of Parliament and that there is a great number of documents that must be coordinated make it inconsistent and paralysed. Acts on spatial planning and development, the Construction Law, Act on real estate management and many other protection acts and special acts are seriously flawed. After the Act was adopted by the Parliament in 2003, already a year later an attempt was made to amend it. The amendment was rejected by gminas. Corrections of existing laws in the current legal environment are unlikely to be successful in improving the Polish spatial planning system. Lack of an obligation that local plans, in particular in areas intended for intensive development, should be consistent with Voivodeship Spatial Development Plans (Diagnostic map 23., Chapter VIII) is one of the major reasons for the inefficiency of the planning system on the local level. It often causes irreversible harmful consequences in space, discernible also at higher planning levels. Even if laws change quickly, the current situation will have an impact on spatial development in the decades to come.

Lack of a System to Achieve National Spatial Development Policy Objectives

So far, there is no system to implement the National Spatial Development Policy that would be grounded on legally binding documents, and that would be linked to real decision-making process of central authorities and other stakeholders. There is no connection between governmental administration's decisions and financial responsibility for consequences thereof. Spatial planning is not integrated with investment planning which results in an imbalance between the supply of land with utilities and the market demand. The system does not stipulate the function of planning documents and relationships between them. Nor does it lay down national spatial policy guidelines that should be followed in plans and programmes at all levels, in particular at the local one, because it is decisions taken at the local level that have the biggest impact on real spatial, especially urbanisation, processes.

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III. Vision of the Spatial Development of Poland by 2030

3.1. Poland 2030 – vision of the socio-economic development

The vision of the spatial development of Poland in 2030 is formulated in reference to the strategic challenges with which the Polish economy is faced and which are identified in the report titled Poland 2030 – Development Challenges[47] as well as to the anticipated objectives of the development policy resulting from the present NSDC 2030.

Poland in the year 2030 is a country with well established conditions for constant and sustainable development, properly developed, efficiently managed and safe. This status results from economic, social, spatial and civilisation processes. It also reflects the responses of the development policy to long-term challenges and on-going development conditions related to the economic situation. Poland in 2030 offers development opportunities to individual citizens, safeguards their interests and acts as a reliable partner in international relations.

In 2030, the income of Poles reaches the average European level and the GDP per capita nears that of the EU average. Human capital indicators show above average values and the standard of living, including access to services of general interest, approaches a comparable level.

The basis of Poland's prosperity is a sensible economic policy grounded in market rules and taking the pillars of social economy into account. The competitive economy, managed by specialised managerial staff who make use of qualified labour resources, is largely knowledge-based – involving the economy of advanced industries and comprehensively developed infrastructure. The Polish economy's competitiveness is also the product of energy and climate security which ensures stable conditions for the operation of business entities and development of society. The state, by offering social development opportunities, initiates and supports the processes of human capital activation and social integration, thereby making it possible for an efficient use of the potential of citizens. It is facilitated by, among others, a modernised institutional structure managed on multiple levels and citizen-friendly systemic solutions. Effective institutions of the state provide a framework promoting efficient realisation of the rights and aspirations of individuals and are conducive to the formation of social capital.

Poland 2030 is characterised by socio-economic and territorial cohesion. Strong regions, whose development depends on endogenous potential and competitive advantages, create nation-wide development stimuli, thereby contributing to the achievement of the general objectives of the regional and spatial policies.

3.2. Poland 2030 – spatial development

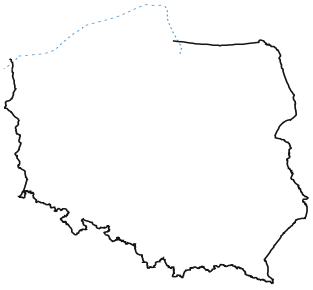
Between the spatial dimension of the country and the socio-economic vision, there exist mutual relations and feedbacks. The vision of Poland's development until 2030 defines the strategic framework for the manner in which space should be managed in order to turn it into a factor supporting the achievement of policy objectives. The substantial intensification of modernizing and development processes, which is expected in the nearest future in Poland, will directly affect the acceleration and consolidation of the changes that have been observed in recent years (after Poland's accession to the EU). This process will occur simultaneously with the transitions in the European space conditioned by global development processes as well as by the advancement of economic and political integration within the EU and in relation to the neighbouring countries.

[47] The document contains a characterization of the following challenges: growth and competitiveness, demographics, labour resources, infrastructure, energy and climate security, knowledge-based economy, social cohesion, solidarity and regional cohesion, efficient state, social capital. See note 16.

Therefore, it is assumed that changes in the spatial development of the country will become a lot more dynamic and will make the spatial image of Poland in 2030 qualitatively different from its appearance in 2010.

The formulation of the vision of the spatial development of Poland by 2030 was possible owing to the framework outlined by the anticipated vision of socio-economic development of Poland, analysis of the current development directions and trends and results of the analyses of the status and conditions of spatial development. This vision is based on five desirable characteristics of the Polish territory: competitiveness, innovation, internal cohesion, biological richness and diversity, security and spatial order (Fig. 4.).

Fig. 4. Main features of the Polish territory in 2030



3.2.1. Polish space is competitive and innovative owing to the potential of the polycentric network of metropolises

The historically shaped polycentric character of the settlement structure is maintained and reinforced which promotes social and economic development as well as the territorial cohesion of the country. Due to the progress of urbanisation, 75-80%[48] of the Polish population live within the administrative borders of cities and in the zones surrounding large centres. Population will concentrate both in large urban centres and in their functional areas, with the largest growth rate occurring in metropolitan areas. Large urban centres will face an inflow of population from rural areas settling in their functional areas – metropolitan and regional – and less frequently in city centres. It will benefit most to the cities of Eastern Poland (Białystok, Lublin, Rzeszów) where urbanisation processes will be the most intensive. That is the consequence of the outflow of population from and, in fact, depopulation of certain rural areas in this part of the country.

[48] The actual level of urbanisation in Poland is higher than the one recorded according to the administrative criterion. Firstly, due to the omission of heavily urbanised sub-urban areas of the largest urban centres. Secondly, due to the omission of a large number of persons who do not have a registered place of residence in cities (e.g. about 10% of the population in Warsaw). If the delimitation of typically urban areas was to follow solutions applied in the Western countries, the Polish urbanisation rate should be estimated at about 70% in 2010 which is 8 percentage points more than the share of population living (with registered residence) within the administrative limits of cities. It is worth noticing that the share of urban population after 1990 is constantly increasing rather than decreasing as the official statistics indicate.

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The concentration of population will be accompanied by further concentration of development potential, including economic potential. The core of the national economic system – and an important component of the European one – is the network of co-operation between cities (Fig. 5.) structured on the framework of large urban centres. It forms a correlated, open network system of functional areas of major Polish cities which are integrated in the domestic and international space with the aid of strong and multi-directional functional connections between their economic, social, educational and cultural functions, the research sector included. All urban centres that constitute nodes in the network are connected with an efficient (at least at the average EU level) transport and ICT network.

In 2030, the key nodes of the network of functional connections between cities include:

- the capital of the country and the largest Polish cities as well as: Upper Silesian Agglomeration (Katowice and other cities comprising the Metropolitan Association of Upper Silesia), Łódź, Cracow, Tricity (Gdańsk – Sopot – Gdynia with the main urban centre in Gdańsk; hereinafter as Tricity), Wrocław, Poznań, Szczecin, the emerging duopoly Bydgoszcz – Toruń, and Lublin;
- capitals of voivodeships of national significance where metropolitan functions of national and international importance consistently concentrate: Białystok and Rzeszów[49], Opole, Olsztyn, Kielce, Gorzów Wielkopolski and Zielona Góra.

The core settlement network also comprises regional centres connected to the main nodes which contributes to the sustainable development of the country: Częstochowa, Radom, Bielsko-Biała, Rybnik, Płock, Elbląg, Wałbrzych, Włocławek, Tarnów, Kalisz with Ostrów Wielkopolski, Koszalin, Legnica, Grudziądz, Słupsk.

Sub-regional and local centres are also connected to the metropolitan network. Functional connection of those centres to the largest cities reinforces the potential of the network of metropolises. Simultaneously, functional links with economically and socially weaker areas situated at a larger distance from the main centres of socio-economic life of the country (in Eastern and North-Eastern Poland, Western Poland, Central Pomerania) gives a development incentive to those localities.

In 2030, Warsaw ranks among the most important cities of Europe in functional terms and it is properly connected to other European metropolises. It constitutes a financial and economic heart of Central Europe where international institutions and companies are based. On the European scale, the Polish capital is an important political, administrative, educational and cultural centre, while playing an important role in industry and modern technologies. At the same time, owing to the development of the polycentric metropolitan network, a devolution is observed in the decision-making, control and administrative functions as well as in the national media – spheres in which Warsaw used to prevail considerably over other cities. The rank of other metropolitan centres and capital cities of voivodeships has increased. In Eastern Poland, in particular, they have become an engine of regional development, strengthening the territorial cohesion of the country and increasing Poland's competitiveness. Within the network, the processes of integration and correlation between the functions of cities and their functional areas produce strong bi-polar and multi-polar systems: Warsaw – Łódź, Cracow – Częstochowa – Upper Silesian Agglomeration – Bielsko-Biała – Rybnik (the system connected to Ostrava Conurbation in the Czech Republic), Gdańsk – Sopot – Gdynia, and Bydgoszcz – Toruń (Fig. 5.). Owing to the intensified cooperation and the synergy of those links, the relations between those cities play an important role in the economic processes of Poland and Europe alike.

[49] Rzeszów and Białystok – apart from Lublin – are the largest cities of Eastern Poland and fast developing diffusion centres with multiple metropolitan functions of supra-national significance. The population in these cities is expected to grow dynamically in the coming years. They constitute important nodes for transport routes going in the eastern and north-eastern directions.

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As a result of the process of metropolisation of economy, investments and modern business activities concentrate in the main nodes of the settlement system and in their functional areas where they can benefit from the potential of universities and research centres. It contributes to the accumulation of the most competitive resources of human capital in those areas (internal and external migration primarily to the largest urban centres) which results in the qualitative and quantitative improvement in the human capital as well as in the increased competitiveness of cities on the European scale. The operation and development of the polycentric metropolitan network strengthens the role of its component cities in international networks in compliance with their specific features and symbolic functions. The main nodes of network utilise synergic relations which leads to enhanced competitiveness and innovation of the Polish territory in the European and global perspective. Strong international connections of the polycentric metropolitan network allow for the transfer of development stimuli – resulting from those connections – from metropolitan centres to their surrounding areas. In 2030, the strength of functional connections between the nodes of the network does not depend solely on the administrative and socio-economic rank of cities, transport links between them or on geographical conditions. In the situation of decentralisation (favouring, on one hand, regions and their capitals and, on the other hand, metropolitan areas) and with the modified economic profile of Poland (transition towards a high-performance knowledge-based economy, innovation in the environmentally-friendly industry and a strengthened role of market services), such factors as the quality of human resources, the potential in the fields of science, research and education as well as the territorial management system become very important.

The largest cities make up the country's engine of development and provide a convenient living space which is supported with an active urban policy. Owing to the application of urban planning standards, the urban space is rationally managed and the spatial order is evident. City centres offer not only a good location for the offices of corporations and institutions, but also a space which their citizens voluntarily choose for their place of residence due to, among others, the high quality of public spaces. Energy-intensive car transport within cities is effectively supplanted with integrated systems of public transport which largely depend on agglomeration railways covering metropolitan areas which prevents pollution and urban sprawl. Suburbanisation is additionally curbed by an effective system of spatial planning. At the same time, functional areas of the largest urban centres offer attractive places to live. Their inhabitants have an easy access to green areas or recreational zones as well as to services of general interest provided by larger cities. Functional connections between the largest cities facilitate the emergence of a single market of investments – based on the daily direct economic contacts – intensive cooperation of universities and research centres and a significant extension of the market of cultural goods. In 2030, the largest cities of the metropolitan network are connected by means of efficient, multi-modal, coherent and integrated systems of transport infrastructure. The largest centres are connected with a network of modern railways – including high-standard railway system – and an extended and modernised road system – partly corresponding to the standard of present-day motorways and express roads (Fig. 7. and 8.). The networked metropolises are further connected to the European network extending towards Berlin, Dresden, Vienna and the region of Øresund, while motorways of the sea connect them to other Scandinavian and Baltic cities (Kaliningrad, Klaipėda, Sankt Petersburg, Riga). The road, railway, air and maritime traffic are efficient owing to the integration of various modes of transport: utilisation of multi-modal systems in freight transport and popularisation of park and ride schemes in passenger transport. The efficiency of the road system is based on the high quality speedway connections between all the largest cities, capitals of voivodeships and the majority of Sub-regional centres, including their complete ring-roads.
The share of the railway transport in the market of freight and passenger transport increases gradually. The passenger rail service is dominated by inter-agglomeration and agglomeration transits which are integrated with urban transport systems in terms of functions and fares.

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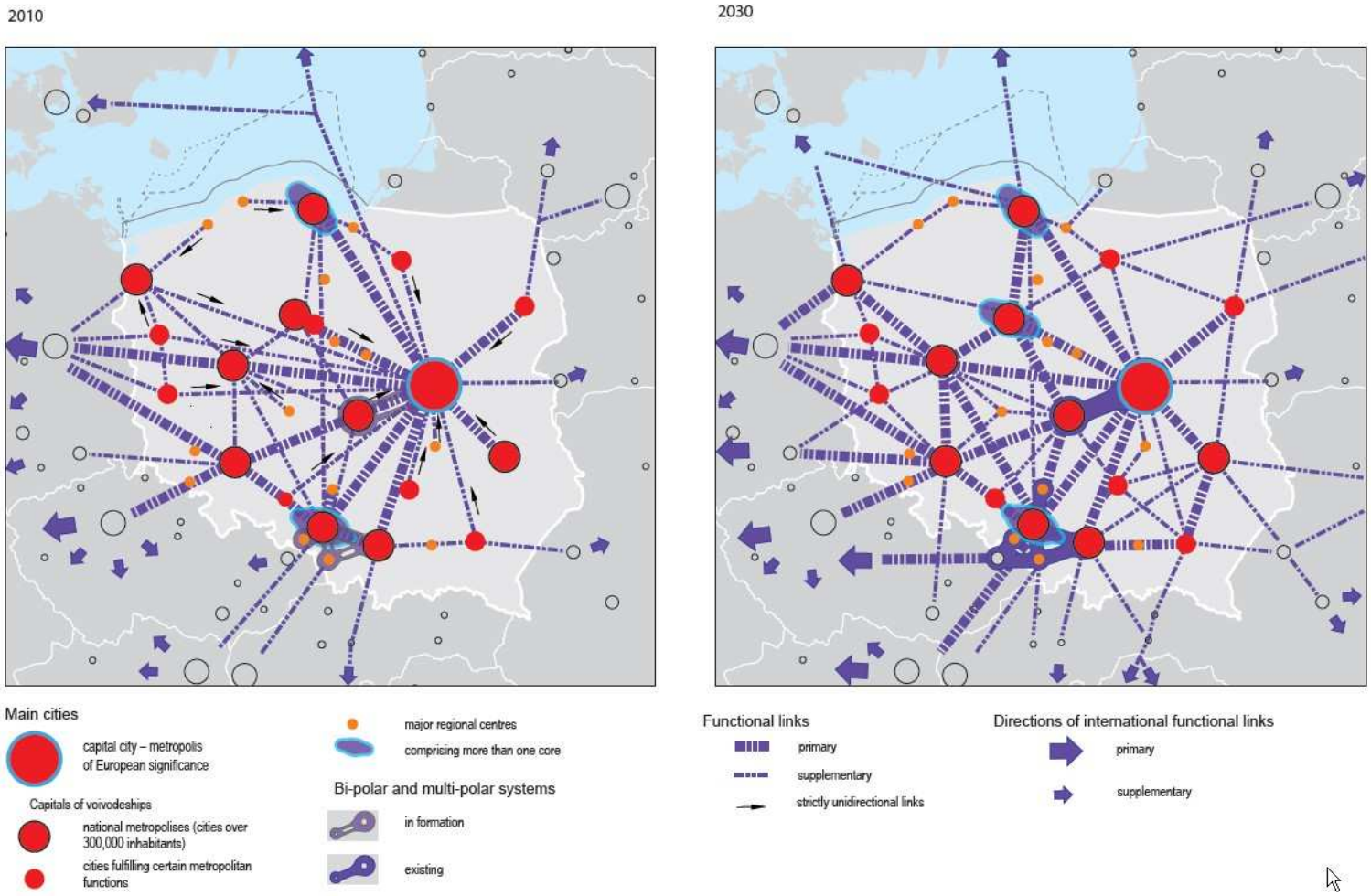
In 2030, a modern railway network connects the main cities of the country (Fig. 8.)In respect of the transport of freight, apart from intercontinental transport, the intermodal transport gains in importance as it ensures safe and efficient transport of goods between metropolitan areas, border crossings, sea ports and other key economic centres. Metropolitan areas of the largest cities have international airports which promote their development and intensify links with other cities in Europe and the world. The metropolitan area of Warsaw is handled by at least two mutually complementary airports. Moreover, if the construction of the Central Poland Airport (*Centralny Port Lotniczy – CPL*) is approved, it will take over the role of an airport hub integrated with the modern system of railway and road connections. The core network is supplemented by airports in Bydgoszcz, Łódź, Szczecin, Rzeszów, Zielona Góra and two new civilian airports in Lublin and Modlin. Depending on the economic analysis of the profitability of such projects and on the future market situation, the core network can be further supplemented by airports in Białystok, Olsztyn, Kielce, Koszalin, Opole, Nowy Targ and Jelenia Góra.

Fig. 5. Functional connections between main urban centres 2010 and 2030



Source: Prepared by MRD

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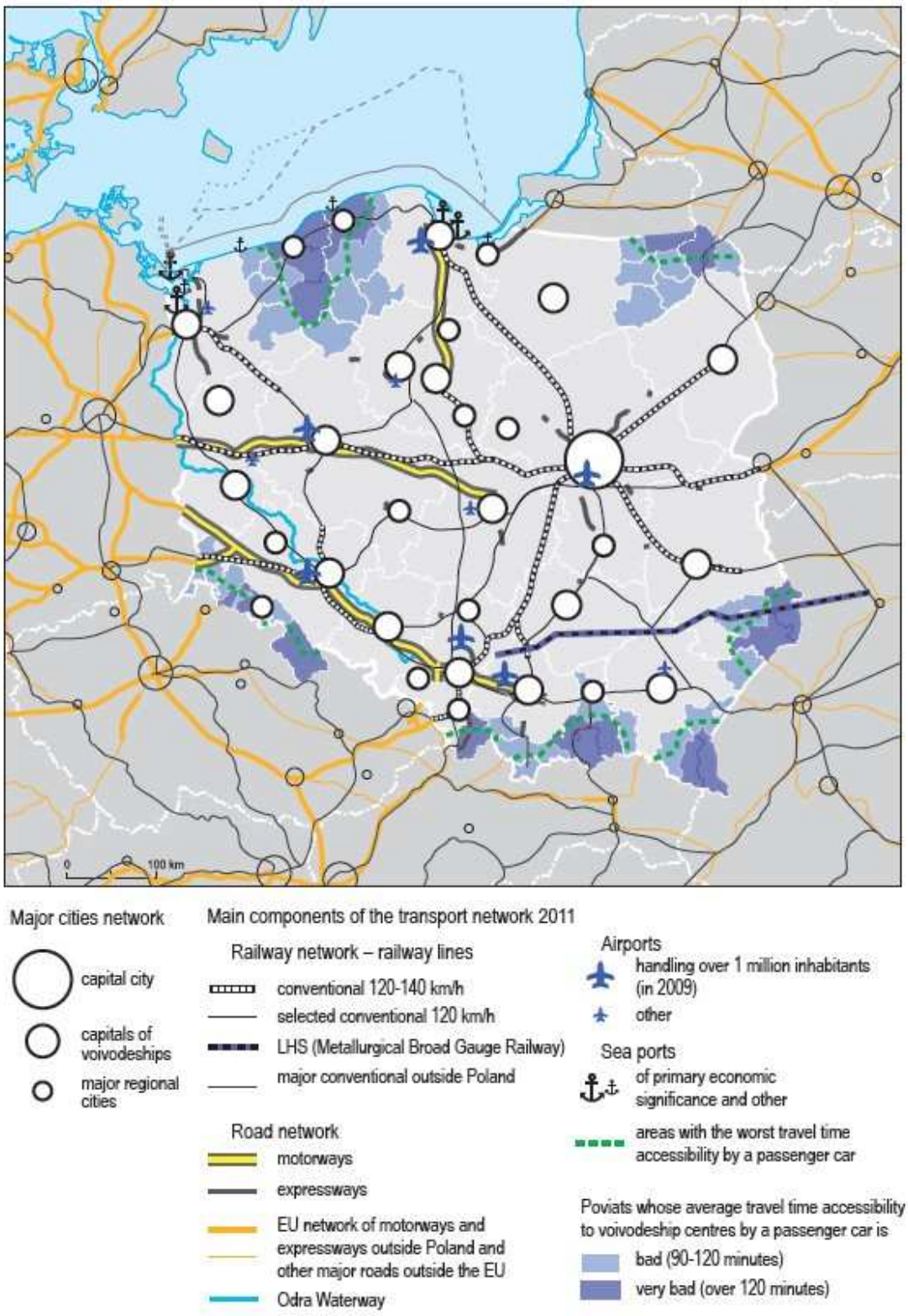
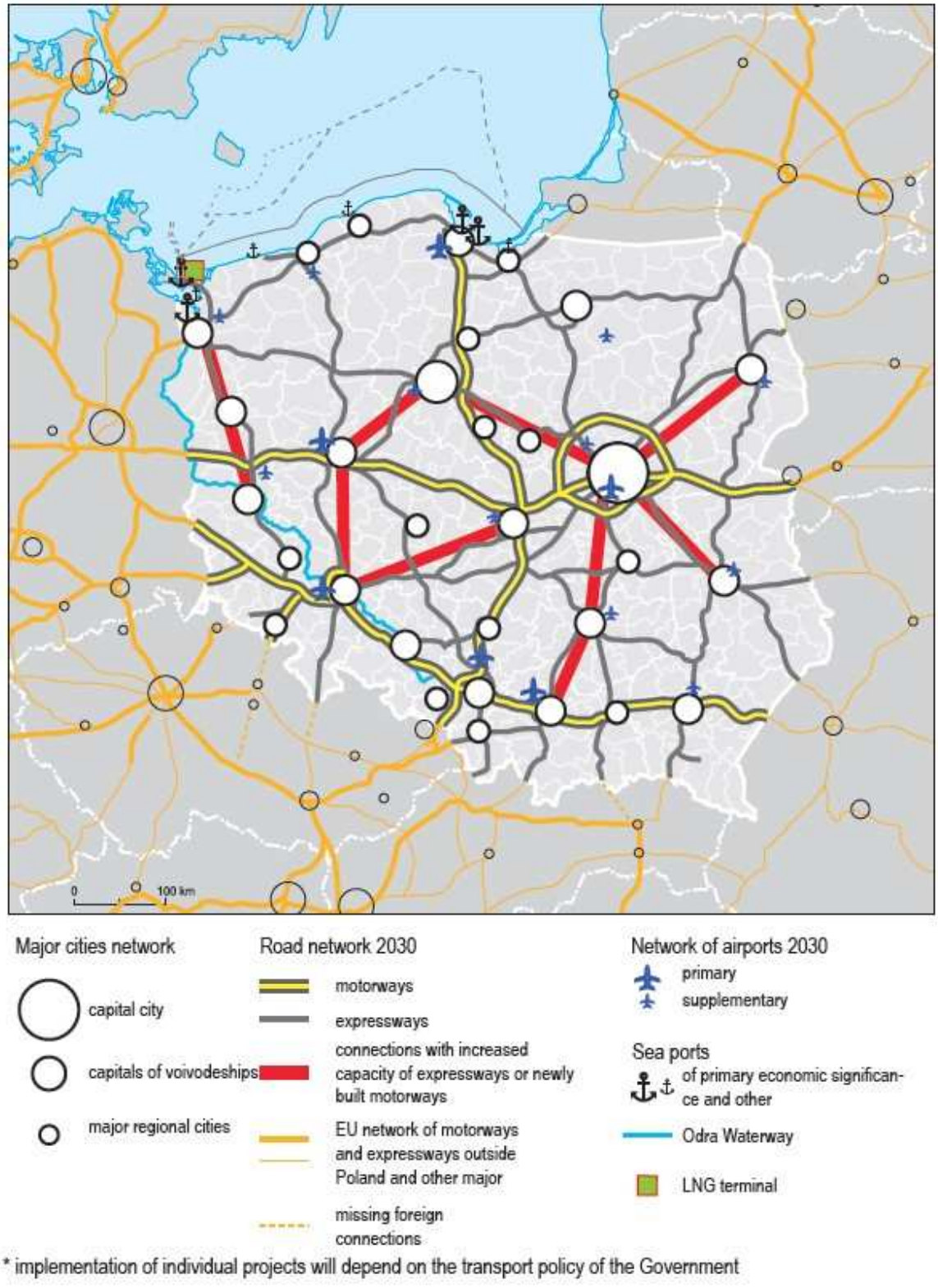
Fig. 6. Major components of the transport network in 2011 and areas with the worst travel time accessibility



Source: Prepared by MRD in cooperation with the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN)

Fig. 7. Vision of the development of primary components of the road network by 2030*: motorways and expressways, airports, sea ports, the Odra Waterway



Source: Prepared by MRD in cooperation with the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN)

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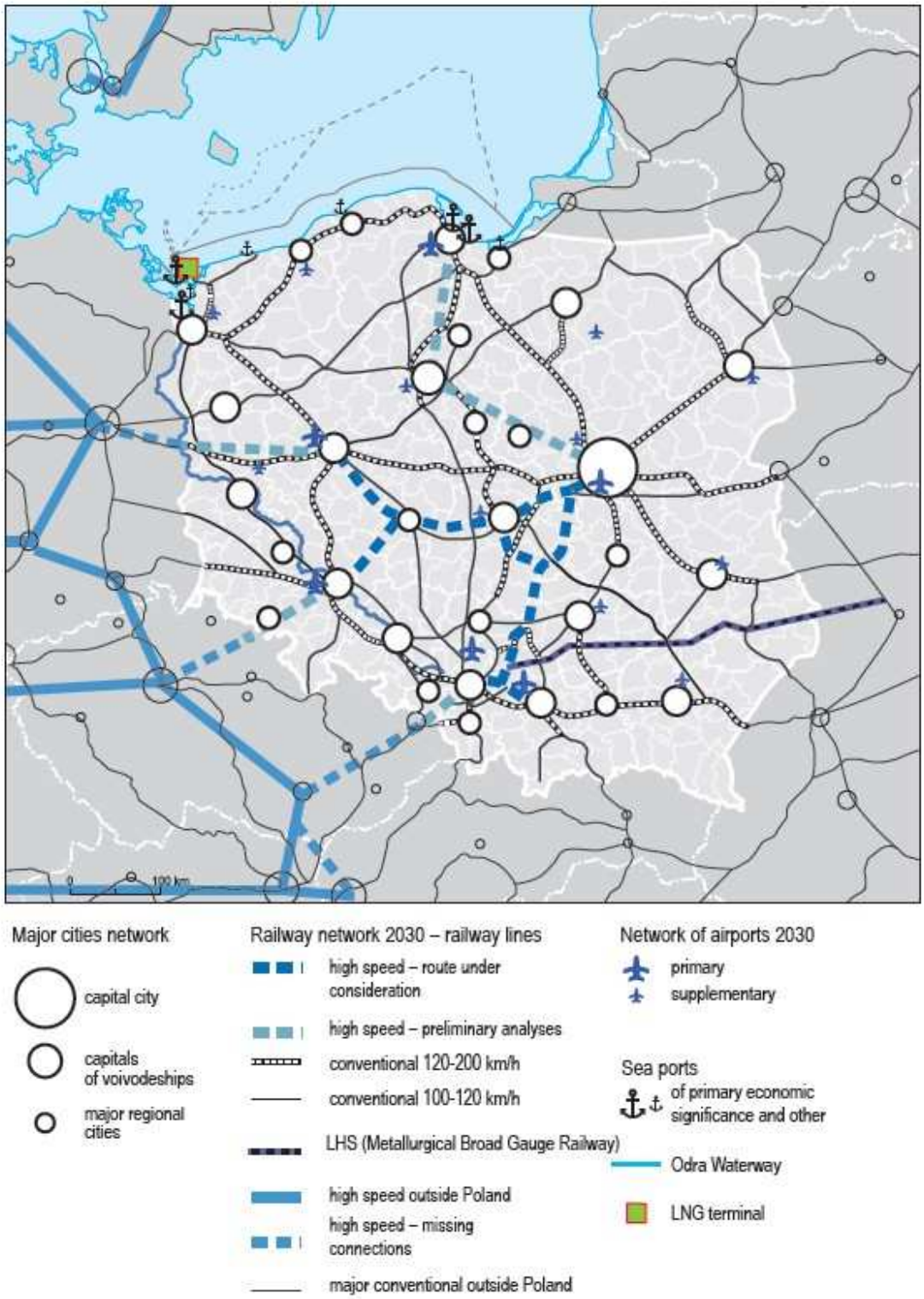
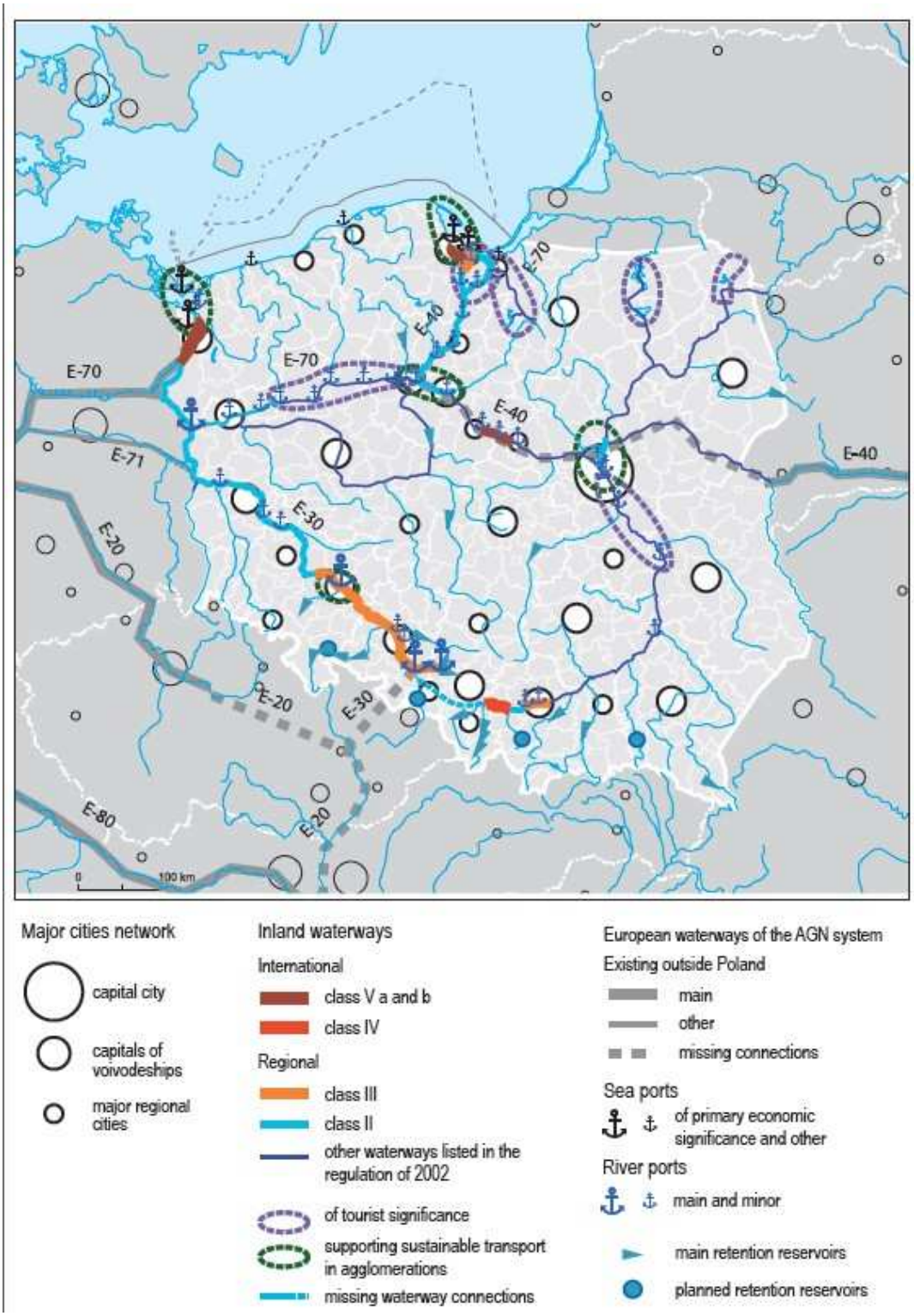
Fig. 8. Vision of the development of primary components of the railway network by 2030*: high speed railways, conventional railways, airports, sea ports, the Odra Waterway



*implementation of individual projects will depend on the transport policy of the Government

Source: Prepared by MRD in cooperation with the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN)

Fig. 9. Inland waterways in Poland, 2011



Source: Prepared by MRD in cooperation with the Regional Water Management Board (RZGW) in Cracow

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The polycentric network of metropolises constitutes an open system that is connected to metropolitan centres and their clusters situated in the neighbouring countries – across the northern border (Stockholm, Copenhagen), western border (Berlin), south-western border (Dresden, Leipzig, Prague, Brno), southern border (Vienna, Bratislava, Budapest, Ostrava) and the north-eastern border (the Baltic countries). Moreover, a significant growth of economic relations is observed across the eastern and northern border (Kaliningrad) which promotes the generation of development stimuli in the south-eastern and north-eastern regions of Poland.

3.2.2. Polish space is integrated and coherent – both externally and internally – which allows all citizens to participate in development processes

In 2030, the Polish space is integrated and coherent:

- owing to the complementarity of functions and increased intensity of functional connections within the main nodes of the settlement system as well as between those nodes (**integration**) and the surrounding areas – where the measures for the multi-functional development of rural areas are cumulated – it contributes to the increase in the territorial balancing of development by way of maximising the utilisation of the potential of Poland's territory to create economic growth and promote employment, taking into account the specificity of individual areas,
- it provides all its inhabitants, regardless of their place of residence, with a possibility to participate in development processes and with access to services of general interest as well as offers support to the multi-functional development of rural areas (**cohesion**).

Integration of the Polish space progresses by virtue of several parallel processes on various levels of management in diverse spatial dimensions:

- on the local scale – it primarily concerns the integration of city centres and their functional areas as well as the integration of rural areas which takes place on the basis of poviat capital cities,
- on the regional scale – it is primarily related to the integration between the largest cities and their direct background, i.e. Sub-regional cities with the surrounding rural areas,
- on the national scale – it concerns functional integration within the urban network of cooperation and the integration with regional policy's problem areas of national significance,
- on the international scale – it is related to the functional integration of the largest cities with, first and foremost, the centres situated at the heart of European activity as well as the integration of individual cities and areas of socio-economic activity along the relatively narrow border zone; in the wider sense, they also include the disappearance of barriers and ensure conditions for the Polish space to operate as an element of the European system in relation to economy, culture, environment, ecological networks, etc.

Local level

In 2030, functional areas of the largest cities have the form of vast, functionally integrated spaces which are bound by strong internal bonds of economic, social and institutional cooperation. The entire functional area of the largest cities is characterised by a high level of dynamic development, continuity, consistency and a high degree of urbanisation. Integrated public transport solutions and accessibility of social infrastructure, including housing and other types of infrastructure, as well as measures to revitalise degraded areas have a positive impact on the mobility of citizens as they eliminate barriers to the choice of the place of work or residence. Integration on the functional areas of smaller urban centres – which neither fulfil any significant national functions nor have any functional specialism (e.g. in tourism) – takes

place, first and foremost, by virtue of the spatial concentration of urbanisation processes and owing to the expansion of the internal transport and communication connections.

Spatial integration on the local level, on territories situated beyond urbanised functional areas of large and medium-sized cities, is ensured by local linkages within rural areas. The centres of such areas comprise the set of local cities which ensure – across the country – a uniform standard of accessibility to services of general interest and public goods, especially in the spheres of culture, education (including primary, lower-secondary and upper-secondary schools), public transport, ICT services (free Internet access points), services related to business activity, judicature and administration.

Significant transformations within rural settlements and in small towns, which provide services to rural areas, concern the functions that those units play in the settlement system which also involves changes in their structures. One of the reasons is the severance of direct links between the place of residence and the place of work which shapes the urbanisation processes in rural areas. In the period 2010-2030, migration concentrates in the zones surrounding the principal urban centres and in the dynamically developing regional, Sub-regional and certain local centres. On the remaining areas, the shrinkage of the population becomes apparent due to out-migration and the negative balance of vital statistics[50] which facilitates the concentration of settlement that the state supports. Urbanisation of rural areas is subject to legal and economic regulations which advance the achievement of spatial order, preservation of cultural heritage and landscape qualities which favours diversification of spatial arrangements and forms of rural settlement. Mobility of human resources underpins and accelerates changes in spatial structures. The levelling-out of the standard of living progresses owing to the process of expanding non-agricultural employment opportunities in rural areas or in their vicinity as a result of the increased spatial mobility (including pendular mobility) and occupational mobility, emergence of non-farm jobs on local labour markets and the improved quality of human resources. It involves facilitation of the access to services rendered by local and higher level centres in compliance with the nationally set standards of accessibility to services of key significance to socio-economic development.

In the process of rural renewal[51], rural areas utilise their own development potential while preserving functional diversification resulting from their situation in relation to development centres, cultural heritage and the qualities of natural environment. Utilisation of unique resources of the cultural landscape and formation of territorial specialisations support the development of local labour markets. Competitiveness of agriculture based on innovation, modernisation and structural changes is on the increase. The development of rural areas is also enforced by the increasing communication possibilities between cities and the country side as well as within rural areas themselves. Borderlands utilise their development opportunities related to the cooperation of clusters emerging on both sides of the national border.

Regional level

In 2030, the processes of regional integration operate in all voivodeships. That type of integration takes place by utilising the potential of the capital cities of voivodeships for the development of the remaining parts of voivodeships (as a result of the processes of diffusion of development). It also makes use of specific development factors (environmental, climatic, cultural, related to energy sources, etc.) present in individual territories situated beyond the functional areas of voivodeship capitals. The space of voivodeships becomes integrated and

[50] "Vital statistics" is a sociological term signifying changes in human population due to natural events such as marriage, divorce, births and deaths. It does not cover migration. Negative balance means that there have been more deaths than births.

[51] Rural renewal understood as a process of shaping living conditions in rural areas. It also signifies influence on the standard of living, its quality, available sources of income with the simultaneous preservation of the rural identity demonstrated in the values of rural life, strengthening and development of the cultural and material heritage of the countryside. The local community is the animator and the subject of this process.

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correlated – with regional markets of labour, services and merit goods operating in it. Regional integration processes are more intensive in those voivodeships where the strongest urban centres are located. Large cities, expanding their circle of influence, make a better use of agglomeration factors and contribute to modernisation and acceleration of development processes in their geographical base.

The economic growth generated by the largest cities is used by other areas. Benefits that stem from the development of the largest cities are transferred by way of the penetration of resources from their areas onto other cities and, most importantly, onto adjacent urbanised and rural areas. Improved travel time accessibility to the capital cities of voivodeships promotes the mobility of the public: daily mobility (commuting to work, weekend traffic), periodic mobility (seasonal and recreational) and the mobility in terms of life's choices, namely the possibility to change the place of residence in order to look for better living and working conditions and, first and foremost, in search of the best educational centres which is of particular importance to inhabitants of rural areas.

Owing to the diffusion of stimulating factors onto the adjacent areas and entire voivodeships, regional centres – and Sub-regional centres in the first place – gain more significance on the national scale as they provide high quality services of general interest on the Sub-regional and local level. The development of Sub-regional centres has a stabilising effect on the settlement structure of the country by counteracting the concentration of population and business activities solely in the largest cities and by ensuring durability and continuity of development in depopulating areas by reinforcing their environmental functions. Owing to the growing affluence of society, fundamental improvement of the status of infrastructure and access to services of general interest, local centres with decreasing population and accelerated process of population ageing do not experience the physical, social and cultural deterioration.

National level

In 2030, Poland is spatially integrated on the national scale. The territory of the country is characterised by differences in the distribution of the forces of production and key macroeconomic indicators (such as GDP and income per capita) between individual voivodeships, between urban and rural areas, and between Eastern Poland and the rest of the country. Those differences do not affect development prospects of the inhabitants of individual regions of the country. All urban and rural areas, including those which lose jobs and population, ensure access to basic goods (telecommunications, transport, and business environment infrastructure) and basic services of general interest (education, health, culture, sport, tourism). It guarantees continuous improvement of the quality of social capital and enables the participation of citizens in development processes – either in their place of residence or in the main urban centres situated at the maximum distance of 2 hours from their place of residence. This situation is achieved owing to the system of active regional policy as well as the equal opportunities system within sectoral policies. Simultaneous concentration of economic activity in the largest cities of the network of metropolises and the multi-functional development of rural areas promote acceleration of structural changes and the expansion of opportunities for growth and jobs in those areas. Areas that are relatively less developed economically are connected to the main nodes of the economic life in Poland and abroad by means of an efficient transport network which increases investment opportunities in those areas (Fig. 7. and 8.) and helps to form new economic, touristic, educational and cultural functions.

In 2030, in effect of the progressing improvement of travel time accessibility (travel times to voivodeship capitals do not exceed 120 minutes anywhere in the country) and digital accessibility (common access to broadband Internet network), distance is no longer a barrier to

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development regardless of how far it actually is from a given locality to the capital city of a voivodeship.

Access to jobs in areas that require restructuring and development of new functions has been expanded owing to the utilisation of specific endogenous potentials of those areas (e.g. related to nature or tourism) supported under the regional policy and to the provision of good quality infrastructural and institutional connections (transport infrastructure, mass transport, the Internet, telecommunications, a range of entrepreneurship support institutions, etc.) with metropolitan areas. It enables people to commute to work and supports other forms of income earning such as remote working.

Higher education establishments and scientific research centres create science networks of European significance ensuring the flow of the state-of-art knowledge and access to education which brings about progress in the field of science. Digital accessibility facilitates medical care and social integration, offers opportunities for partaking of the goods of culture and for their global dissemination. Digitisation helps increase the standard of services in the fields of governance and management and offers access to advanced financial services across Europe. Owing to digital data bases, cadastral information about land and construction objects is generally accessible which increases the security of investments and economic activity. Digital accessibility – comprising the electronic access to public administration services, considerable development of remote work and electronic education systems – substantially reduces the burden on transport systems, thereby extending the time of their operation and reducing the use of energy by transport. Simultaneously, the quality of administration services, work and education is improved which, in consequence, contributes to increasing the available leisure time among the public and to limiting the unemployment.

In 2030, Eastern Poland is a well-connected and competitive region that is coherent with the central part of the country. The main cities of Eastern Poland have a role in stimulating the development and in expanding the spectrum of functions in those territories. Regional centres, situated in the proximity of the external EU border, derive additional benefits from intensified cross-border cooperation. Improved quality of education, development of human resources, availability of services of general interest and the broadband Internet stimulate utilisation of the potential of this part of Poland and help enhance its competitiveness. Joint "hard" and "soft" projects supporting sustainable development on both sides of the border are implemented in the spheres of environmental protection, tourism development and cultural initiatives among others. The agricultural structure of areas with fragmented farming is subject to profound transformation. The share of agriculture diminishes in favour of other sectors of economy, including tourism.

As a result of increased connectivity in domestic and international relations, cross-border functional areas have emerged on the internal EU border and have assumed the form of dynamically developing regions, utilising the development potential of borderlands – mainly German and Czech, but also Slovak and Lithuanian. Diffusion of development coming from the large cities situated near the western border of the country bolsters the development of border zone centres which play the role of development catalysts reinforcing educational, cultural, touristic, trade and service functions. Jointly elaborated institutional basis in the sphere of integrated spatial planning allow for the integration of urban centres divided by the border.

Western Poland and Central Pomerania, with the main centre in Szczecin, become a territory that is functionally integrated with the main areas of economic activity in the central part of the country and along the Baltic coast. International connections become evident: primarily with Berlin (which may prove particularly beneficial to Szczecin) and Saxony as well as with the cities and regions situated on both sides of the Baltic Sea (Copenhagen, Scania and

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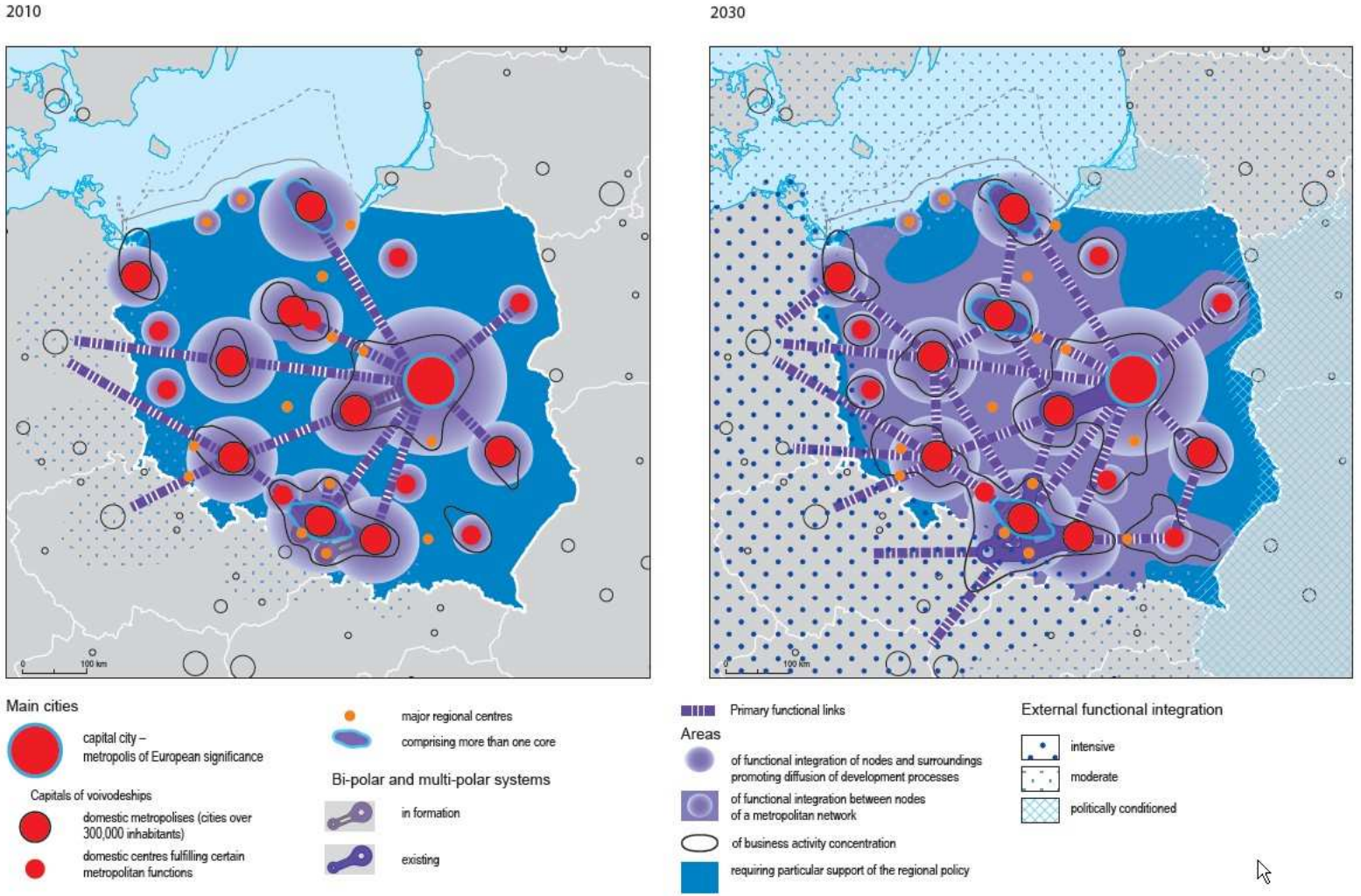
Stockholm). It offers a favourable setup for taking the opportunities related to intensified political and socio-economic integration of Poland and its metropolitan network with the primary area of EU economic activity (covering the majority of the German territory as well as the Czech Republic). The interface area where the interactions are most intense extends, among others, along the western Polish border (Fig. 10.). The Upper Silesian Agglomeration constitutes a functionally and spatially integrated area which stands out in terms of its rich development potential. The already completed regeneration of brownfields supports the restoration of ecological and cultural functions of this area. This region attracts innovative projects, including foreign investments, with its favourably flexible labour market and well qualified human capital. An additional advantage can be seen in the preservation of cultural identity and the connectivity of properly managed recreation areas. The Upper Silesian Agglomeration derives its development stimuli from the intensive cooperation with the metropolitan area of Cracow and Ostrava which jointly form a trans-national area of intensified development of European significance.

Advantages that stem from the country's access to the sea are used for its socio-economic development. Marine areas and the coastal zone are jointly developed in a rational manner that respects biodiversity and the principles of environmental protection, owing to the introduction of integrated spatial planning that ensures a long-term possibility of using the natural resources and development potential of the Baltic Sea and its coast. New forms of profiting from marine areas come into being, including RSE, mariculture for ecological purposes and marine tourism. The transport accessibility of marine areas strengthens the development of sea ports handling overseas shipments from Tricity, Warsaw, Poznań and Szczecin.

International level

In 2030, the Polish territory is far better integrated in international relations than it is the case at present. Various configurations of such relations are demonstrated in Fig. 11., 12. and 13. Owing to the processes of globalisation and integration within the European Union (in 2030, Poland will have already been its member for 27 years), Warsaw and other metropolitan areas are functionally tied (primarily in economic terms) to other metropolitan areas of the EU. The intensity of those ties depends on the economic strength and complementarity of the economies of various EU states and regions. The main target of the connections formed by the largest Polish cities is the EU area extending from London to northern Italy, due to its economic potential (Fig. 12.). Other economic linkages are supplemented by relations associated with administrative, cultural and educational functions as well as with the sphere of science between Warsaw and the capitals of neighbouring countries: Vilnius, Minsk, Kiev, Bratislava, Prague and Berlin or even more distant countries: Copenhagen, Stockholm, Riga, Budapest and Vienna. Berlin has a special position among the above-listed cities as its rank and role – owing to the processes of functional integration – affect the development of the western parts of Poland, supplementing the direct impact of the metropolitan centres of Western Poland. Other Polish cities – primarily the largest cities of the network of metropolises – are also involved in the construction of the network of connections.

Fig. 10. Directions of the Polish space integration in 2010 and 2030



Source: Prepared by MRD.

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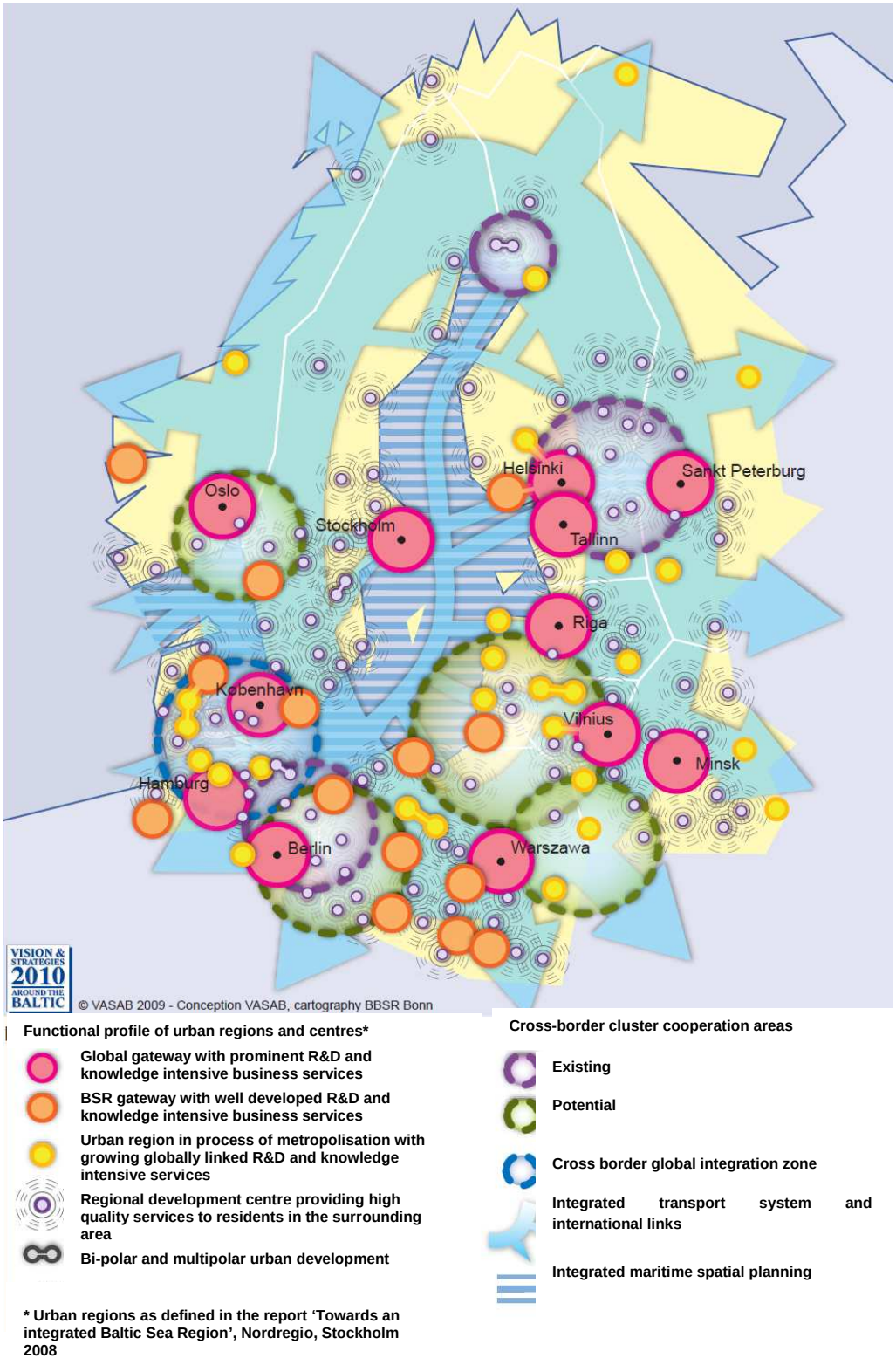
Due to the economic potential, growth and cultural proximity along the Polish borders, the strongest links (Fig. 10.) have emerged between metropolitan areas and regions of Western and South-Western Poland, on one side, and Saxony (Dresden and Leipzig), Berlin, the Czech Republic, northern Moravia (Prague, Brno, Ostrava) and north-eastern Slovakia, on the other side. In the entire Baltic Sea basin, owing to the complementarity of functions, animated functional connections emerge between metropolitan areas (Fig. 11.) with their main nodes in the following cities: Copenhagen, Malmö, Stockholm, Helsinki, Riga, Vilnius, Klaipeda, Tallinn, Tricity, Warsaw, Poznań, Szczecin, Berlin, Hamburg. Functional links of other much weaker cities with surrounding areas are supported, due to economic and cultural differences, with an appropriate regional policy and cross-border cooperation. Functional ties between Poland and Lithuania as well as Slovakia, along a major part of the border, may be less important economically, but are of equal significance for political, touristic and cultural reasons. However, the relatively low density of population in areas along the Lithuanian border and the natural barrier of the Carpathians along the Slovak border prevent the links from becoming stronger.

Fig. 11. Perspective for the territorial development of the Baltic Sea basin in 2030



Source: *VASAB Long-Term Perspective for the Territorial Development of the Baltic Sea Region,* Riga, October 2009.

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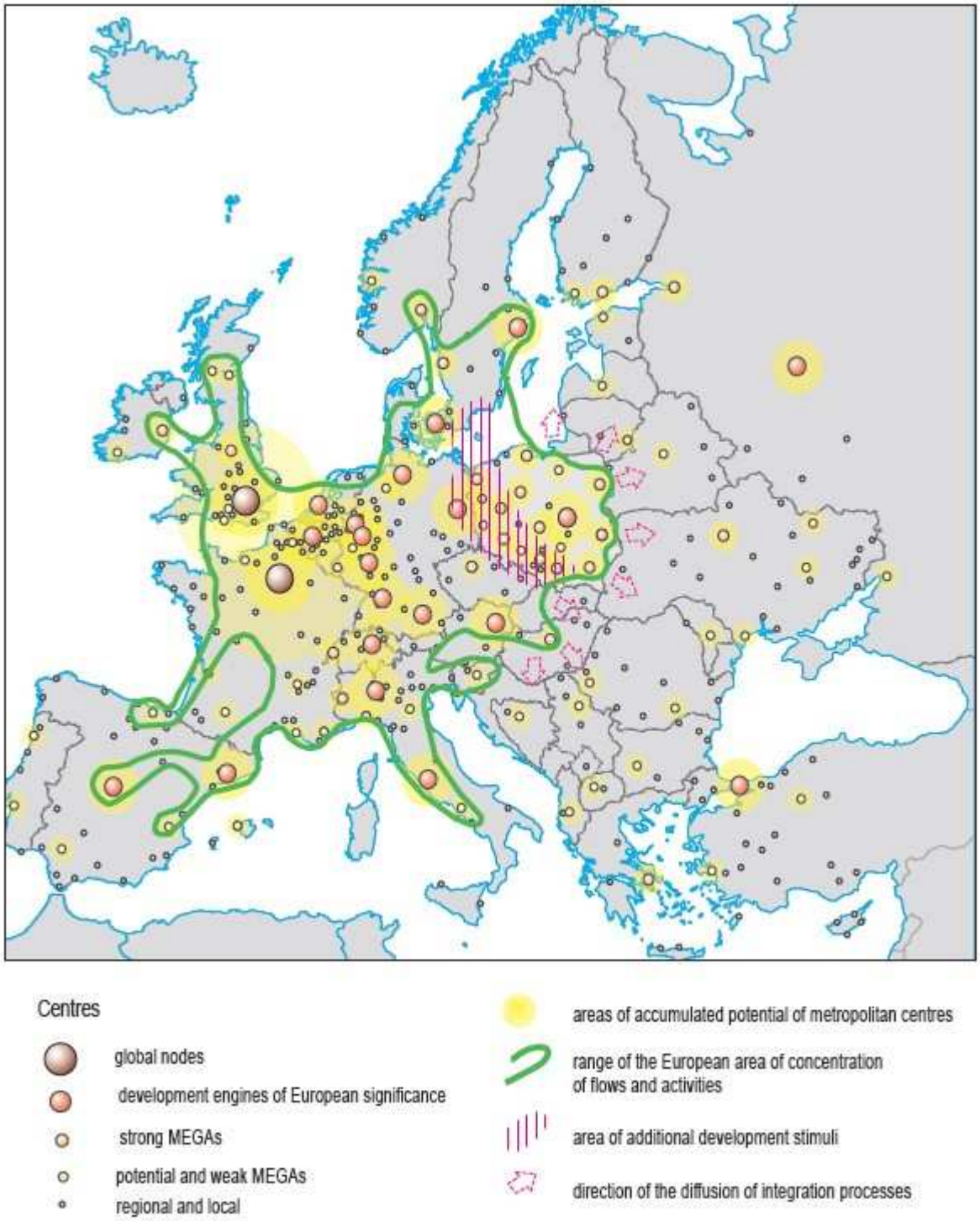
Fig. 12. European metropolises in 2030



Source: Prepared by MRR on the basis of *ESPON Scenarios on the Territorial Future of Europe*, ESPON Project 3.2, 2007.

In areas adjacent to both sides of the north-eastern border (with Kaliningrad Oblast of the Russian Federation) and eastern border (with Belarus and Ukraine), the processes of integration and formation of functional connections are far less advanced despite the support of the regional policy. It is the product of persistent dissimilarities of economic and political systems as well as cultural differences in relation to countries in that area (Russia, Belarus, Ukraine). However, integration with the EU is becoming stronger (especially in the economic dimension) and

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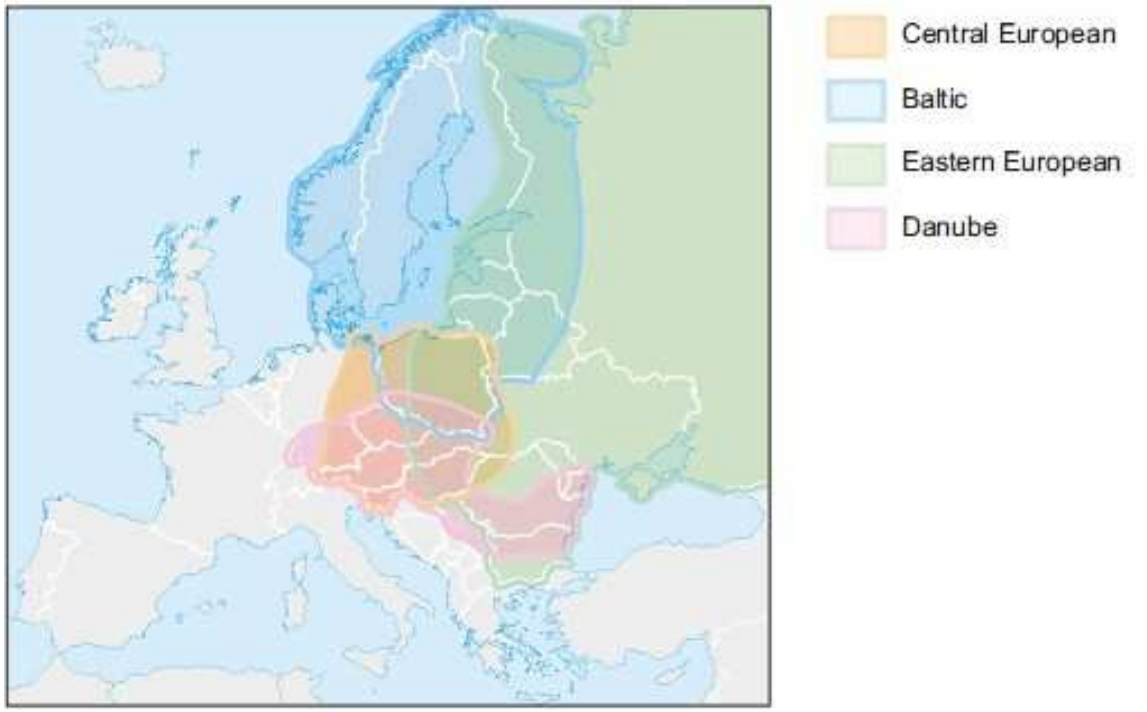
receives support under the Eastern Partnership[52] by implementation of soft complementary projects aimed at getting societies closer together.

Fig. 13. European areas of integration involving Poland



Source: Prepared by MRD.

3.2.3. The Polish space is recognisable while preserving the rich assets of its natural and cultural heritage

By 2030, the distribution of the main forms of land use has not changed considerably on the national scale. The attention to high quality of the newly created public spaces is accompanied by skilful utilisation of ecosystems and protection of the available precious assets.

The cultural heritage of the Polish territory is put on display and promoted which has increased the recognisability and attractiveness of Poland. The care about cultural heritage sites and the legacy of the former inhabitants of the Polish territory is favourable to the development of tourism – by helping local traditions to survive – and supports the process of establishing the cultural identity of migrants[53]. In the regional systems of recreational amenities there have appeared new types of parks which make use of specific regional features of landscape and unique natural resources emphasized by intentional accentuation of assets that promote regional culture and active leisure. Landscapes significant for the history of culture are protected under a well developed network of culture parks and historic monuments which is integrated with the basic spatial units that protect landscape features characteristic of specific geographic and nature regions, namely landscape parks.

[52] Eastern Partnership is the EU initiative (COM (2008)823 final) addressed to 6 countries of Eastern Europe and South Caucasus (Ukraine, Belarus, Moldova, Georgia, Armenia, Azerbaijan) and aimed at supporting the European aspirations of countries covered by the initiative, economic cooperation, promotion of sustainable development and at facilitating their future integration with the EU. The Warsaw Declaration (30.09.2011) – confirming the will of active cooperation – also contains an anticipation of the opening of the EU programmes to the citizens of partner states as well as negotiations regarding the launching of a free trade area (DCFTA).

[53] Cultural identity signifies a relatively permanent identification of a group of people and its individual members with a specific cultural system created by a combination of ideas, convictions, views with specific customs and traditions as well as with a given axiological and normative system. People deprived of a sense of spatial belonging, heritage and not attached to traditions in a given country or region are not able to strengthen their identity which results, among others, in the lack of care about the elements of previously existing landscape in their new place of residence. This term is important because it helps understand the value judgements made by present day Poles in the sphere of opting for various cultural content.

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The perceived changes in the distribution of the main forms of land use are regional in character and are primarily related to the expansion of large cities, the effects of depopulation, adaptation to climate change and trends in agricultural production. In 2030, special protection areas and special areas of conservation, comprising the European ecological network Natura 2000, cover over 20% of the Polish territory, including numerous watercourses and river valleys. Combined with the sites of the National System of Protected Areas (NSPA)[54] and the stripes of ecological corridors, the components of the Natura 2000 network form a joint system of nature and landscape conservation which is integrated with the system protecting historic buildings, urban and rural complexes, cityscapes, historic monuments and culture parks. Integrated protection covers also marine areas – valuable habitats and connecting corridors alike – underwater landscapes and underwater cultural heritage. The multi-annual policy of nature and landscape protection has helped preserve the species and habitats of the European plain, including European populations of breeding birds associated with wetlands and the mosaic-like structure of traditional agricultural landscapes. Mountainous landscapes and soil types are similarly well represented.

Spatial planning, by taking account of the mutual relations of environmental components, affects the management of animate nature and landscape resources and thereby contributes to reducing the isolation of habitats and to stabilising ecosystems that are important for the preservation of the diversity of species present in Poland which are responsible for the individual characteristics – important on the European scale – of the Polish nature and landscape conservation sites. Mechanisms for the control of economic development in environmentally valuable areas, originally devised for the purposes of the Natura 2000 network present in Poland since 2004, limit the range of locations available to many projects that could have a significantly negative impact on the environment – such as large-scale afforestation and intensive farming – simultaneously stimulating innovation and development of sustainable forms of management on areas of exceptional nature and landscape value.

The forest cover rate exceeding 30% and the development of ecological corridors crossing the territory of Poland have transformed the landscape of drainage areas in Central Poland and helped maintain an appropriate ratio of developed and natural areas. The state conducts actions aimed at concentrating settlement in scarcely populated or depopulated areas. The increased share of reused land, related to the application of the preference of regenerating rather than developing new lands, specification of areas permanently protected against building development in land development plans and new architecture and building standards all help limit the size of irretrievably lost biologically active land, primarily in newly urbanised areas and in developed urban areas. Owing to the broad social participation in the planning process, actions aimed at the conservation of traditional agricultural landscapes, formation of scenery combinations, and ensuring safety to the inhabitants of river valleys counterbalance the influence of current economic reasons that are decisive in the actual land management. The process of rural renewal, supported by planning on the national level, contributes to the maintenance of durable, multi-functional ecological structures in areas subject to modernisation despite the considerable advancement of land consolidation processes in farmland areas and technological changes in agriculture. In areas with rapidly increasing population density, small agricultural plots support the processes of balancing ecological functions and diversification of economic functions of rural areas. The socio-economic development model that is in operation favours the restoration of traditional agricultural landscapes, preservation of ecosystems in river valleys, renaturation of local watercourses and utilisation of the buffer capacities of wetlands and polder

[54] The National System of Protected Areas (*Polish KSOCh - Krajowy System Obszarów Chronionych*) is a term denoting a system whose formation began in the 20th century and which comprised national parks, nature reserves, landscape parks, protected landscape areas and other minor supplementary forms of protection. The construction of the system started in the 1970's and was not finished before the amendment of the Nature Conservation Act in 2004 deprived the system of its legal basis.

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retention for the purposes of flood protection. The networks of environmental and socio-economic connections are mutually consistent and taken into account when deciding on the location of communication and hydro-engineering infrastructure as well as when planning the spatial development of cities and rural areas. The applicable environmental compensation measures constitute one of the ways for solving nature-related conflicts and for maintaining and reinforcing the ecological potential of Poland.

In effect of the functional unification of objects formally included in a range of area protection networks – primarily the Natura 2000 network, protected rural complexes and NSPA objects with good nature conservation record – a consistent and hierarchical network of nodes and ecological corridors – constituting part of the continental network – has been created. The system presented in Fig. 14. includes environmental networks of urbanised land which comprise open parts of functional areas and the green spaces of urban landscape. On the national level, the ecological network takes into account the main land corridors of supra-national significance: Baltic-Lakeland, upland and mountain corridor connected to the corridors delineated by the valleys of large Polish rivers. That system, supplemented with corridors of supra-regional significance, is further elaborated on the regional and local levels in compliance with the hierarchy of spatial planning and the needs to preserve the consistency of the country's ecological network. The networks of air and river ecological corridors – used by birds, bats and aquatic organisms, including potadromous and diadromous fishes – have been delineated separately. River corridors are connected to the Baltic Sea via estuaries.

Areas characterised by permanent accumulation of the most precious natural assets with varied formal protection status constitute the nodes of networks, i.e. biocentres: national parks, parts of landscape parks, large Natura 2000 sites, forest complexes, cross-border protected areas, geoparks. The small increase in the size of areas protected under the Natura 2000 network in relation to the situation in 2010 (up to about 22% of the total area of the country)[55] results from compensation for the infringements of the network's continuity and integrity resulting from infrastructure projects necessary for the sustainable socio-economic development as well as from scientific studies of the network's evolution. Three new National Parks have been established: Mazurski, Turnicki and Jurajski. Moreover, several other existing parks have been enlarged and the protected area of Białowieża Forest and Kampinos Forest have been extended. Many of them have been included in the UNESCO Network of Biosphere Reserves. Also, the network of landscape parks has evolved, making its contribution to the spatial cohesion of the ecological system of the country as well as to the protection of landscapes that shape the identity of regions. Biocentres and particularly sensitive precious habitats are surrounded with buffer zones with a lower degree of protection.

Node areas are connected by ecological corridors which integrate the space of areas under legal protection and other rural and urbanised areas within the system of environmental networks. The spatial organisation of ecological corridors is based on the recognition of functions fulfilled by landscape structures in providing for the living and migration needs of protected species, other significant species as well as on the utilisation of natural and man-made spatial barriers. The system prevents spatial isolation of small objects of area protection, dispersed forests and environmental complexes cut across by transport routes. To this end, the system makes use of such structures as natural corridors of river valleys, wetlands, water reservoirs, groups of trees amid fields and avenues, historic parks, green areas accompanying other buildings which –

[55] In January 2011, the European Commission approved the areas that had been notified in October 2009 as proposed Sites of Community Importance. At present, they have the status of Sites of Community Importance. The portion of the country included in the European ecological network 'Natura 2000' has grown by about 2%. Data of the General Directorate for Environmental Protection (*Polish GDOŚ*) from November 2010: 19.7% of the land area of Poland: 141 special protection areas (SPA) covering 15.6% of the land surface, 823 special areas of conservation (pSCI/SCI) covering 11.05% of the land surface. The SCI and SPA sites partly overlap. The sites of the network may partly or entirely cover areas included in other statutory forms of protection. At present, Natura 2000 sites include the entire territories of all national parks. They also include the territories of certain landscape parks in part or in whole.

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if significant for the historic and cultural heritage – may be protected by applicable laws. The emerging landscape and environmental systems, comprising a variety of landscape structure and habitats, contribute to the attractiveness of regions.

Transitions in rural areas related to the socio-economic development are subject to systemic interventions aimed at the preservation of the biological richness of farmland and woodland, comprising the direct surroundings of ecological corridors and protected areas. Some of those areas constitute the recreational base of cities which provides a functional and spatial link between organised green areas and environmentally valuable land and, at the same time, reduces the pressure caused by the urbanisation of rural areas directly adjacent to large cities.

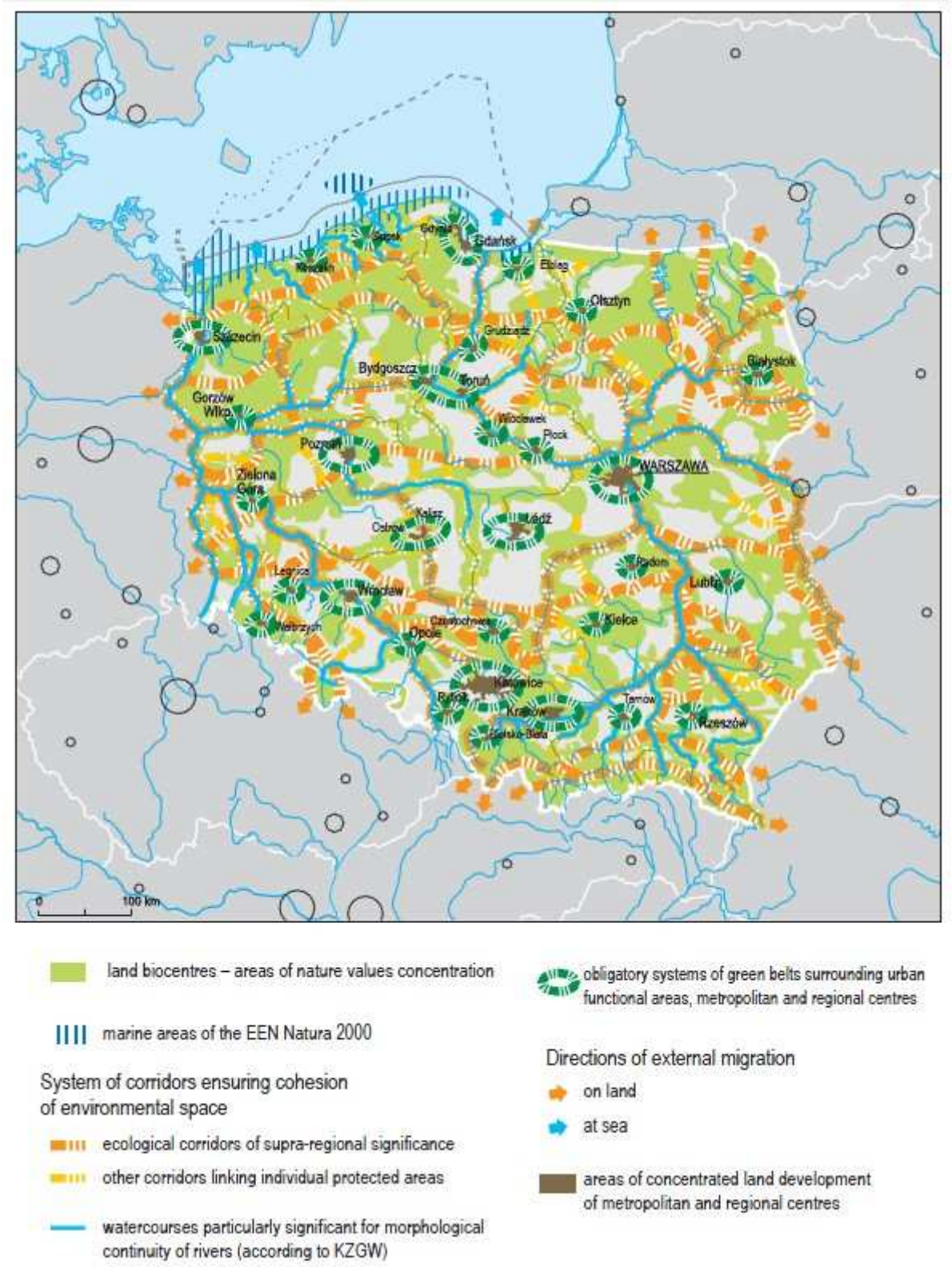
A system of areas ensuring connections between natural systems and coherence of protection measures implemented on both sides of the external border of the European Union has evolved along the eastern Polish border. Concentrations of migration corridors and nodes of networks are situated in the following geographic and natural regions:

- the Carpathians (pan-European corridor),
- Roztocze, Polesie, Białowieża Forest, Augustów Forest,
- part of the Wschodniosuwalskie Lakeland situated near the border,
- Bug River Valley.

On the northern border, a similar function is fulfilled by: Romincka Forest, areas adjacent to the Oświn Lake and to Masurian Canal, Vistula Spit with the Vistula Lagoon. On the internal EU border, nodes of the network concentrate along the Odra River Valley and on Saxon-Lusatian Lowlands and include landscape parks and national parks on the Polish side of the border as well as in the environmentally valuable parts of the Sudetes and Sudetes Foreland (Jizera Mountains, Wałbrzych Mountains, Stołowe Mountains – Kłodzko Valley) and further on extending towards the Carpathians. The Odra River Valley has preserved the ecological functions of a European corridor despite the hydro-engineering projects carried out at the beginning of the 21st century and despite its continued maintenance of the waterway standard.

Owing to measures aimed at the shaping of spatial order and in effect of advantageous changes of social models in this respect, it has been possible to stop the progressive loss of traditional habitats and rural landscapes associated with local culture. On the other hand, the settlement processes resulting from changing lifestyles and threatening the spatial order, exuberant suburbanisation, scattering of development in rural areas, emerging colonies of second houses with no connection with the previously existing structures, and human pressure in the coastal zone all require an intervention of integrated spatial planning. The preserved characteristic and precious natural and cultural landscapes as well as objects of material culture heritage are used in the socio-economic development, intensively supporting the development of local economies. The touristic use of waterways – both new and regenerated with the preservation of historic engineering solutions – has increased in significance. The development of settlement and location of economic projects are subject to local adjustment on the basis of physiographic analyses and environmental impact assessments. In this context, the concept of "ecosystem services" demonstrating dependencies between nature and society gains new significance.

Fig. 14. Major components of the Polish ecological network in 2030



Source: Prepared on the basis of: M. Degórski, A. Mizgajski, T. Palmowski *Expert Opinions for NSDC, EKONET-PL, Mammal Research Institute of the Polish Academy of Sciences (ZBS PAN)* (W. Jędrzejewski et al.), NSDPC, spatial development plans (vsdp) of borderland voivodeships

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3.2.4. The Polish space is resistant to various threats related to energy security and natural security

In comparison to the first decade of the 21st century, the spatial distribution of energy production and the availability of primary energy carriers have changed. The dispersal of sources allows for an optimal use of capacities of a given area and for streamlining of the costs of energy transmission from the places of production to recipients (Fig. 15.).

The structure of demand for primary energy has fundamentally changed. There has been a reduction in coal use to about 40% (from 58% in 2010). Deposits of coal and lignite counted among the deposits of strategic significance for the energy security of the country, are subject to protection in compliance with the rules applicable to the protection of strategic mineral deposits. The protection covers, in particular, the areas of the following deposits: "Legnica", "Gubin", "Gubin 1", "Złoczew" as hard coal deposits "Bzie-Dębina", "Śmiłowice", "Brzezinka"[56]. Hard coal extraction takes place in extended and modernised mines of Upper Silesia and Lublin Coal Basin. Lignite extraction has been resumed to ensure continued operation of domestic power stations that use this fuel. Owing to the optimisation of emission-free technologies, a range of new systems have installed both at power stations and selected industrial works. In the regions associated with the extraction of hydrocarbons and energy production, carbon-capture infrastructure has been extended, to a limited degree, in the areas where mining works are present. Carbon dioxide is stored with the intention to utilise it in the production of high-energy petroleum-derived products. Decreased emission of CO_2 in electrical power engineering has also been possible owing to the development of modern gas power industry.

European energy production systems have been integrated. Poland has access to diversified sources of natural gas and petroleum. An LNG terminal has been constructed in Świnoujście and a gas pipeline "Baltic Pipe" has connected the transmission systems of Poland and Denmark. Moreover, a connection to the German system in Lasów and a link to the planned gas pipeline NABUCCO crossing the Czech Republic have been built. Transmission lines between the northern and southern parts of the country have been improved. Extension of the gas grid enables the construction of natural gas power stations which also serve as a safety net for the RES-based dispersed power industry. The gas grid has been extended in the areas previously poorly supplied with gas in Podlaskie and Warmińsko-Mazurskie Voivodeships as well as in the northern part of the Mazwieckie Voivodeship. This process was initiated by constructing gas pipelines from the south to Białystok and Olsztyn. Other projects are being carried out to increase natural gas extraction in Poland. The supply sources of petroleum have been further diversified by means of utilising the existing and alternative crude oil transport routes. The utilisation of the Pomeranian Pipeline (Płock-Gdańsk) has been intensified. Selected commodity pipelines (radiating from Płock) have been extended. The capacity of petroleum and liquid fuel storage has been increased due to the growing demand and in order to comply with the applicable standard requiring that a 90-day reserve of liquid fuel is maintained. A storage and trans-shipment facility has been built in the seaport in Gdańsk, connected to the Naftoport terminal and allowing for the exchange of liquid fuels and petroleum with other countries. At least nine natural gas storage facilities are in operation. Their capacity has been nearly doubled (in comparison to 2010) by increasing the volume of existing storage facilities and by constructing new ones in the areas with a newly installed gas grid. The extraction of unconventional natural gas deposits has been launched.

The share of natural gas in energy production is on the increase. Extraction of unconventional natural gas deposits contributes not only to the strengthening of energy security of the country but it also constitutes a development factor in the regions where extraction has begun. As

[56] Provision compliant with Annex 3 to the Polish Energy Policy until 2030, page 9, Measure 2.3, Manner of execution pt. 3 and 6; pt. 6 of the document contains an explicit obligation to include the listed deposits in the NSDC as deposits protected against development.

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a result, it causes economic growth across the country. Moreover, the increased extraction and consumption of natural gas (in percentage as compared to other energy carriers), allows for a larger reduction of green-house gases. Commercial systems for underground coal gasification have been put in operation for the purposes of producing synthesis gas and electricity which allows for gaining gradual independence from imports of this raw material.

Also, a possibility has emerged for achieving successive independence from petroleum. The role of renewable energy sources (RES) – such as biomass, geothermal, water, solar and wind energy – has been increased. The share of RES in the final energy consumption exceeds 15%[57] and continues to grow. Due to the demand for biomass, the structure of agricultural crops is changing gradually.

Coal continues to be the main fuel for electrical power production, even though its role as the fundamental source of energy is constantly decreasing. The share of this fuel in the production of electricity has dropped from 92% in 2006 to less than 5% in 2030. Additionally, the coal output has decreased by 20%. The role of renewable energy sources in electricity production has grown to about 19%. Nearly half (45%) of this type of energy is derived from wind power production[58]. The major part of the power of wind turbines is situated on land (ca. 90%)[59], but marine areas are also used in the production of this type of energy. The largest wind farms are situated in the north of Poland, which has significantly helped solve the problem of underinvestment in power engineering in that area. Spatial conflicts between the need to protect landscape and the demand for electrical power are minimised by a system of spatial planning arrangements.

Two nuclear power plants are in operation and others are under construction. Those electrical power plants produce over 10% of electric power. Since 2020, in place of the decommissioned National Radioactive Waste Repository in Różan, a new near-surface radioactive waste disposal facility has been in operation. A training and scientific research base has developed for nuclear power engineering. Studies are in progress on the selection of location for a deep repository for high-level radioactive waste and spent nuclear fuel constituting an indispensable component of nuclear power production.

In scarcely populated areas with dispersed settlement structure, a substantial number of individual electricity users have organised power production for their own needs. The above solution to the problem of electric power supply has become possible owing to the technological advancement in the manufacture of equipment for small energy producers, a considerable decrease of its cost and the development of dispersed energy generation.

The problem of ensuring the security of electric power supply to Warsaw, the cities of Northern Poland, Poznań and Wrocław has been solved primarily owing the construction of new 400 kV transmission lines (including Bełchatów – Poznań, Poznań – Słupsk, Ostrołęka – Gdańsk lines).

Poland has a well developed system of electric power connections within its territory and with the neighbouring countries. The Polish power system has been connected to the German (Neuenhagen – Vierraden – Krajnik) and Lithuanian (Ełk – Olita/Alytus) systems. The domestic transmission network (400 kV) has been extended and enhanced, especially in Northern and Eastern Poland. In the northern parts of Poland, energy supply security has been enhanced as a result of installing efficient generators at the new nuclear power plant, marine wind farms and the development of dispersed energy generation. Moreover, transmission lines between the northern and southern parts of the country have been improved. Integration with Scandinavian power systems is in progress.

[57] Based on the Polish Energy Policy.

[58] Calculation on the basis of data from Table 9., page 12, Annex 2 to the Polish Energy Policy.

[59] Calculation on the basis of data from Table 1, Annex 2 to the Polish Energy Policy.

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The policy of restoring space for rivers wherever possible – in consideration of spatial planning and management, the need to protect cultural heritage and high level of urbanisation – has improved retention levels and flood security. Outside of urbanised and developed land, in the river valleys that require intensified protection and mitigation of flood risk, the space needed for an unobstructed flow of flood waters has been considerably expanded.

Early warning systems have been designed and deployed to alarm against natural hazards. Flood risk management plans have been elaborated and implemented, areas most exposed to the threat of flooding and influence of Baltic storms have been secured, development in flood-land has been radically limited. Various levels of technical protection against flood have been distinguished. The creation of new flood protection reservoirs and the application of water flow control systems depends on the balance between the considerations of ecosystem conservation status and the needs of flood protection and prevention against droughts. Consequently, hydro-engineering projects on rivers have been substantially limited and river valleys are arranged, as far as possible, so as to retain excess water, slow down its flow and allow water to spill over river banks. By pushing flood banks further apart, the flow capacity of river beds has been increased, contributing to better flood safety, especially in the sections of river valleys with prevailing protection functions, such as the central part of the Vistula River Valley. Spatial planning and management coordinate the rational development of engineering infrastructure in compliance with the water and environmental programme, river basin management plans, actual needs identified in sub-basins and other non-engineering measures.

By means of restoration of water retention capacities on the level of ecosystems, by increasing the accumulation of carbon in soils and by developing retention in small reservoirs situated in the direct proximity of cropland, the rate at which river beds fill up has been slowed down which has increased the resistance of large parts of the country to the phenomenon of drought and, looking into the future, to the climate change. In addition, the capacity for retaining and utilising rain water in urbanised areas has increased which has had a mitigating effect on the microclimate of cities and helped improve the quality of green public areas.

Structural measures of the "Programme for the Odra 2006" have effectively enhanced the safety of people living in the Odra River Basin and, at the same time, have restored the navigability of the river. The modernised Wrocław Water Junction, completed Racibórz Dolny and Kamieniec Ząbkowicki reservoirs as well as numerous polders that have been demarcated and created effectively prevent cities situated on the Odra River by minimising the flood risk.

The reservoirs in Świnna Poręba and Kąty Myscowa have been completed and a major part of the network of smaller reservoirs in the upper section of the Vistula basin has also been built. River embankments have been rebuilt in the entire basin, including in Cracow, Będzin, Dąbrowa Górnicza, Mysłowice, Sosnowiec, Katowice, Kielce, Bielsk-Biała, Rzeszów, Tarnów, Sandomierz, Warsaw, Płock, Tczew. The flood protection programme for Żuławy region has been carried out, resulting in a considerable increase of the safety of land situated in the Vistula delta. The estuarial section of the Vistula River – including Żuławy, Drużno Lake and other rivers of the Przymorze region – are well protected against storm water from the sea. Also, the cities in the central and western parts of the coast have gained protection. Measures aimed at materialising the vision in respect of directions of development and the use of space have considerably contributed to reducing the emissions of green house gases and air pollutants as well as to increasing the security related to natural hazards. Despite the absence of unequivocal scenarios for the course of climate changes in Poland, the territory has been prepared for mitigating the foreseeable effects of those changes. The integrated planning of the spatial development of the country – based on efficient monitoring that utilises the geographic information system (GIS) – serves as the key instrument for coordinating sectoral policies within an active climate policy of the country.

3.2.5. Well-organised legal system and efficient public institutions ensure spatial order in Poland

In 2030, the Polish space is organised in an orderly manner. The national spatial development policy, constituting an integral part of the development policy, actively supports the achievement of development objectives and helps resolve spatial conflict and clashes by taking into account the conditions and requirements resulting from the characteristics of individual spatial components: economic and social system, infrastructure, settlement structure, natural and cultural environment. In the situation of increasing variability of spatial structures and a direct connection between the spatial policy and socio-economic planning, the role of spatial planning – as one of the instruments for accomplishing the objectives of development policy – is on the increase.

In 2030, owing to the well-operating management system – comprising instruments related to spatial planning, law, institutions and investments – the spatial policy is able to play a coordinating role in relation to other policies that influence spatial structures on all levels of planning.

Spatial planning integrated with socio-economic planning

In 2030, the Polish spatial policy is programmed, in principle, on four different levels of management:

- national,
- regional,
- local,
- in functional areas singled out on the basis of physical and geographical characteristics or the phenomena of socio-economic development – they may operate on each of the above-mentioned levels of management.

In principle, there are two basic levels in the regional system of (socio-economic) development policy planning: national and regional (strategies and programmes for other areas have a subsidiary character and are related to those two). Within the spatial planning system, the national and regional levels are significant primarily for identification and delimitation of certain phenomena and for determining the manner of public interventions into their course. The local and site specific level as well as, to a large degree, the functional level are of elementary significance for determining the spatial location of public interventions and for solving spatial conflicts between its various users.

In 2030, the Polish spatial management system is compliant with the subsidiarity principle, but its nature is hierarchical which means that lower levels of planning need to take into account projects important from the perspective of the country or region. It constitutes an integral element of the national development management system which creates possibilities for the implementation of investment projects[60] (Fig. 37.).Application of uniform regulations and guidelines and appropriate referencing of spatial planning documents pertaining to socio-economic development on the national, voivodeship and gmina levels – including functional areas – ensures coordination of plans contained in all strategic and operational documents related to a given area (more on the subject in: Objective 6., Chapter V.).

National spatial planning as an element of the European system

In 2030, the national spatial planning system forms a coherent system with the European planning. In takes into account the EU vision of territorial development, the spatial dimension

[60] The management system shall be construed to mean a set of measures aimed at the efficient utilisation of human and material resources which are undertaken in a coordinated manner by public administration units of various levels in cooperation with representatives of socio-economic partners and NGOs, in compliance with the partnership principle (in: *Założenia systemu zarządzania rozwojem Polski* [*Foundations of the Polish Development Management System*], Warsaw 2009).

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of policies aimed at delivering EU objectives (e.g. the current Europe 2020 strategy) and development strategies of European macro-regions, such as the Baltic, Danube, Central European or Eastern European macro-regions. In 2030, measures related to the development of transport infrastructure, preservation of water resources, flood protection, conservation of cultural and natural heritage provide the basis for planning in borderlands. By taking into consideration the interest of areas situated on both sides of the border, they lead to the emergence of international development strategies combined with spatial development plans drawn for individual areas.

National planning system allows for responding to newly emergent challenges

In 2030, the spatial planning in Poland allows for taking appropriate measures in response to newly emergent challenges resulting from trends that affect the character of spatial structures in the country. The Polish spatial planning takes account of climate changes, depletion of energy resources and the evolution of new technologies in this sphere. It is responsive to changes that stem from, among others, depopulation and migration processes and urban sprawl. Also, the spatial planning takes the economic trends into account.

Legal system ensuring the effective and efficient policy of the national spatial development

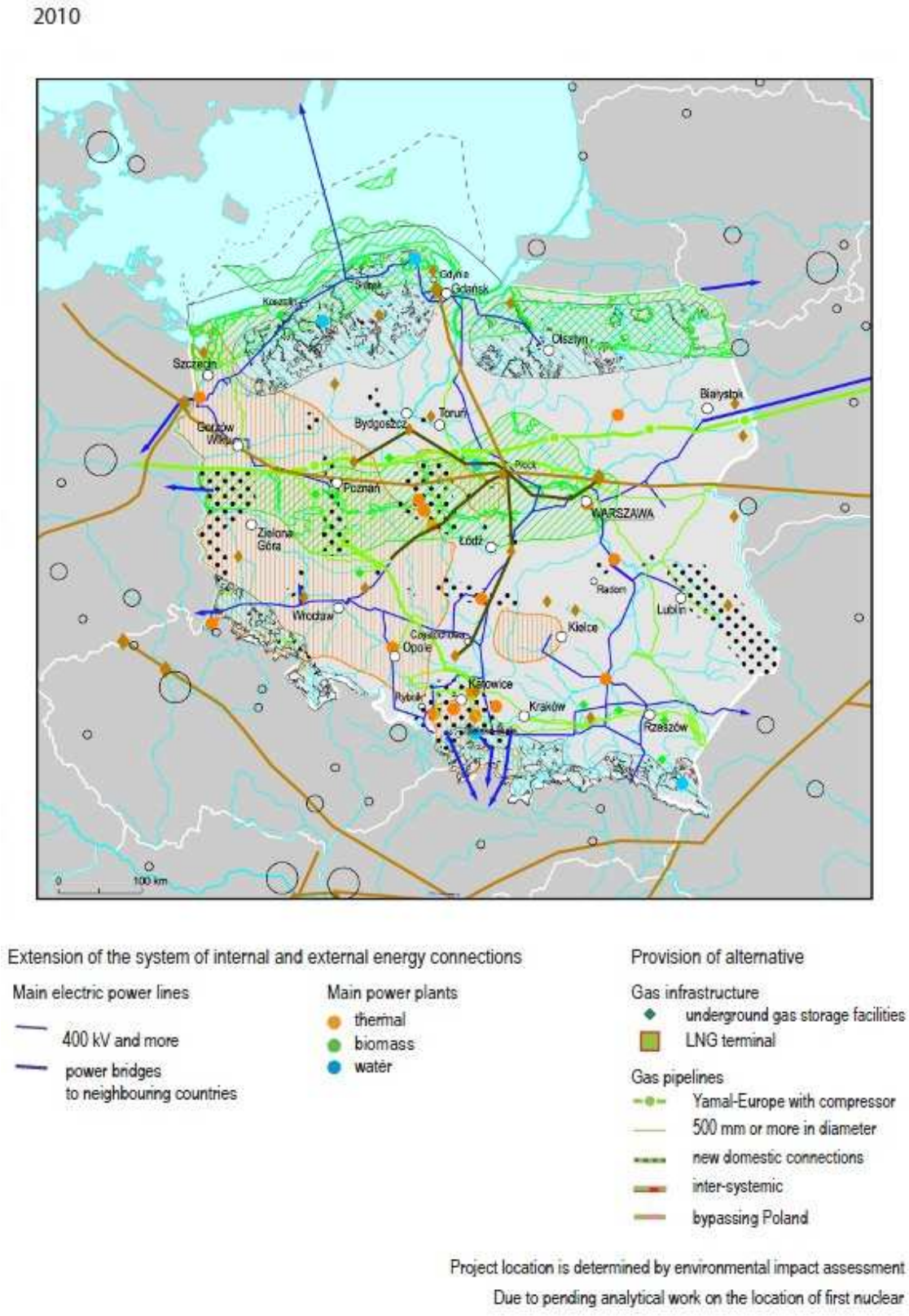
In 2030, the legal system related to spatial planning is clear, consistent and stable. The basis for the system is provided by a comprehensive act of law, covering both land and marine areas of the Republic of Poland. That act is supplemented with executive legislation which formulates the rules applicable various ways of spatial development. The stable legal system constitutes the basis for short- and long-term measures and establishes the framework for an effective operation of public and private entities in this respect.

Efficient institutional system ensuring delivery of development policy tasks in the territorial dimension

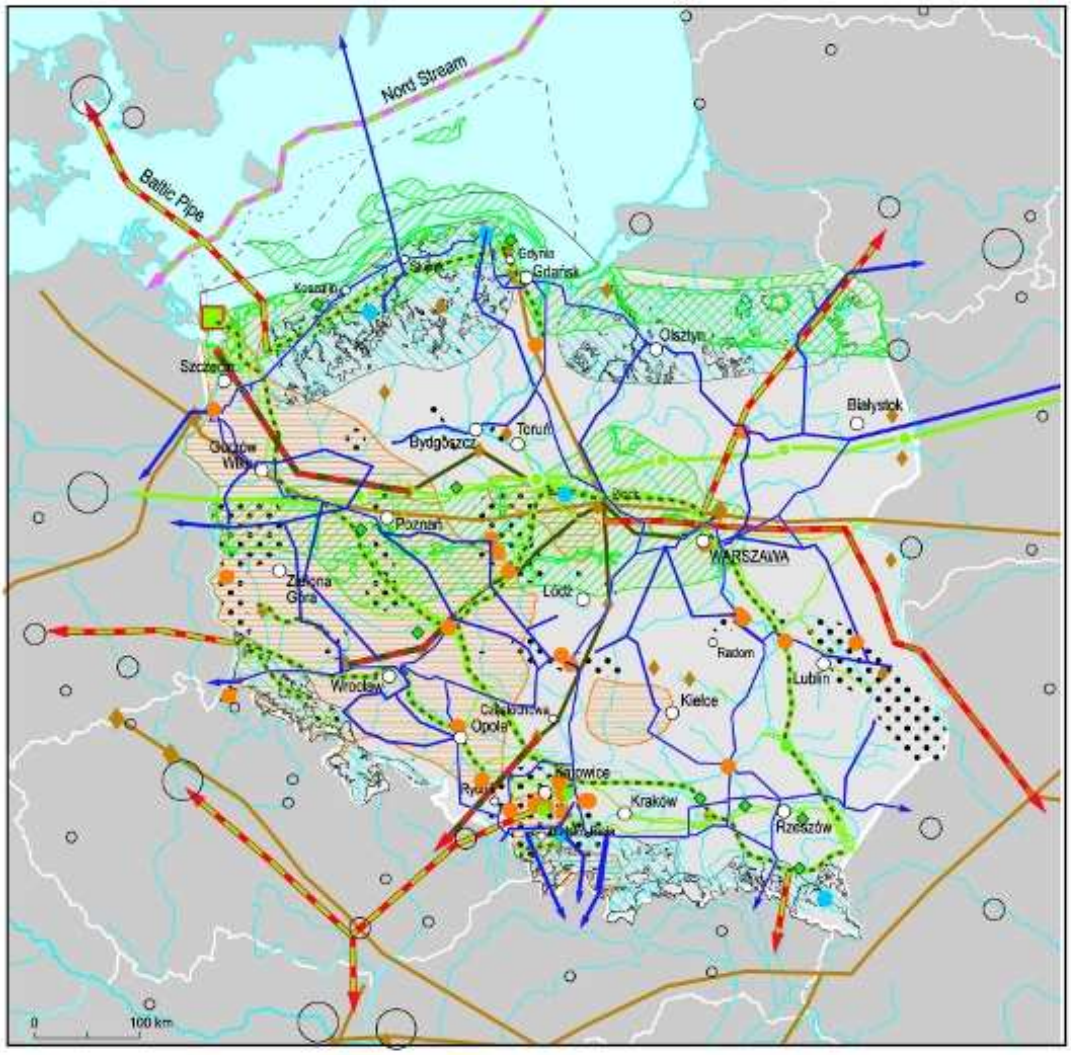
Rational spatial management is ensured by highly efficient and skilled state institutions. The institutional system provides for the execution of national visions in a hierarchical planning and management system which takes account of the interests of the widest possible group of entities participating in development processes on various levels of management. The administrative system ensures an efficient spatial coordination of various entities: objectives formulated as part of the spatial policy on various levels of socio-economic and spatial planning are delivered by the entire public administration.

Participation of citizens and NGOs in the planning and development process, including spatial planning, is a common rule which results from the need to take account of various interests on the stage of preparation of documents and before their implementation begins. Cooperation on the stage of preparing project alternatives is beneficial for their high quality and offers an opportunity for an early resolution of conflicts prior to the formal acceptance of those projects. This provides for an effective accomplishment of important common goals and increases social control over actions conducted by public authorities. The partnership principle in the hierarchical and horizontal relations means the involvement of planning stakeholders in the entire planning process and allows citizens to identify more with the place where they live. Dialog – with the participation of professional mediators – provides the basis for solving possible disputes.

Fig. 15. The energy system and development areas of dispersed energy generation



2030



supply routes

Oil infrastructure

- oil pipelines
- new oil pipelines
- commodity pipelines
- new commodity pipelines
- main refineries and oil storage facilities

Deposits of coal and lignite that may be subject to protection

Development zones of dispersed renewable energy generation:

- wind
- water
- geothermal

exclusion of Natura 2000 sites

including the influence on the cohesion and integrity of the Natura 2000 network.
power plants in Poland, they are not marked on the map.

Source: Prepared by MRD

Spatial policy attains its objectives owing to investment activities conducted under various public policies

In Poland, the spatial policy constitutes the basis for investment activities effected on every level of management – namely national, regional and local – as well as in the identified functional areas. Implementation of investment projects takes place as part of development programmes on the national level (the responsibility of competent ministers) and on the regional level (the responsibility of the local government of individual voivodeships). In special cases, it may also take place under programmes addressed to specific functional areas. Expenditures for the programmes are contained in a multi-annual financial plan of the state (specified in the State Budget) and in the budgets of individual units in the public finance sector. Execution of the largest strategic projects of the state and local government proceeds according to a formula of consultations and agreements between various participants of spatial development measures (the territorial contract) [61].

Coordination of the spatial policy improves, first and foremost, the efficiency of investment projects by means of their concentration and by minimising conflict situations. An example of the integration of planning in 2030 is offered by the development policy which approaches the land and sea in conjunction so as to balance conflicts resulting from diverse ways in which they are used. Integrated planning of the land and sea involves the implementation of systemic solutions – primarily in the spheres of transport, environmental protection and conservation of the traditional seaside landscape – constituting factors indispensable for the development of both coastal zones and the rest of the country.

Coordination based on a lasting monitoring system

The national system for the monitoring of spatial processes and for the evaluation of the execution of spatial and regional policy constitutes the primary tool for the management of development measures and for their coordination. It fulfils this role owing to its combination with the system for the monitoring of socio-economic phenomena and the effects of development policy. This system is integrated with the European spatial monitoring system[62] which ensures the perception of the Polish space as a component of macro-regional and pan-European structures.

The system permits to evaluate the activities of all entities involved on different levels: from local, to regional, to national, and to European. The monitoring provides information on the effects of sectoral policies that influence the space and constitutes the basis for taking action. Also, it enables the coordination of spatial activities of the entities participating in the spatial development of Poland and, therefore, it constitutes a cooperation platform in respect of setting objectives and formulating measures with spatial consequences. The monitoring conducted in relation to functional areas provides knowledge and data on their development trends. The system is handled by specialised public administration organisational units which guarantee the highest quality and relevance of data provided. The usefulness of this system depends also on its omnipresence and accessibility.

[61] Introduction of the territorial contract (also by way of law) as a tool for coordination and ensuring the efficiency of public measures in relation to a specific territory (not only voivodeships) is provided for in the National Strategy of Regional Development 2020.

[62] Monitoring of the Polish territory will be conducted pursuant to the Act on spatial data infrastructure of 4 March 2010 (Dziennik Ustaw [Journal of Laws] of 2002, No. 76, item 489).

IV. National Spatial Development Policy – Principles and Objectives

4.1. National Spatial Development Policy – Principles

Programming and implementation of the National Spatial Development Policy are governed by a set of principles grounded on the selected development paradigm, as well as the Constitution and respective national and international laws. Spatial policy principles are permanent and concern all space-related human activities. The key principle is:

the systemic sustainable development principle[63]; sustainable development is construed as such socio-economic development where political, economic and social activities are integrated, and where natural environment balance and sustainability of primary natural processes are maintained, to ensure that individual communities' and citizens' needs are met both now and in the future.

By applying this rule to economic, environmental and social capital, the following **public planning principles** were directly inferred:

economic soundness principle – meaning, that spatial policy must be based on a long-term social, economic and spatial benefits assessment;

brownfield before greenfield development principle – means intensification of urbanisation in developed areas to minimise urban sprawl. In practice this principle prevents scattering of investment projects, contributes to the effective use of urbanised areas and prevents degradation of urban space (the principle requires space to be recycled and existing resources to be used);

ecological prudence principle – means that occurring problems should be solved in due time, i.e. appropriate action should be taken when there is a justified belief that a problem needs solving, rather than only when there is a full scientific proof; this principle will prevent nonfeasance due to time-consuming studies, lack of resources or conservative approach of responsible people or institutions;

ecological compensation[64] **principle** – means that space should be managed, and the development policy, including spatial policy, planned and implemented in such a way as to protect environmental balance and to compensate for environmental losses caused by spatial development, increased urbanisation and investments that are necessary for socio-economic reasons and that do not have environmentally neutral alternatives;

The operation of the integrated development system is governed by:

hierarchy of objectives principle ensuring coordination of all decision-making bodies; decisions must be made following the principle of subsidiarity of local government – this principle defines key spatial planning components that should be designed at the topmost planning level in order to set standards and prioritise public purpose investments to reduce harmful phenomena in space, e.g. spatial conflicts;

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[63] In accordance with Article 5 of the Constitution. Consequently, in accordance with the Act on spatial planning and management of 27th March 2003, Article 47, paragraph 1, point (1): "Minister responsible for regional development shall draw up National Spatial Development Concept for Poland that will ensure sustainable development taking into the account natural, cultural, social and economical conditions".

[64] Environment Protection Law (Dz. U. of 2008, No. 25, item 150, as amended), Article 3 (8), defines environmental compensation as "all measures, including in particular construction works, earthworks, soil regeneration, afforestation, planting trees and groups of plants, intended to restore natural balance in an area, to compensate for environmental losses caused by the project, and to maintain landscape values"; application rules: Article 75; guaranteed application in area nature conservation: act of 16th April 2004 on nature conservation (Dz. U. of 2009, No. 151, item 1220, as amended), other investment cases are regulated by the Act of 8th October 2008 on provision of information about the environment and protection thereof, public participation in environmental protection and environmental impact assessments (Dz. U. of 2008, No. 199, item 1227, as amended).

principle of dynamic zoning and demarcation of planning areas – is the basis for functional planning intended to use local and regional potentials and to minimise conflict (implemented in NSDC 2030 by means of functional areas);

public participation principle (broad and active) guarantees legitimate and transparent space management and planning procedures. Public activity is necessary when formulating, first of all, local strategies, policies and laws. Effectiveness of spatial policy implementation requires human capital quality to be improved and civic society to be built, as well as the principle of increased public participation, construed as stakeholders' participation in, and shared responsibility for development policy, to be followed.

Apart from the abovementioned principles, the following public policy implementation principles are also applicable: geographic and thematic concentration, partnership and cooperation, conditionality, knowledge-based economy, integrated territorial approach and coordination with other policies, subsidiarity and multilevel approach[65].

4.2. Strategic Goal

National Spatial Development Policy is a means to achieve Poland's development objectives nationwide. Therefore, the spatial strategic goal must contribute to the increasing competitiveness of Poland, ensure efficiency of the state and at the same time promote cohesion in its three primary dimensions.

Therefore, the strategic goal of the National Spatial Development Policy is as follows:

To effectively use country's space and its territorial differences of potential to achieve overall development objectives – competitiveness, increased employment, efficiency of the state and long-term social, economic and territorial cohesion.

This goal must be realised while ensuring environmental and cultural cohesion in line with the constitutional principle of sustainable development.

The goal thus formulated – provided objectives and implementation tools are well selected – is being implemented by all competent public bodies responsible for development at different governance levels, in different thematic areas and in different territories. The strategic goal is timeless. Together with spatial policy principles described above, it is the basis for formulating objectives and setting out the path to achieve them in documents with specified time perspective developed by the Government and other public authorities. NSDC 2030 is one of such documents.

[65] To learn more, see National Regional Development Strategy, Warsaw 2010.

4.3. National Spatial Development Policy – Objectives to be Achieved by 2030

The way to ensure that the strategic goal of the National Spatial Development Policy is realised is to focus public bodies' activities in selected thematic areas and territories. Intervention objectives and areas were selected based on an analysis of the situation in Poland, including the most important development conditions and trends, against the international backdrop, primarily in comparison to the European Union. Objectives accompanied by appropriate instruments should ensure that the spatial development vision Poland 2030 presented in Chapter III is achieved. To ensure development, it will be necessary to strengthen and use regions' internal potential, in particular the potential based on unique cultural and environmental resources and human capital. Specialisation of regions will contribute to the focus on achieving Europe 2020 ambitions.

The six objectives of the National Spatial Development Policy presented below must not be treated separately. Those objectives are linked to Poland's spatial structure components, closely related to each other and complementary:

(1) To improve competitiveness of Poland's major urban centres in the European context through functional integration while preserving the pro-cohesive polycentric settlement structure.

(2) To enhance internal cohesion and achieve sustainable territorial development by promoting functional integration, creating conditions for diffusion of development factors, multifunctional development of rural areas, and using all territories' internal potentials.

(3) To improve Poland's connectivity at many levels by developing transport and telecommunications infrastructure.

(4) To develop spatial structures supporting the achievement and preservation of Poland's high-quality natural environment and landscape.

(5) To enhance spatial structure's resistance to natural calamities and loss of energy security, and to develop spatial structures supporting national defence capabilities.

(6) To restore and consolidate spatial order.

Progress in achieving the objectives that enable the realisation of the national spatial development vision in 2030 (described in Chapter III) is measured by means of efficiency and effectiveness indicators described in Table 1.

NSDC progress indicators described in Table 1, as well as diagnostic maps are the basis for systematic monitoring of effects of spatial development measures taken under various public policies at all governance levels: national, regional, local and functional. Every five years the Minister of Regional Development will prepare a report that will be the basis for NSDC update. Reports may be used to modify NSDC 2030. Independently, the Council of Ministers may take the decision to update a part of, or the entire document.

Table 1. NSDC 2030 progress indicators, including a description of the scope and monitoring methods

	Object of study	Monitoring methods and levels; data sources
IMPROVED COMPETITIVENESS OF SPACE	(Number and type of) functional connections and their trends in the polycentric metropolis network between: a) major cities in Poland, b) other urban centres.	Study programme (functional connections study by the Institute of Geography and Spatial Organisation, Polish Academy of Sciences; study by UPM; local governments' analysis system). OP HC study.
	Function integration rate in multi-polar and multi-peak systems – function integration indicator / functional connections indicator in a system.	
	Metropolitan functions of major cities. Comparison with European metropolises' features. Rate and quality of connections between Poland's and Europe's major cities – metropolitan indicator.	Study programme (functional connections study by the Institute of Geography and Spatial Organisation, Polish Academy of Sciences; study by UPM; a new analysis to determine metropolitan functions). ESPON studies.
ENHANCEMENT OF INTERNAL COHESION	Functional connections between the core urban area and its surroundings (income per capita, access to services, transport possibilities, percentage of commuters).	A study programme Data of the Central Statistical Office – database containing recent census data.
	Cohesion in specific problem areas – surface of: a) areas with the worst service access, b) revitalised areas, c) cities and other areas losing their original socio-economic functions, d) the least developed areas, e) borderlands, f) areas with the worst temporal accessibility.	A study under NRDS action plan.
	Integration rate with European centres; research, business and educational connections.	
IMPROVED ACCESSIBILITY	Mutual daily connectivity indicator of major cities in Poland. Mutual daily connectivity of major urban areas. Internal connectivity of areas. "External" (international) links of major cities in Poland.	A study programme of IGSO PAS, a study under NRDS action plan.

MAINTAIN HIGH QUALITY ENVIRONMENT	Increased surface (in %) of areas protected under two acts of Parliament: on nature conservation and on historical objects protection and care. Cohesion and fragmentation of ecosystems in National Parks and Natura 2000 Landscape Parks; usage of animal over- and underpasses along ecological corridors. Percentage of single water bodies (SWB) that do not achieve good water status (WFD). Number of areas with PM 2.5 suspended dust non-compliance. The ratio of landfilled municipal waste to collected municipal waste expressed in percent. HNV factor. National Afforestation Programme progress factors.	Data of the Central Statistical Office. Data of the National Heritage Institute. *Farmland Bird Index*. National Bird Monitoring (common breeding birds and wetland birds). Analyses of the Ministry of Environment and General Directorate for Environment Protection. Studies by General Directorate for National Roads and Motorways. National Environment Monitoring (Chief Inspectorate of Environmental Protection). CAP progress factor.
SECURITY	Energy diversification rate (Herfindahl-Hirschman index). Distribution of energy sources, including RES. Location and size of areas with energy supply issues. Resource security policy.	Monitoring by PSE. Data of the Ministry of Environment, Ministry of Economy, National Water Management Authority and social partners.
	Scope and value of flood damage. Populations in flood threat areas. Increase in natural and artificial retention.	Study programmes to be developed. Data of the Central Statistical Office.
ENSURING SPATIAL ORDER	*Brownfields* – ratio of brownfields to functional areas of cities. Share of open and green areas in the overall surface of functional urban areas.	Data of the Central Statistical Office, *Corine Land Cover*, National Environment Monitoring.
	Coherence rate of plans and strategies at national / regional / functional levels.	Cross analysis methodology – MRD.
	Percentage of urban planners – members of a professional organisation employed in planning offices.	Ongoing analysis by MRD.
	Local spatial development plan coverage of development areas in gminas.	

V. National Spatial Development Policy – Objectives

Objective 1. To improve competitiveness of Poland's major urban centres[66] in the European context through functional integration while preserving the pro-cohesive polycentric settlement structure.

(1) Description of the problem

Polycentricity and relatively even distribution of the largest and the most important urban centres in the country's spatial structure are unique features of the Polish settlement structure in comparison to other European countries. The largest populations (above 2 million) inhabit the Warsaw agglomeration and Upper Silesia Agglomeration (Katowice with adjacent urban areas). Functional areas of Cracow, Łódź and TriCity are inhabited by ca. 1 million people each. In 2010, other major cities (together with their functional areas) were smaller. This group includes: Wrocław, Poznań, Bydgoszcz with Toruń, Szczecin and Lublin. In accordance with the adopted methodology (Chapter VI), all those cities had their metropolitan areas[67].

The abovementioned major cities with their functional areas are a place of concentration of economic, political, administrative, social and cultural functions, as well as the most intensive economic activity (Figure 16)[68]. Since major cities are attractive as a place of work and a focal point of various higher order services, they are also the destination of work commute and temporary or permanent (largely unregistered) migration from less-developed areas and other countries. Currently, the biggest number of functional connections (such as work commute, business contacts, education and culture) link Warsaw with other major cities in Poland. Similar relationships between the other cities are much weaker (Diagnostic map 3., Chapter VIII).

At present, the group of cities with less impact comprises voivodeship capitals: Białystok, Gorzów Wielkopolski, Kielce, Olsztyn, Opole, Rzeszów, Zielona Góra; cities building strong multi-peak relations with major cities (Katowice and Cracow): Bielsko-Biała, Częstochowa, Rybnik; strong urban areas within the impact zone of Warsaw: Płock and Radom; cities at an early stage of potential development: Elbląg, Koszalin and Słupsk that strengthen Central and Eastern Pomerania; as well as other cities.

In 2010, the second group had regional city status. Weaker voivodeship centres and regional centres fulfil a number of metropolitan functions, however in many respects they are still connected with, and functionally subordinate to metropolitan centres (e.g. in terms of economy, higher education, science and culture). On the one hand, it results in an incomplete use of the potential of the core city network for national and regional development, and on the other, it reduces territorial cohesion of the country. It is the case, in particular, in areas without strong urban centres that could support regional development processes and provide development stimuli to adjacent areas. This situation occurs both in Eastern Poland, as well as in considerable portions of Western Poland and Central Pomerania (with the exception of areas adjacent to Szczecin, TriCity, Poznań and Wrocław).

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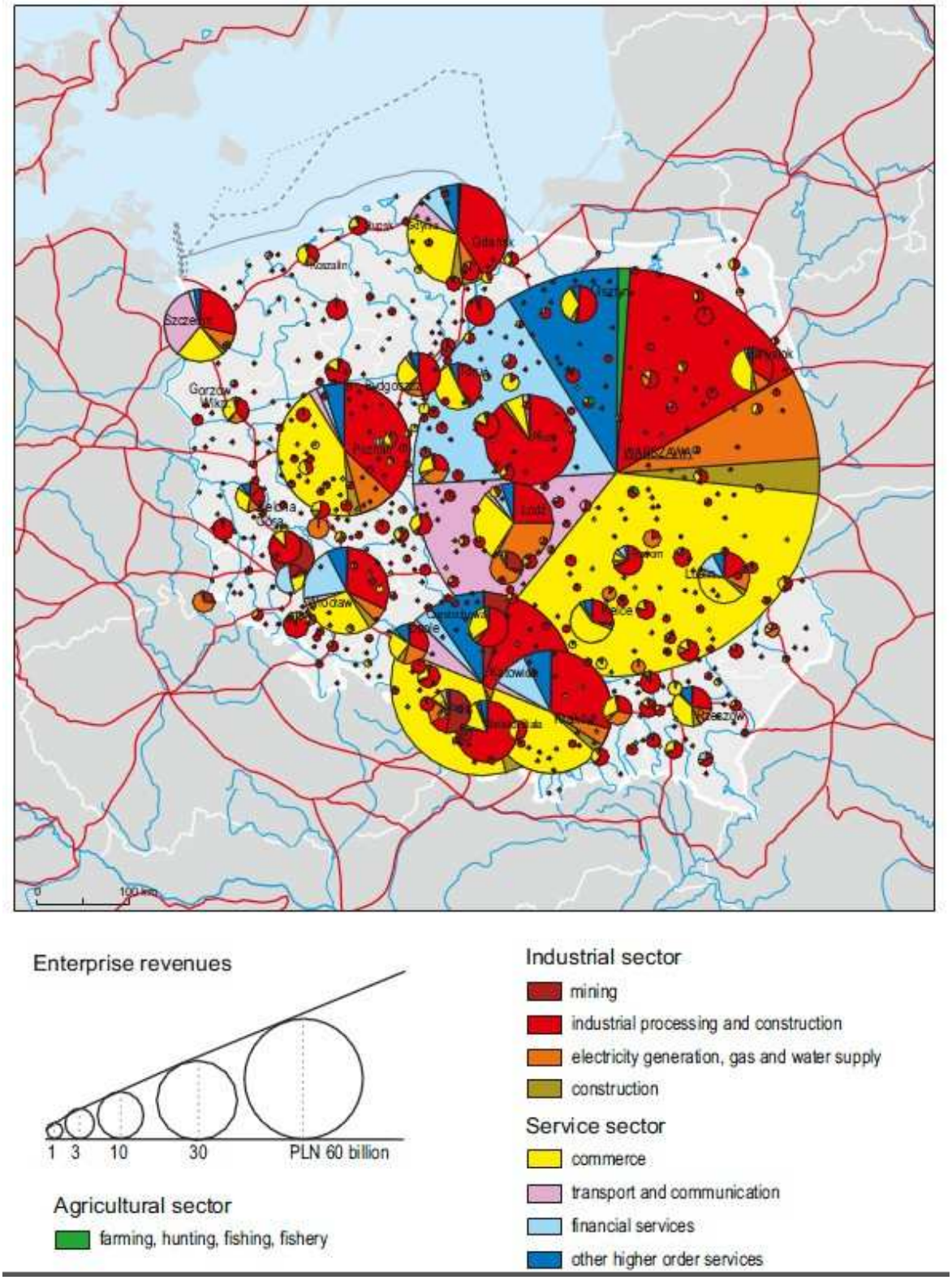
[66] Major urban centres are metropolitan centres and all voivodeship centres, including pairs of cities fulfilling voivodeship city functions (Gorzów Wielkopolski – Zielona Góra and Bydgoszcz – Toruń), as well as the following urban centres: Bielsko-Biała, Częstochowa, Koszalin, Radom, Rybnik, Słupsk and Płock.

[67] There are several methods to designate metropolies according to level (NUTS 3, 4, 5) and planning document (NSDC, VSDP). According to the Union of Polish Metropolises, a metropolis is a settlement complex of knowledge city(ies) – a region with at least 500,000 inhabitants, national centres – at least 200,000. The Union of Polish Metropolises defines 12 metropolitan areas: Warsaw MA (the only Polish metropolis of European significance); developing national metropolises: Gdańsk MA, Cracow MA, Poznań MA and Wrocław MA; problem areas that require re-metropolisation: Katowice MA, Łódź MA, Szczecin MA; emerging Bydgoszcz-Toruń metropolis; and metropolises at the building stage: Białystok MA, Rzeszów MA and Lublin MA. Metropolitan areas are also delimited by: Updated Concept of National Spatial Development (prof. G. Gorzelak), ESPON analyses, voivodeships.

[68] Apart from the mentioned areas, the most intensive economic activity in terms of GDP per capita occurs in intensive manufacturing areas, raw material extraction areas, and Zagłębie Lubińskie (copper extraction).

Fig. 16. Spatial structure of income of Poland's largest 10,000 companies; types of economic activity and ownership

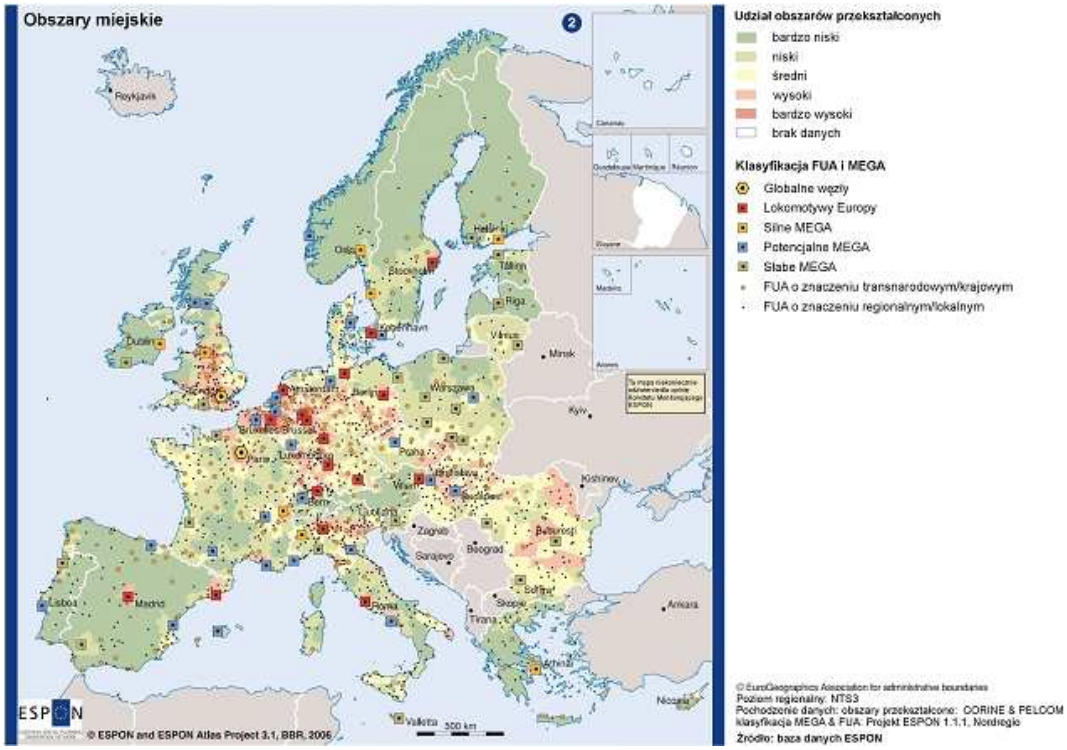


Source: P. Śleszyński, *Gospodarcze funkcje kontrolne w przestrzeni Polski*, [*Geographic control functions in Polish space*], *Prace Geograficzne*, 213, Institute of Geography and Spatial Organisation, PAS , Warsaw 2007.

Major urban centres, in particular those concentrating the largest number of metropolitan functions, are focal points for activity and fulfil functions that have impact on economic and

civilisation growth rate of the entire country, as well as of individual regions. International status of those urban centres is an important gauge of a country's overall position on the continent and in the world. In this respect, Polish cities significantly fall behind cities in other Member States of the European Union, in particular those in the west and north of Europe. In comparison with other EU Member States, Poland's major urban centres suffer from underdevelopment of metropolitan functions, in particular control functions, economic governance, transport, research and development, and, to a certain degree, symbolic functions. A characteristic feature of Polish cities is the low innovation rate and a small share of knowledge-based economy, in particular high technology industries. In functional terms, only Warsaw stands out among Polish cities. In ESPON documents it was classified as a potential European MEGA 2 metropolis (Fig. 17)[69].7071

Fig. 17. ESPON classification of urban centres in the European Union



[69] Under the ESPON programme, Functional Urban Areas (FUA) were identified in 29 European countries. FUA consist of an urban core and an adjacent external zone economically integrated with the core. 1595 FUAs with at least 20,000 inhabitants were identified. In course of analyses, FUAs were categorised into three groups: 1) MEGA (Metropolitan European Growth Areas), 2) FUAs of transnational/national importance, and 3) FUAs of regional/local importance. MEGAs were further subdivided into the following categories: global nodes (London and Paris), European engines (17 urban centres, e.g. Berlin, Stockholm, Barcelona, Vienna and Rome), and three MEGA categories: MEGA 1 (strong MEGAs), MEGA 2 (potential MEGAs), MEGA 3 (underdeveloped metropolises; in Poland this category includes: Gdańsk, Szczecin, Poznań, Wrocław, Łódź, Katowice and Cracow). FUAs of transnational/national importance are: Białystok, Bielsko-Biała, Bydgoszcz, Częstochowa, Kielce, Lublin, Olsztyn, Opole, Rzeszów, Toruń and Zielona Góra.

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Obszary miejskie	Urban areas
Udział obszarów przekształconych	Share of transformed areas
bardzo niski	very low
niski	low
średni	medium
wysoki	high
bardzo wysoki	very high
brak danych	no data
Klasyfikacja FUA i MEGA	Classification of FUAs and MEGAs
Globalne węzły	Global nodes
Lokomotywy Europy	European engines
Silne MEGA	Strong MEGAs
Potencjalne MEGA	Potential MEGAs
Słabe MEGA	Weak MEGAs
FUA o znaczeniu transnarodowym / krajowym	FUA of transnational / national importance
FUA o znaczeniu regionalnym / lokalnym	FUA of regional / local importance
Ta mapa niekoniecznie odzwierciedla opinię Komitetu Monitorującego ESPON	This map does not necessarily reflect the opinion of ESPON Monitoring Committee
Poziom regionalny: NTS3	Regional level: NTS3
Pochodzenie danych: obszary przekształcone: CORINE&PELCOM klasyfikacja MEGA i FUA: Projekt ESPON 1.1.1, Nordregio Źródło: baza danych ESPON	Data source: transformed areas: CORINE&PELCOM MEGA and FUA classification: ESPON strand 1.1.1, Nordregio Source: ESPON database

One of the development possibilities for major urban centres is networking that enables growth, knowledge exchange and creativity. The Union of Polish Metropolises has been promoting this mission since 1990; the Union comprises 12 major cities: Białystok, Bydgoszcz, Gdańsk, Katowice, Cracow , Lublin, Łódź, Poznań, Rzeszów, Szczecin, Warsaw and Wrocław. The Union inspired, *inter alia*, the fast train connection between Łódź and Warsaw and between Bydgoszcz and Toruń. It also postulates a similar connection between Katowice and Cracow. UPM cities are members of the Eurocities association comprising 140 European cities with over 250,000 thousand inhabitants. Connections between other Polish cities are not as strong.

Functional connections between Polish cities, that are expected to establish a polycentric metropolis network described in the Vision (Chapter III), are nowadays insufficient. Cooperation between urban centres within the settlement network is missing. Currently, the predominant trend is to compete, rather than to build cooperation or strategic alliances between urban systems. Strong functional connections occur between metropolises, while connections between metropolises and regional centres, including other voivodeship capitals, and between regional centres themselves, are weaker.
Also cities' external functional connections are insufficiently and unequally developed. While foreign investments in major cities' functional areas continuously increase complementarity of economic functions and enhance cooperation between those cities and cities in the European Pentagon and, partly, in Central Europe, it is not accompanied by an equally strong integration of other functions. In such fields as culture, science and education only a few Polish cities are capable of a permanent higher order cooperation that enhances their competitive position through transfer of ideas, knowledge and know-how. Even though political and economic barriers were removed, the potential to develop functional connections between major cities in the Baltic Sea Region[72] and between such pairs as, for instance, Szczecin and Berlin, is still largely unused. Cooperation with cities in Ukraine, Russia or Belarus, although economically desirable, is still difficult due to political and administrative barriers. This situation hinders development opportunities of cities located at the eastern border: Białystok, Lublin, Olsztyn and Rzeszów whose connections with cities of Western Europe are weak.

Development of functional connections is largely hampered by the underdeveloped transport infrastructure, both roads and railways. Travel times between major cities differ significantly

[72] Compare: *VASAB Long-Term Perspective for the Territorial Development of the Baltic Sea Region*, October 2009.

from European standards. It hinders the establishment of a single investment market, transfer of know-how and ideas and development of metropolitan functions. One may assume, that provided a more effective connections existed, the network of cities would be competitive towards European metropolises.

Another problem of the settlement system in Poland is the uncoordinated development of major cities' functional areas. Suburbs of those cities are characterised by spontaneous urbanisation and growing spatial chaos. This results in landscape degradation and growing socio-economic costs incurred by functional areas. Unchecked suburbanisation may lead to environment degradation, deterioration of leisure places and loss of investment sites that will result in a decline of the image and attractiveness of those areas. Moreover, unchecked development of flood plains in the next few years may increase flood hazard for people, economy, cultural heritage and the environment.

At present, suburbanisation manifests itself by the outflow of people from city centres and large housing developments to areas on the fringes of major cities. It causes rural areas surrounding major cities to change their functional character within 20 – 30 km from cities' administrative borders. The dynamic rurbanisation (semi-urbanisation) means settlement of a large portion of the employed population in cities and metropolises in search of an attractive living environment. Thus, the number of non-agricultural workers is growing, urban lifestyle is becoming established, and at the same time suburbs are losing agricultural functions and start to resemble city landscape in consequence of disappearance of their characteristic features. Suburbs are usually inhabited by affluent, often well-educated, people. Due to poor and slow development of social infrastructure and services, as well as lack of jobs, new inhabitants of suburbs are forced to work and fulfil some of their needs in major city centres. People are forced to travel repeatedly between their homes and city centres or suburbs located on the opposite side of the functional area. Due to the underdeveloped public transport, inhabitants of suburbs are dependent on individual transport that contributes to failures of the transport system, generates congestion, and reduces the efficiency of the entire city system.

(2) Outline of future actions

Achieving one of Poland's major development objectives in the perspective of the next twenty years, i.e. increasing competitiveness of the economy, will mean making an effective use of national spatial development. In spatial terms, the principal role in the process of increasing economy's competitiveness must be played by the potential of major cities construed as focal points of economic, social and cultural changes. Spatial policy will support the increase of competitiveness of Polish cities in relation to other cities in Europe while preserving the polycentric structure of the settlement system.

Having regard to identified problems and development opportunities, spatial policy will support competitiveness of the major cities in Poland by (Fig. 18.):

1.1. Encouraging the development of metropolitan functions in major cities;
1.2. Intensifying national and international functional connections between main settlement network nodes;
1.3. Integrating functional areas of major urban centres.

In order to enable the establishment of polycentric network of metropolises, and thus to increase international competitiveness of Polish cities and their functional areas, the list of actions must also include transport and telecommunications measures described separately under Objective 3. (Chapter V).

Details of urban development will be described in the governmental document entitled "Foundations of the National Urban Policy"[73]. Since urban development is an interdisciplinary matter, a management and cooperation model will be developed for all administration levels concerned with this topic. National urban policy will be integrated with strategic documents at the governmental, regional, metropolitan and local levels.

The development of metropolitan functions, higher number, and better quality of functional connections, functional urban areas integration and improved accessibility of the major economic growth nodes will not only enable the development of other urban areas, but also will contribute to the improvement of living and development conditions in areas adjacent to major cities of the emerging metropolis network.

Re 1.1. Encouraging the development of metropolitan functions in major cities in Poland

Development policy, including spatial policy, will first of all support metropolitan functions of all voivodeship cities. Actions intended to support the development of metropolitan functions will be adapted to each city's baseline situation.

At present, there are ten urban centres with well-developed metropolitan functions with Warsaw as the leader. The first set of actions to be taken within the framework of the spatial policy in those areas, described above as voivodeship cities (see: Chapter VI), will be to improve the quality of higher order public services, and to develop scientific, economic (in particular knowledge-based) and symbolic functions of national and international signficance. Because of its special role, the spatial policy for Warsaw must focus primarily on supporting the development of such international functions that will make Poland an important player in the EU and the entire Europe (e.g. as the location of important EU institutions and as the place of concentration of financial functions with impacts on the entire Central Europe). Both institutions and investments located in Warsaw will influence the development of the entire country. After 2020 Warsaw should become the major city of Central and Eastern Europe – a vast, competitive, accessible urban centre based on well-educated and specialised human capital[74].

The development of metropolitan functions in other voivodeship cities will involve, first of all, strengthening and diversification of their economic functions by creating conditions encouraging investments in high added value sectors. Their research and scientific potential will also be strengthened. Spatial and functional structures will be adapted to the needs of knowledge-, and innovation-based economy. Support will be given to facilitating cooperation between business and science. Placement of selected nationwide and regional public governance functions in those cities, as well as improvement of existing institutions will also be supported. Symbolic, including cultural, functions of those cities will be strengthened and underlined. Assistance will be provided for the refurbishment and modernisation of existing cultural infrastructure (theatres, concert halls, exhibition halls, museums, art galleries, libraries, etc.), revitalisation and adaptation of heritage buildings for cultural purposes, and the development of infrastructure for tourism, congress events, exhibitions and fairs.

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[73] In accordance with Foundations of the Polish Development Management System, adopted by the Council of Ministers in 2009, MRD together with MI must prepare Foundations of the National Urban Policy concerning, *inter alia*, urban revitalisation, prevention of unchecked suburbanisation and strengthening metropolitan functions of urban centres. Thus, the need to define the place and role of urban policy within the framework of development policy and its basic strategic documents was recognised. The final Urban Policy is developed by the minister responsible for construction, spatial management and housing under Article 9a (8) of the Act on governmental administration division (Dz. U. of 2007, No. 65, item 437, as amended).

[74] ESPON strand 1.1.1. Urban areas as nodes in a polycentric development: An European engine is an urban centre with high values of the following indicators: mass (measured by population size and economy size), competitiveness (attractiveness for private companies measured by the GDP *per capita* and the location of head offices for the top 500 European companies), connectivity (measured by number of connections, accessibility of connections and number of airport passengers), and knowledge basis (the share of the employed working with R&D and the percentage of the population with higher education).

Actions intended to boost metropolitan functions will be supported mainly by the state's regional policy and other coordinated sectoral policies (e.g. the transport policy). International policies of the Government and local governments, e.g. on concentration of functions with international significance, will also be very important.

Re 1.2. Intensifying national and international functional connections between main settlement network nodes

The spatial policy will strengthen functional connections between national growth poles. Actions will focus on intensifying functional connections, primarily in terms of the following functions: economic, research and development, social, educational and symbolic (including cultural).

The formation of a polycentric metropolis network will improve the competitiveness of Poland's major urban centres, and consequently of the entire country. The network, due to a relatively high number of urban centres distributed evenly across Poland, will contribute to ensuring a well-balanced development of the entire country.

Special attention will be given to establishing and intensifying connections between metropolises and regional centres that are intended to be included in the polycentric metropolis network in the future. Abovementioned measures enable making a fuller economic use of the polycentric settlement structure in Poland (its large and medium-sized urban centres), sustainability of development processes (and thus, supporting spatial cohesion processes) and inclusion of the largest possible territory in the most dynamic development processes. In this context, supporting the establishment of functional (economic, social, scientific and cultural) connections between regional centres and metropolitan centres is particularly important.

Additional growth stimuli enhancing the scope of cooperation will be provided by intensified cooperation between, and growth synergies occurring in the following metropolitan pairs: Warszawa – Łódź, Upper Silesian Agglomeration – Kraków (including smaller cities, like Bielsko-Biała, Częstochowa and Rybnik), and in the Bydgoszcz – Toruń metropolitan area. Spatial policy measures in this field will include: integration of public transport systems, in line with integrated sustainable development plans for collective public transport[75] connecting those cities; and preparation of development plans for functional areas, including multi-peak systems.

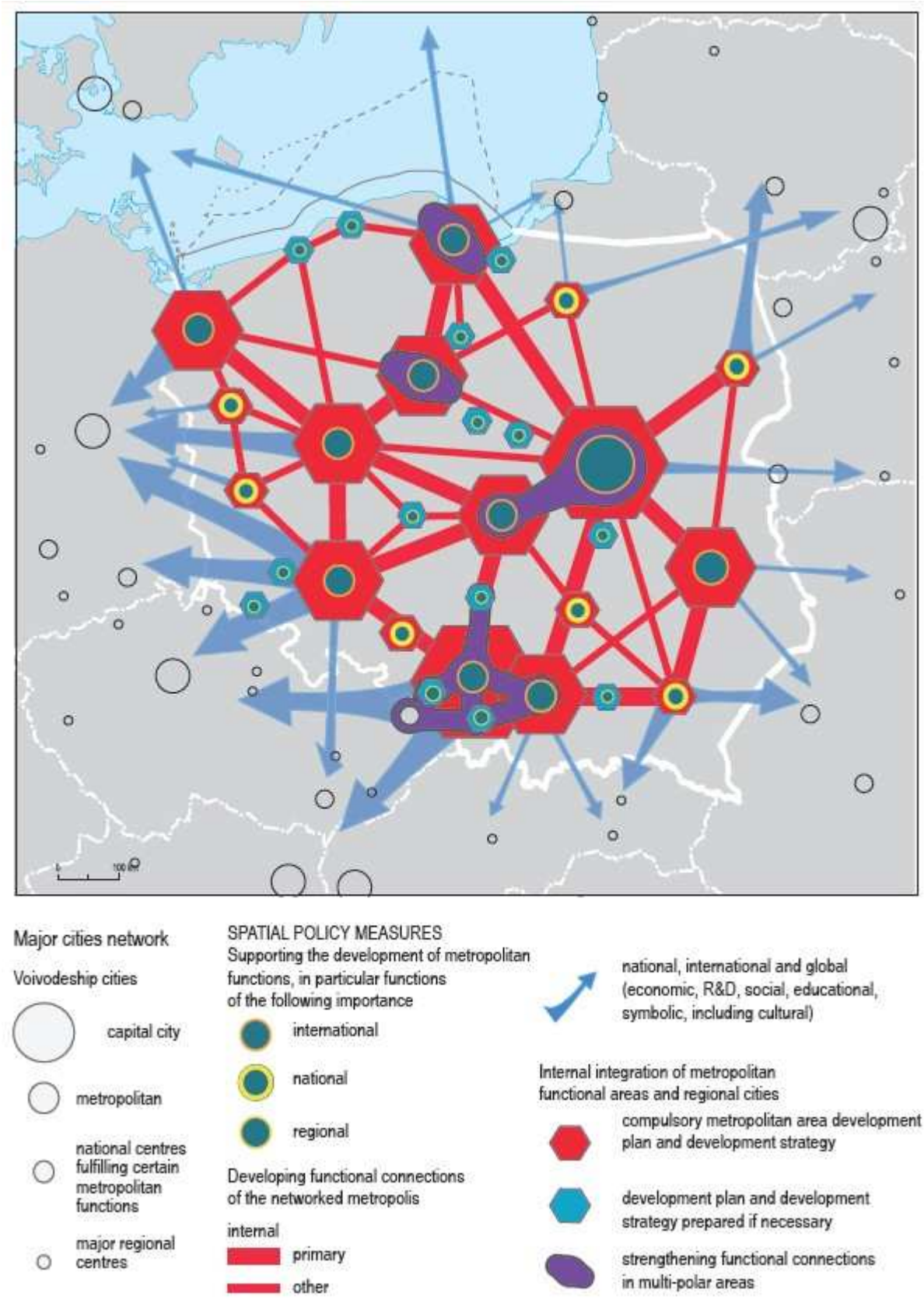
Spatial policy will be also directed towards strengthening the potential and competitiveness of regional cities complementing and supporting major cities. Their endogenous growth potential (underused at present) must be mobilised. Support must be given to changes to speed up innovation and improve competitiveness. Complementary functions fulfilled by regional cities will strengthen the major urban centre network and thus enable the development of the entire country.

Strengthening functional connections between major cities will involve: establishing cooperation network between universities and the research and development sector, supporting cooperation between the knowledge sector and the economy, business and innovation, as well as development of cooperation between cultural institutions. The development of economic cooperation and business environment will be strengthened and promoted through the intensification of economic cooperation between major urban centres at the national level. The way to strengthen functional connections in various fields between major urban centres will be set out in more detail by the National Urban Policy.

[75] Act on collective public transport of 16th December 2010 (Dz. U. of 2011, No. 5, item 13).

This objective and transport infrastructure development, described in Objective 3, are complementary and co-dependent. Functionally, transport infrastructure development involves: developing modern intermodal transport systems connecting, first of all, major cities in Poland, and then voivodeship and other regional cities (integration of air, road, rail and water transport), improving access to Polish cities by air, and modernisation and development of high-standard rail network.

Fig. 18. Spatial policy aiming to improve competitiveness of major urban centres.



Source: MRD.

Spatial policy will be directed towards strengthening not only national, but also international functional connections with borderlands, Europe and the world. It will improve the competitive capacity of the entire country and those regions where nodes will be located. Thus, an open system will be created. In consequence, cooperation between cities in Poland and metropolitan centres lying to the north, west and south of the country will be strengthened. One may assume, that without the intervention of the spatial policy links between Polish cities and the Berlin metropolitan area, Dresden, Leipzig, Prague and Ostrava will be the strongest. The spatial policy will support establishing additional connections with the abovementioned areas to achieve synergy.

Also functional connections, including connections between coastal cities and cities in southern Scandinavia (Stockholm and Copenhagen) and in Baltic States, will be strengthened. Those countries are counted among the most innovative economies. However, functional connections of their urban centres obviously gravitate towards Western Europe. The spatial policy will support functional connections between Polish metropolises and cities in those countries. It will contribute to increased innovation of Poland's economy through transfer of innovation and green technologies.

Moreover, it is in the interest of Poland to intensify connections between its cities and cities to the east of its borders. It will strengthen – currently weak – relations with Ukraine, Belarus and Russia.

Strengthening of connections between major Polish cities and metropolises in other countries will involve: supporting cooperation between higher education establishments, developing institutional support for foreign businesses willing to cooperate with Polish businesses, preparing Polish offices to provide service to foreign businesses in English, promoting Polish cities during international fairs and other events, organising international fairs and conferences in Poland and supporting economic transformation in countries lying to the east of Poland. Additionally, strengthening of connections between Polish cities and international metropolises will also include infrastructure projects described in Objective 3 to support better access to Berlin, Dresden, Prague, Vienna, Moscow and Kiev, as well as to Baltic States and Scandinavia.

Re 1.3. Integrating functional areas of major urban centres

In order to improve competitiveness of major cities, it is also necessary to ensure appropriate relationships within functional areas (comprising both urban and rural gminas). This need is most apparent in the largest metropolitan areas: Warsaw, Upper Silesia Agglomeration and TriCity. But the problem becomes gradually visible (to a varied extent) in functional areas of all metropolitan and regional centres.

National Spatial Development Policy will support the integration of a functional area with its core through planning[76] and investment projects in order to strengthen internal functional connections within the functional area, including improving connectivity. It is desirable to create appropriate conditions for space management in functional areas to ensure siting of enterprises operating in related sectors, service functions and public spaces in an organised manner in demarcated, cooperating zones to generate synergy. Attempts should be made to integrate complementary functions in order to rationalise spatial resources management and to reduce energy needs (e.g. reduction of transport needs). An essential condition of mobilising areas is to ensure protection of environmental resources and to support renewal of the resources through an appropriate policy. This should reduce costs of urban infrastructure and improve the quality of living.

Actions intended to ensure spatial integration of functional urban areas will focus on developing and implementing regulations enabling integrated spatial policy in functional urban areas, in particular reorganisation of the following functional metropolitan areas: Warsaw,

[76] The spatial planning system rules are elaborated in Objective 6.

Upper Silesia Agglomeration and TriCity. Laws will be adopted to support establishing of functional areas[77].

Voivodeship Spatial Development Plans will demarcate functional areas of major cities indicated in NSDC 2030. Spatial development plans and development strategies for those areas will be prepared. Plans and strategies should take into the account, first of all: sustainable mobility concept for the area, the need to protect environmentally important areas, the need to reduce and prevent greenfield development, and the need to ensure public spaces within the urban area. Local environmental and cultural predisposition should be the basis for generating spatial structures' pro-developmental functions.

Regional policy will include investment projects, in particular transport infrastructure projects (including, most significantly, integration of different modes of transport), environmental infrastructure projects, social infrastructure projects and revitalisation projects.

Improvement of internal connectivity within functional areas will be of special importance. It will extend the potential labour market[78]. Integrated sustainable development plans for public transport will be a tool to implement integrated multimodal public transport solutions covering different modes of transport and different infrastructures: agglomeration rail, tramways, busses, traffic management system, "park and ride" parking lots, bicycle and pedestrian transport (eco-mobility chain, safe bicycle and pedestrian routes, and bicycle rental and storage systems).

In selected cities actions will be taken do revitalise degraded city districts.

Urban development policy will promote the development of sustainable construction methods. The construction sector will aim to reduce material and energy consumption of buildings throughout the construction cycle – from the design through to operation. Attempts will be made in urban areas to implement solutions to use precipitation water for local needs, rather than to remove it through the storm drain system. Therefore, increasing surface of green areas within estates will be promoted: "green" roofs, introduction of accompanying verdure, establishing local water features, building parking lots ensuring leaching of water to the soil and other permeable paving materials.

Existing barriers resulting from the regulatory framework and administrative culture make it necessary, apart from introducing planning and investment tools, to implement support mechanisms to improve knowledge of, and to develop partnership cooperation culture between public and private bodies.

[77] In the "Declaration on the role of metropolises as innovation and knowledge regions", signed on 9th April 2009 in Wroclaw, mayors of 12 member cities of the Union of Polish Metropolises stated: "it is necessary to create territorial self-government units, that will replace poviats, and that will be included in metropolitan areas. Authorities of those units will be equipped with a democratic mandate. The units must have regional responsibilities: strategic planning, spatial planning, environmental planning and transport planning, as well as responsibilities within the poviat network".

[78] Transport system and connectivity are elaborated in Objective 3.

Objective 2. To enhance internal cohesion and achieve sustainable territorial development by promoting functional integration, creating conditions for diffusion of development factors, multifunctional development of rural areas, and using all territories' internal potentials.

(1) Description of the problem

Territorial cohesion, construed as a policy of enabling individual parts of a country to use their development potentials and allowing the largest possible number of their inhabitants to participate in development processes, should be perceived in several spatial scales. From the national spatial development perspective, the key internal cohesion issues are:

- to ensure cohesion between Central Poland, characterised by higher socio-economic development, and areas lying at a greater distance from Poland's major socio-economic centres that are affected by lower development rates and deteriorating development prospects,
- to ensure cohesion between dynamically developing voivodeship and regional cities on the one hand, and areas surrounding them – rural areas and sub-regional cities – on the other,
- to ensure cohesion in demarcated geographic areas affected by concentration of specific problems, such as poor accessibility of public services, social degradation and very poor connectivity.

One of the chief challenges of the spatial policy is **to ensure national cohesion** between well developed parts of Poland and areas with poor development rate and deteriorating development prospects. Analyses have shown that at present the group of such areas consists of: five voivodeships of Eastern Poland, Central Pomerania and Western Poland.

Eastern Poland, comprising the following voivodeships: Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie, is characterised by low growth potential in the European scale. Urban centres (apart from voivodeship capitals) are weak and not engaged in nationwide development (with the exception of Mielec, Świdnik and a few other towns in the historical Central Industrial Region (Centralny Okręg Przemysłowy). Another feature of the area is low urbanisation (with the exception of Warmińsko-Mazurskie voivodeship), e.g. only 47% of the population of Lubelskie voivodeship live in cities. Poland's GDP at purchasing power parity was equivalent to 46.6% (2010) of the EU 27 average, while in Podkarpackie and Lubelskie, that are counted among the poorest regions in the EU, it was equivalent to 39% and 39%[79], respectively. Due to the underdevelopment of functions and lack of appropriate transport connections, the area is poorly spatially integrated with the Central Poland and its metropolitan areas, as well as urban centres in Central and Western Europe. The border with Belarus, Ukraine and Russia, not used for economic purposes due to political reasons and legal and administrative differences, is still a barrier to development. Major cities in the region are too weak to influence (by diffusion of growth factors) development processes in the entire Eastern Poland region and in individual voivodeships. Nevertheless, it is those major cities that have the greatest development potential. They are the focal point of economic growth, employment and higher order public services. Negative influences on Eastern Poland's competitiveness include: high employment in non-specialised agriculture with fragmented land ownership, predominance of meadows and pasture land (Map 8., Chapter VIII), low ware production, and lack of alternative sources of income; concentration of depopulation processes in rural areas; disturbance in the demographic structure caused by outflow of young

[79] Eurostat, 2008.

people (in particular women) in the economically productive age. The outflow is caused by emigration abroad, as well as movement of people to major cities, including Lublin, Białystok and Rzeszów. Eastern Poland (with the exception of Warmińsko-Mazurskie voivodeship) is characterised by traditional economic structure with an important role of agriculture. Industry and service sectors in the entire Eastern Poland are characterised by numerous deficiencies. Additionally, in many poviats poor quality and accessibility of public services deteriorates people's development prospects. On the other hand, the macro-region is characterised by high-quality natural environment, however its tourist potential is not fully used on a big scale (with the exception of Masurian Lakeland). The macro-region features numerous protected areas, including the largest national parks, some of which are counted among the most valuable natural assets of Europe. Therefore, socio-economic and spatial development of the region should go hand in hand with environmental protection.

Central Pomerania and Western Poland (including the western part of Pomorskie voivodeship, Zachodniopomorskie voivodeship, Lubuskie voivodeship and western part of Dolnośląskie voivodeship) are characterised by an average socio-economic development, as compared to the rest of Poland. GDP of the region (2008) is below the EU average, with GDP of Zachodniopomorskie equal to 51.48%, and GDP of Lubuskie to 48% of the EU 27 average. The area is highly diversified. Its largest and strongest urban and economic centre is Szczecin. With its population of 400,000 (2010; including the functional area), the city is a place of concentration of economic, scientific and cultural functions. The city, however, is losing some of its economic functions (shipyard industry) and is subjected to growing competitive pressure in leading sectors, such as transhipment of goods in sea ports. It loses its importance as the transit centre for the north and south of Poland and Europe. Other cities in this area mainly fulfil administrative functions and seasonally become tourist destinations. Low population density, scattered settlement network without functional integration, and lack of large cities are reasons of low attractiveness for investors, and in consequence, of the region's limited inclusion in modernisation and development processes of the country. Additionally, limited access to major growth centres in Central Poland and insufficient, compared to the rest of the country, access to basic public services and higher order services, as well as social problems (poverty, social exclusion and pathologies) persisting in isolated areas, cause growing depopulation, structural unemployment, and low economic and investment activity rates in considerable parts of Western Poland and Central Pomerania.

It is not only Szczecin, but also Gorzów Wielkopolski, Zielona Góra, Koszalin and Słupsk with populations from 90 to 130 thousand people, that have the potential to generate and diffuse growth in this part of Poland. However, opportunities are hindered by low quality transport and functional connections with major, more dynamic nodes of Poland's settlement network, such as Poznań, Wrocław, or TriCity. At the same time, geographic and functional closeness of Berlin and Scandinavian urban centres (in particular, Copenhagen) is not being used to increase the development potential. On the contrary, very often the closeness is perceived as a hazard causing drainage of resources. Development problems in Słupsk and Koszalin are aggravated by the cities' loss of administrative functions and big distance from current administrative centres (Szczecin and Gdańsk), as well as low quality of human capital. Consequently, the cities are not able to use their potential to play an important (national and regional) role in generating growth, creating jobs and diffusing development to adjacent areas.

The second major challenge of the National Spatial Development Policy in the context of cohesion is creating conditions to ensure functional cohesion between major cities and adjacent areas. Functional cohesion is intended to ensure diffusion of growth concentrated primarily in major cities. The most profitable and competitive businesses are concentrated in major cities. Major cities also fulfil basic economic, administrative, political and cultural functions for adjacent areas (sub-regional cities and rural areas).

Development of smaller cities and rural areas with lower development potential depends on their functional integration with major cities in the region, as well as their ability to use unique internal potentials to generate a territorial specialisation. The development of such rural areas is to a lesser and lesser extent dependent on farming specialisation. The dynamic process of abandonment of farming, whose intensity varies across the country, causes ownership transformation that leads to increased concentration and productivity in certain sectors of agriculture.

The degree and geographic scope of functional integration between cities and rural areas on the one hand, and major cities on the other, varies across the country. Analyses show, that a large portion of rural population (up to 20% of economically active people) in areas adjacent to major cities in Poland, and to a lesser extent areas adjacent to regional cities, find employment in those cities. The commute area is directly proportional to economic attractiveness of the urban centres – Warsaw agglomeration has the largest commute area. On the one hand, it results in increased income of urban populations in, and rural populations around major cities, and on the other it has a negative impact on the quality and local availability of basic public services that are decisive for development prospects. In consequence, without appropriate regional and spatial development policies, the areas are threatened by outflow of better qualified and economically active people.

The third challenge of the National Spatial Development Policy in the context of internal cohesion is the concentration of development problems in certain sub-regions and poviats that share a set of socio-economic features. Some of those areas are threatened by permanent marginalisation caused by loss of competitiveness and development opportunities.

In spite of nationwide economic growth, the areas do not offer favourable living conditions to their inhabitants, and development barriers prevent them from using their resources to boost competitiveness and innovation. In this situation there is a risk that in certain areas the spatial continuity of the settlement network will be broken, in particular due to local cities losing their functions, and due to depopulation of certain rural areas. The negative demographic balance accompanied by the loss of functions by small cities may lead to a disturbance in spatial and functional balance of the settlement system that will contribute to the emergence of depopulated areas.

The abovementioned group may include the following areas: a) areas with the worst availability of service; b) socially-, economically-, spatially- and environmentally-degraded areas; c) borderlands; d) areas with the worst transport accessibility to voivodeship capitals.

Re a) Accessibility and quality of public services determine development prospects of an areas (and, indirectly, of its inhabitants). Accessibility varies significantly across the country. Areas with the worst accessibility and quality of public services (demarcated on poviat level) form a mosaic. Across the country, such areas are usually located at a distance from development centres. Such areas are concentrated in certain rural and poorly urbanised areas in eastern, central and north-western parts of Poland. Poor access to basic public services, such as education (including pre-school education), medical care, public transport, municipal services and cultural services is a signal of low attractiveness for investors, economic problems and weakness of the basic urban network (local urban centres). This limits restructuring possibilities, also in adjacent rural areas. Lack of attractive jobs and opportunities to raise qualifications, that could improve inhabitants' mobility, results in lower income, lower living standards and increasing depopulation. An additional factor determining weakness of the settlement network and development prospects of rural areas is the poor accessibility to major cities in terms of access to good quality infrastructure and well-organised public transport systems.

Re b) As analyses demonstrate, negative socio-economic, spatial and environmental phenomena accumulate in urbanised areas, mainly post-industrial and post-military city districts and entire cities. It is caused by the loss of original functions of those areas, restructuring processes, physical degradation of buildings and changes in land use. Areas susceptible to socio-economic and spatial degradation processes include, primarily: old city centres; high-rise residential districts; post-industrial, post-military and post-railway areas in urbanised areas. The highest concentration of such problems, sometimes engulfing entire cities, or districts thereof, as well as economic zones outside of their administrative borders, occurs in Upper Silesia Agglomeration, Rybnik Agglomeration, areas (such as Wałbrzych) where mining was severely reduced or stopped altogether, and cities where certain industries collapsed (e.g. Radom, Łódź and Szczecin). Single degraded districts occur in all major cities, while single local urban centres affected by degradation processes are located mainly in Western Poland, Central Pomerania and Warmińsko-Mazurskie voivodeship.

Degradation of those areas is often the result of a long-term industrial use accompanied by the decline, or restructuring of traditional sectors of economy. The loss of cities' and city districts' original socio-economic functions leads to increasing degradation manifested by low entrepreneurship, unemployment, low quality infrastructure and intensified social problems due to depopulation and frequently occurring concentration of social pathologies and poverty.

Apart from abovementioned degraded city districts, Polish cities also feature environmentally degraded areas. Those are mainly post-industrial, post-military and post-railway areas that must undergo regeneration and be put to a new use. At present those areas are poorly integrated with the fabric of cities and their functional areas, but in the future may be transformed into coherent investment areas. Once revitalised, the areas will become an incentive for potential investors. A problem that may occur in the future is concentration of immigrants in centres of major cities.

Re c) Spatial planning in borderlands in Poland must be strengthened to enable the implementation of transport, telecommunications, environmental protection and flood prevention projects, and the establishment of functional areas of urban centres divided by the state border. Two different types of approach should be taken towards borderlands due to the different features of EU external and internal borders, as well as the specific nature of the maritime border. Eastern border of the EU is a spatial, economic and social barrier difficult to penetrate. Borderland development and exploiting the potential of the border depends mainly on the political situation in Poland's neighbouring countries in the east and their willingness to undertake economic, cultural and institutional cooperation. At present, there is little bilateral cooperation[80] in cross-border planning of development and development measures due to legal barriers (different development planning, institutional and economic systems).

Poland's entry into the Schengen zone did not contribute significantly to the intensification of development processes and cooperation between borderlands along borders with EU Member States. On the one hand, those areas are threatened by brain drain due to better accessibility of the Berlin metropolis and closeness of other centres in Germany that offer better living conditions. On the other hand, bad socio-economic situation in those areas is due to the weakness of the settlement network, poor accessibility of central regions of the country and insufficient institutional capacity of local and regional authorities. Consequently, western borderlands are characterised by high unemployment rate and increasing outflow of people to larger urban centres in Poland and abroad. Different administrative and planning systems, like in the case of the external EU border, is an obstacle to cooperation. There are but few cross-border cooperation projects within the framework of European Territorial Cooperation, and

[80] One of the tools supporting good governance programmes under European Territorial Cooperation is the INTERACT Programme. One of the Programme's intervention areas is cross-border cooperation between regions laying along the external EU border.

hardly ever do they involve topics other than culture, tourism and education. Their impact is too small to influence functional integration of areas on either side of state borders, not to mention exploiting joint development potential.

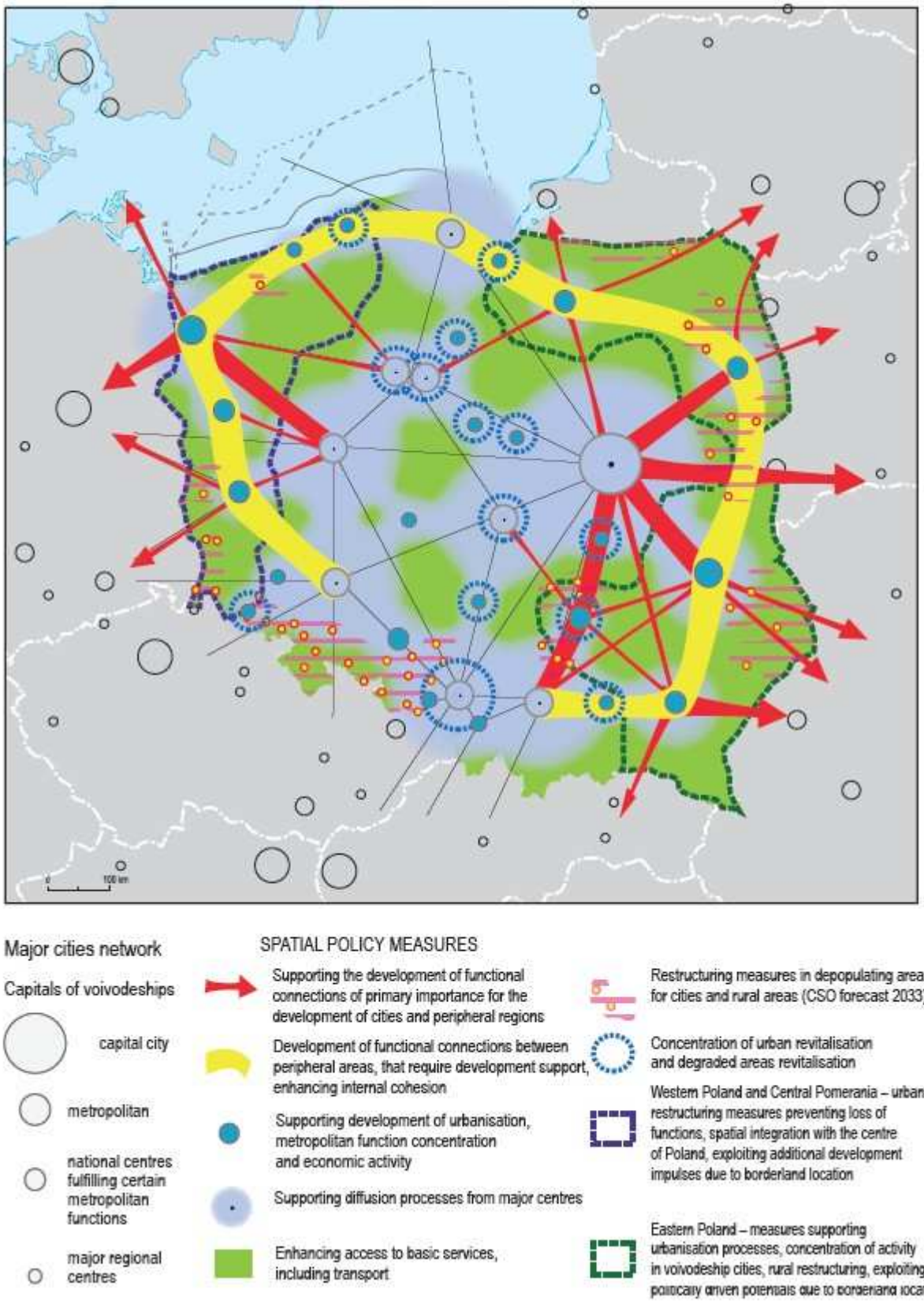
Re d) Problems of areas with the worst accessibility to voivodeship capitals were described under Objective 3. NSDC 2030.

(2) Outline of future actions

In order to ensure effective exploitation of the potential of entire Poland, the spatial development policy must aim to ensure territorial cohesion of the country in different spatial dimensions, using the emerging polycentric metropolitan network. Territorial cohesion is intended to enable the entire population to participate in the development process by ensuring access to good quality jobs and public services that are a precondition for development opportunities. This interpretation of territorial cohesion complies with the Position of the Government of Poland on the Green Paper[81] and Article 5 of the Constitution of the Republic of Poland.

[81] Position of the Government of the Republic of Poland on Communication from the Commission to the Council, the European Parliament, the Committee of the Regions and the European Economic and Social Committee. Green Paper on Territorial Cohesion. Turning territorial diversity into strength, COM (2008) 616.

Fig. 19. Outline of spatial policy actions to improve internal cohesion of Poland



Source: MRD.

Spatial policy measures intended to achieve the territorial cohesion objective include:

2.1. Supporting nationwide cohesion between: Central Pomerania – Western Poland – Central Poland – Eastern Poland;
2.2. Regional functional integration, supporting development diffusion to areas outside major cities and building territorial specialisation potential;
2.3. Supporting cohesion in problem areas.

An important measure to ensure cohesion is efforts to improve transport accessibility of, primarily, areas distant from voivodeship capitals and important socio-economic development centres (Fig. 19.). Those efforts were included in, and described under Objective 3.

Re 2.1. Supporting nationwide cohesion

Having regard to the history of the socio-economic structure, low development rate in terms of GDP, and the scale and scope of lack of cohesion, actions should be implemented in particular in Eastern Poland. Territorial impact of the current economic processes shows that in order to ensure nationwide cohesion, the spatial development policy must also take into the account issues of Central Pomerania and Western Poland.

In order to accelerate development and modernisation in both of the abovementioned regions, it is essential to take action to improve their functional integration with Central Poland and main development process focus areas, i.e.: polycentric network of major cities, strengthening functions of major urban centres in the area, supporting restructuring of economy and using specific internal potentials of those areas.

2.1.1. Development and on-going update of macro-regional strategies.

Complexity of factors influencing development process and the need to coordinate impacts to support the development of Eastern Poland, Western Poland and Central Pomerania force the national authorities (with local authorities, business and social partners) to develop macro-regional strategies[82]. Those strategies, including national measures, regional measures and cross-border impacts, could become a point of reference for the NSDC 2030 monitoring and evaluation system providing information on territorial cohesion that would go beyond differences in GDP, or unemployment rates.

2.1.2. Strengthening transport connections between Eastern Poland, Central Pomerania and Western Poland on the one hand, and Central Poland and the major city network on the other

Those areas should be quickly (by 2020) linked with the major growth centres in Poland. This should be achieved primarily by extending and modernising good quality road, rail and, where economically viable, air transport infrastructure. This will provide an opportunity to strengthen functional connections of those areas and will contribute to growth.

Intensification of connections between major urban centres in Poland and urban centres in the abovementioned areas in long-term perspective may have a significant impact on a more active development of smaller sub-regional and local cities, as well as rural areas.

Due to proximity of state border, it will also be important to develop connections between the abovementioned areas (first of all, between regional cities located in those regions) and ‚major urban centres on the other side of the border. In the context of advanced investment projects and economic trends in the functional integration process on the western and south-western borders, the most important target areas for the National Spatial Development Policy will be

[82] The binding strategy for Eastern Poland is the Socio-Economic Development Strategy for Eastern Poland, 2020 adopted by the government in December, 2008.

(depending on political developments) the Baltic Region, Lithuania, Ukraine, Kaliningrad Oblast and Belarus.

Supporting transport connections between the most important urban centres in Eastern Poland, Central Pomerania and Western Poland under present circumstances is less important, than building connections with major cities in Poland. Over the next twenty years, the development of such connections will be an important aspect of Poland's spatial integration preventing the establishment of the centre-peripheries model (see Fig. 19).

2.1.3. Encouraging the development of metropolitan functions in minor cities

In addition to actions under Objective 1., spatial policy will support metropolitan functions mainly through planning to encourage population concentration in minor urban centres. Regional policies dedicated to the development of metropolitan centres will involve supporting metropolitan functions of those centres, in particular economic functions and functions connected with access to higher level public services. The objective of those policies will be to enhance the importance and growth dynamics of the basic city network that is decisive for competitiveness of surrounding areas. Policies will involve: concentration of economic functions, development of human and social capital and supporting increased investment rate by building essential infrastructures. The abovementioned policies will enable the centres to play the role of growth engines and to a greater extent diffuse growth to adjacent rural areas and sub-regional centres.

2.1.4. Supporting urbanisation concentration in medium-sized, and certain small cities

The medium-sized and small cities network in the area needs spatial development policies to strengthen their human potential, to establish economic and service functions (e.g. by preparing investment sites), and to improve the quality of provision of public services.

This support is important due to a number of spatial connections between local urban centres and rural areas. A significant number of small cities has economic growth potential as local growth centres for adjacent rural areas. The development of local growth centres and of connections between those centres and rural areas may improve rural population's access to services and labour market and thus to contribute to an improved attractiveness of rural areas as a place to live, work, and run business. Therefore it is also necessary to ensure the development of transport infrastructure ensuring access to local growth centres.

Moreover, special attention should be paid to establishing groups of villages and small towns sharing the same development problems.

Due to the depopulation of significant parts of rural areas in Eastern Poland, it is in this region in particular where local centres, and accessibility thereof, should be strengthened.

The task of the spatial development policy in Central Pomerania, Western Poland and Warmińsko—Mazurskie Voivodeship is to support (due to relatively high urbanisation and low population density) restructuring of the socio-economic base and to optimise the provision of public services.

2.1.5. Supporting rural restructuring

Restructuring of rural areas, as a part of spatial development and regional policies, has major significance for Poland. It is essential to support, also locally – on gmina, poviat and sub-region levels, the growth potential of rural areas, and the extension of local labour markets' offer taking into the account local conditions. Rural areas fulfil a number of functions of primary significance to sustainable development of the country, in terms of production (agricultural and non-agricultural), consumption, provision of public goods, as a place of living, work and recreation of the majority of the society. At the same time, the majority of nature

conservation sites, as well as different types of economic activity, primarily farming, are located in rural areas. Therefore it is particularly important to support multi-functional development of rural areas using their endogenous potentials, as well as to use and reinforce effects of growth diffusion from urban centres.

It is necessary to facilitate rural population's adaptation to structural changes by using different potentials of rural areas (e.g. ecological and touristic potential, as well as the potential to generate energy using local resources) and by enhancing employment opportunities in more productive economy sectors. It will be induced by supporting the development of human resources, social capital and investments in technical infrastructure (for transport, telecommunications, low-voltage energy and environment protection) and social infrastructure. An important restructuring measure is to strengthen the role and quality of public institutions (including administration) that administer restructuring processes, prompt activity and build partnerships between social groups.

An important set of restructuring measures for those rural areas where farming remains the main function (e.g. due to environmental and cultural conditions) will be measures intended to increase productivity of agriculture, including concentration and further optimisation of food production, to organise agricultural markets, to support cooperation between farmers and to increase international sales.

Re 2.2. Regional functional integration, supporting development diffusion to areas outside major cities and building territorial specialisation potential

This objective aims to include the largest possible territories of all voivodeships in development processes by supporting regional integration processes around voivodeship cities and other major cities, building territorial sustainable development potential (readiness to absorb growth impulses), building conditions for growth diffusion to areas around major urban centres, and creating absorption capacities in smaller cities and rural areas. Where appropriate, territorial specialisation should be promoted (in tourism, environment, different industries and agriculture) to complement the income base of the region's population.

Voivodeship cities play the key role in regional integration. Those cities, concentrating administrative functions, the largest number of economic functions and provide higher order public services, are usually critical[83] for developing capacities of entire regions. The network of major cities will be the diffusion-stimulating basis. Those cities, in spite of different sizes and impact scale, will ensure spatial stability in Poland.

2.2.1. Increasing internal transport accessibility in regions

Growth generated by voivodeship cities will be conveyed to other urban centres and rural areas by means of modernised transport infrastructure, as well as by the introduction of integrated sustainable development plans for public transport. It will significantly improve access to major cities from adjacent areas. Thus, functional integration between urban centres and minor cities and rural areas will be intensified. Those processes will be additionally strengthened by extending public transport systems in functional areas of voivodeship cities. Infrastructure access improvement is covered by Objective 3. (Chapter V.).

2.2.2. Supporting growth in sub-regional centres

Sub-regional centres often play a very important role for the development of rural areas, mainly as catalysts that encourage the development of non-agricultural functions and as incubators of activities mobilising adjacent areas. Apart from supporting medium-level service

[83] Except when the size and the economic potential of those cities is too small for them to play a significant role in regional development processes. It is the case in majority of voivodeship cities of Eastern Poland, Central Pomerania and Western Poland, as well as in Opole.

functions, sub-regional and local centres will be strengthened by the improvement of access to major urban centres. It will create conditions for adjacent rural populations to intensify their spatial and occupational mobility contributing to better quality of living based on better access to higher level public services and more attractive jobs.

2.2.3. Spatial and functional integration of rural areas

Spatial policy in rural areas will aim to mobilise existing development potentials in order to improve competitiveness of those areas as a place of living, work, leisure, running business and improving living conditions for local people. In order to ensure well-balanced development of rural areas it is necessary to protect and use their environmental, landscape and cultural potentials, to improve the quality and accessibility of public services, to strengthen local communities, to create conditions for business development that will facilitate non-agricultural income sources. Rural areas will become a more attractive place of living, leisure and work.

Support for development processes in rural areas will allow for territorial differences, including the location of rural areas in relation to major development centres and will focus, in particular, on:

- increasing employment opportunities by enhancing occupational and spatial mobility,
- ensuring the development of infrastructure and improving public transport,
- supporting poviat cities and other local cities stimulating local development,
- creating conditions for enhancing non-agricultural investments.

One of the prerequisites of economic activity and a factor decisive for the quality of living is the availability of appropriate local energy infrastructure. Energy infrastructure in rural areas, electric power transmission grids, distribution grids, and links between regional electrical grids will be modernise also to accelerate growth of renewable energy.

Ensuring access to high-quality educational services, from nursery schools for children up to 3 years of age and pre-schools for older children, is particularly important for increasing occupational mobility of rural populations. Therefore it is necessary to take vigorous action to modernise and develop broadly understood educational infrastructure, and to create and modernise infrastructure for incubating social and civic projects. It is also essential to ensure access to high-quality services allowing the rural population to improve their knowledge, skills and to mobilise.

Increased non-agricultural investments in rural areas will be aided by: business environment institutions, including advisory institutions; entrepreneurship incubators; industrial parks; legal solutions facilitating running business complementary to farming and record keeping for such businesses; increased availability of external capital; support for social economy; and networking

In order to increase spatial mobility of rural populations it is necessary to coordinate regional, poviat and gmina transport infrastructure development plans; maintain existing and create new railway connections (between poviats in a voivodeship, or between poviats and the closest metropolitan centre); strengthen regional and local bus transport to connect metropolitan areas with adjacent rural areas. It is necessary to take action to build and develop direct local connections, strengthen passenger transport to railway lines, and to support integration of tariffs and ticketing systems between regional railways and public transport. Also, it is necessary to establish connections between the local road network and the network of national roads, express ways and motorways. Support must also be given to building new and extending existing intermodal transfer nodes in rural areas based on building and extending integrated local and regional passenger transport infrastructure.

Infrastructural measures to increase spatial accessibility will be accompanied by complementary measures to extend broadband internet network in order to ensure equal opportunities in education, facilitate economic activity and telework.

In the case of **rural areas under the influence of a large urban centre** it is essential to develop endogenous potential of the area, to remove transport (accessibility) barriers, and to strengthen diffusion of development processes from major urban centres to those areas. Instruments of development diffusion that will be stronger in the proximity of economic development centres and weaker with distance are as follows:

- development of the transport network between urban centres and rural areas, including building and extension of intermodal transfer nodes that will improve pendular spatial mobility of rural populations,
- improving attractiveness of rural areas as the location of investments, in particular by coordinating local and regional infrastructural investments with the construction of the road network,
- improving the quality of public services and accessibility thereof (located in rural areas and different types of cities), in particular ensuring equal opportunities in education by ensuring availability of high-quality educational services for rural populations.

Increased accessibility of poviat, sub-regional and regional cities from rural areas will ensure better access to labour markets and to medium-, and higher order public services. Necessary actions will include modernising and supplementing the road network in rural areas and developing integrated public transport between cities and the countryside. Improved spatial accessibility of cities will improve networking, cooperation, and know-how exchange opportunities to propagate good practices and improve diffusion of development.

Support for rural areas with the poorest access to goods and services that are prerequisites of development was discussed in section 2.3.1.

As regards **rural areas whose development processes need support**, the key role will be played by the exploitation of their endogenous potential and removal of transport and communication barriers (transport and ICT networks). In those areas, local development measures will be particularly important. Those measures will support the development of local cities and improve employment opportunities other than agriculture, including teleworking.

Where such measures are deemed essential at the national level (e.g. due to the scale of the problem or inadequate budgets of gminas), over the next few years the spatial and regional policies should continue to support the extension of the water supply and sewer network and other environmental protection infrastructures (outline of future actions was described in the discussion on spatial policy for Eastern Poland, Central Pomerania and Western Poland).

In the case of administrative rural areas subjected to urbanisation pressure **situated within the range of functional urban areas** it is essential to develop transport links, public services networks and economic cooperation within functional areas around major cities. However, environmental, landscape and cultural features, as well as local community fabric characteristic for rural areas should be preserved.

It is necessary to counteract negative effects of rurbanisation, i.e. loss of characteristic rural features, and generating additional costs of investments in transport, telecommunications, social and cultural infrastructures. Spatial planning in rural areas should preserve the best traditional housing patterns. It should also prevent excessive scattering of houses, establishing of densely populated areas, decrease energy consumption of structures created in course of rurbanisation. Spatial planning should also allow for transport network connection needs, both local and with major urban centres.

2.2.4. Supporting territorial specialisation development

In order to support economic growth, including higher income and better living standard in individual regions, it is important to support territorial specialisation in farming, industry, maritime economy and specialised services (e.g. tourism, spa, recreation) based on an area's internal potential. Spatial policy will support concentration of socio-economic functions (territorial specialisation) by means of planning instruments (demarcation of the areas and defining their development conditions), and investment projects under regional and sectoral policies. In particular, it is desirable to use more actively existing instruments to support the development of new investments (including infrastructural investments). Those instruments involve preferences for areas with high unemployment consisting of more lenient criteria for demarcating zones and allocating state budget grants[84]. Local authorities should play an important role in using those instruments, i.e. selecting intervention areas that will be included into special economic zones, providing broadly understood promotion, and creating legal and technical conditions facilitating new investments. An important role in mobilising rural areas and supporting rural labour resources may also be played by creating clusters. Clusters in Poland include not only high-tech companies, but primarily companies representing traditional industries, e.g. food industry that is important for farming activity. Groupings of traditional industries often occur in rural areas at a distance from large urban centres. An opportunity for rural areas that need development support is future cross-border cooperation with similar clusters in neighbouring countries, e.g. under Eastern Partnership.

Another important aspect of spatial policy in rural areas where agricultural functions persist is to use those areas to secure optimised, long-term strategic interests of the national food policy. Soil protection zones should be demarcated to protect the agricultural use of land. Rules should be developed and implemented to protect those zones against conflicting functions, such as non-agricultural housing, mining and production of plants intended for RES. The best agricultural and forest soils will be better protected against non-agricultural and non-forestry uses. Detailed recommendations will be included in documentation of voivodeship spatial development plans.

A development opportunity for many rural areas is to specialise by exploiting their cultural heritage, environmental and landscape resources. Ecological functions of rural areas will be strengthened by afforestation of disused farmland, restitution of hydrological conditions, inclusion of certain farmlands into the system of ecological corridors (Objective 4.) and preservation of appropriate proportion of open land. Additionally, their functional space management will be strengthened by establishing new structures with high landscape and environmental value, protecting and revitalising existing heritage buildings and ruralist complexes. Rural landscape protection standards will be developed and implemented. Those standards will also demarcate areas where farming practices protecting traditional rural landscape will be supported. On the governmental level, programmes will be prepared to support the development of ecological plant and animal production.

Re 2.3. Supporting cohesion in specific problem areas

2.3.1. Support for rural areas with the poorest access to goods and services that are prerequisites of development

Functional and spatial connection of those areas to the network of major urban centres can be ensured by providing inhabitants of all areas - regardless of their location - with access to basic

[84] Such as the support programme for investments important to the economy of Poland 2011-2020, as well as special economic zones operating within the current regulatory framework by 2020.

services in the vicinity of their places of residence (up to 30 minutes travel time), as well as with access to higher level services situated in the main urban centres (1.5 hours travel time). Areas with weak access to public services are situated in various parts of Poland – primarily at a considerable distance from regional centres. Their largest concentrations can be found in Western Poland, Central Pomerania and several other areas in Eastern Poland (Fig. 20.).

The inhabitants of the above-mentioned areas are deprived of the access to basic public services that ensure participation in the present-day development processes. Economic development in those areas needs to be supported by provision of the basic services that are necessary for the development and modernisation of education, health, sport and tourism, transport, water and sewage infrastructure, and culture services, as well as by improving the quality of those services. Spatial policy aims at ensuring a uniform accessibility standard for services that are of primary significance to development processes across the country. To this end, standards will be developed on the national level for all of the abovementioned thematic areas (starting with education, health, public transport, public utility services – including environmental protection services – and culture). Analyses have shown that, depending on the initial situation in individual areas, the demand for the provision and improvement of the quality of specific services can vary significantly. The national spatial development policy will identify such areas (works on regional strategies and land development plans are in progress) on the local level (the level at which numerous basic services are supplied). Subsequently, the programmes will be implemented by means of regional policy instruments and coordination systems (the new territorial contract described in NRDS).

In order to improve access to services, especially administrative and social services, it will be necessary to take measures to increase the administrative capacity for the management of development on the local level. The quality of public institutions will be improved by transferring the best practices and experiences in managing local development and resources in those areas.

2.3.2. Restructuring and revitalisation of degraded areas and cities

Spatial policies in degraded urban areas are aimed at reinstating their administrative, social and economic functions and at creating favourable conditions to reuse them through correlated interventions in the field of spatial planning, infrastructural investments, human resources and entrepreneurship. Restructuring and revitalisation measures will lead to the regeneration an area or city, restoration of favourable living, business and investment conditions using existing cultural potential, and preservation of symbolic and ecological functions in course of adaptation to new functions.

In order for restructuring and revitalisation to be correct, it is necessary to introduce an obligation for restructuring and revitalisation programmes to comply with regulations, planning documents and regional documents. Thus coordination of planning, as well as integrated approach to issues of revitalised areas will be ensured at all planning levels. It will be achieved by preparing laws and guidelines enabling integration and monitoring of comprehensive revitalisation and restructuring projects in urban and degraded areas.

On the regional level, degraded urban, post-industrial, post-military and post-mining areas should be identified. Their functional quality should be verified. Next, voivodeship spatial development plans should demarcate areas that should be covered by comprehensive (local) revitalisation/restructuring programmes and regional investment programmes compliant with city development strategies (including measures for both degraded and well-developing areas) and voivodeship development strategies. Preparation of local revitalisation programmes will be a key prerequisite of investment projects set out in regional development strategies. Moreover, the local level will be responsible for putting legal status of urban real estate in order

(regulations concerning restitution of property and estate claims). Comprehensive local revitalisation programmes should include technical, spatial, social, cultural, economic and environmental priorities. Apart from improving the condition of residential and public buildings, programmes should also protect cultural heritage, ensure high-quality public space, improve public transport, support integration of residents in revitalised areas, reinstate or establish environmental functions, and promote sustainable development.

To complement the abovementioned national regional development programmes, multi-annual investment projects are possible (initially as pilot projects). Those projects will, first of all, be aimed at degraded areas affected by the most serious problems, primarily in the Upper Silesia Agglomeration. Apart from spatial and socio-economic revitalisation measures in urban areas, there will be measures to amend soil in post-industrial areas. Amended post-industrial areas will change their functions in line with local development strategies.

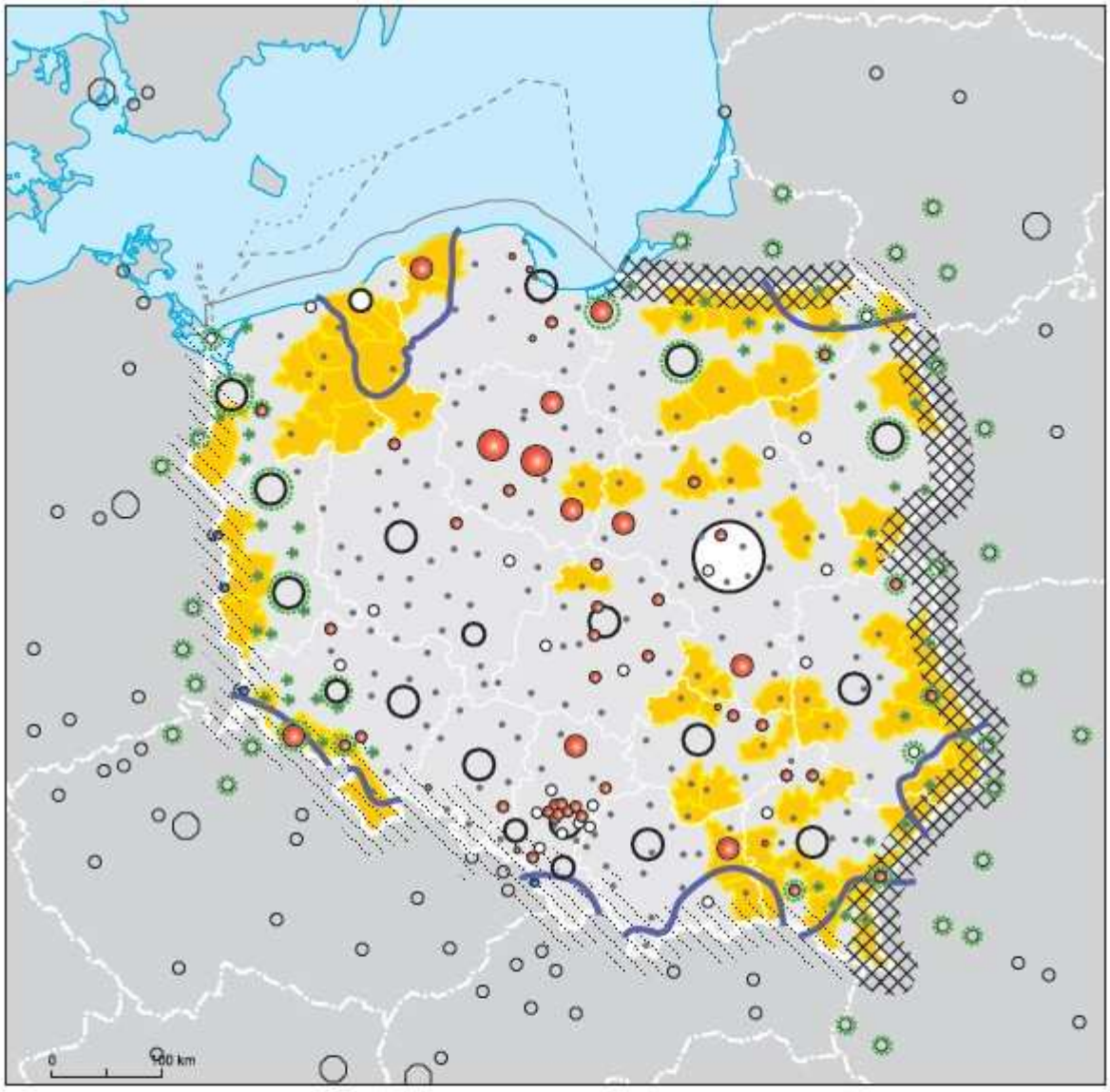
2.3.3. Strengthening integration of borderlands

The task of the national spatial development policy is to support integration of borderlands with major economic centres by ensuring the development of functional connections on both sides of the border. Due to political reasons, the situation of EU external borderlands is more difficult than the situation of EU internal borderlands and requires a different approach to be adopted.

In order to solve borderland problems, integrated actions are required at all planning levels, including tools provided by regional and spatial policies. Specific measures should be applied after an identification of problems taking into account potential impacts in areas on both sides of the border. In order to implement integrated measures with potential cross-border impact, eight[85] socio-economic and spatial development strategies will be prepared for all borderlands in Poland (on the NUTS 2 level) covering territories on both sides of the border.

[85] List of development strategies for areas around Poland includes: The Baltic Sea, Kaliningrad Oblast, Lithuania, Belarus, Ukraine, Slovakia, Czech Republic and Germany.

Fig. 20. Areas where restructuring and development of new functions is necessary



Source: MRD.

Those macro-regional strategies (covering areas in Poland and on the other side of the border) will be prepared on the national level in cooperation with local authorities, socio-economic partners and in communication with neighbouring countries. The strategies would become a foundation of territorial cooperation for the development of borderlands that would also include planning of EU-funded cross-border cooperation programmes.

Actions will be taken to coordinate environmental protection programmes in national parks, landscape parks and other protected and environmentally valuable areas, in particular Natura 2000 sites, on both sides of the border. Support will be given to scientific studies aimed at creating joined protection strategies and plans, as well as hard and soft projects to strengthen environmental potential in those areas.

a) EU internal borderlands will develop by diffusion of development from major urban centres on both sides of the border. Those areas will also take advantage of intensified integration between Poland and EU Member States, in particular Germany and Czech Republic. An additional factor will be the cross-border cooperation of cities and rural areas between Poland on the one hand, and Slovakia, Czech Republic, Germany and Lithuania, on the other. In the future it will contribute to the establishment of cross-border functional areas (first of all on the border with Germany, Czech Republic and a part of Slovakia). Additionally, the development of those areas will be enhanced by better accessibility of the centre of Poland and international destinations via modernised and extended transport infrastructure.

Another important development factor will be cross-border development plans for the following sub-regional and local urban centres, and their regions, divided by the state border: Frankfurt – Słubice, Guben – Gubin, Görlitz – Zgorzelec and Český Těšin – Cieszyn. In the future, integrated approach to spatial and socio-economic planning will result in joint human capital and infrastructure projects that will fill in gaps in transport and technical networks. It will also help to solve problems with cross-border water resources management (river Odra). Functional integration of urban centres divided by the border with their adjacent areas will be also supported by the establishment of a joint public transport network that will contribute to strengthening of movement of resources, goods and services between neighbouring cities and their functional areas.

A complementary measure supporting areas divided by the state border will be the strengthening of the strategic dimension of the development policy. It will consist of creating coordination and cooperation mechanisms in the multi-tiered governance system on the sub-regional and local levels. The measure will be used to build development management capacities in the field of borderland cooperation. Public institutions will establish a cooperation platform with non-public bodies in order to use communication channels and implement development programmes.

b) EU external borderlands will receive more – in comparison with internal borderlands – support, because external borderlands are also among the poorest regions located at a significant distance from major socio-economic centres in Poland. Increased importance of regional centres in Eastern Poland located close to the external EU border, such as Lublin, Białystok, Olsztyn and Rzeszów, will contribute to enhanced opportunities of those areas and more intensive diffusion of development to borderlands. Another important development condition for borderlands is the improved accessibility of the centre of Poland and international destinations. This factor will be influenced by political conditions and the resultant border procedures (visa, customs, phytosanitary and veterinary checks, etc.).

Spatial development policies will strengthen sub-regional and local centres in EU external borderlands by:

- transferring benefits of development diffusion from major regional centres to the following sub-regional cities: Elbląg, Ełk, Suwałki, Biała Podlaska, Chełm, Zamość, Przemyśl; strengthening of those cities will be facilitated by improved access to medium- and higher order public services, in particular education and healthcare,
- supporting new business investment projects,
- placing in those cities important institutions dealing with bilateral and European cross-border cooperation,
- placing in those cities important regional public governance functions,
- improving quality of secondary and higher education in fields complementary to the development of neighbouring countries,
- joint hard and soft culture, spa tourism and recreational tourism projects.

Developing cooperation between twin cities located in EU external borderlands, such as Terespol – Brest, and gaining development stimuli from international growth centres will be one of the most important elements of borderland cooperation that will contribute to the development of those areas. The cooperation should consist of coordination of actions to ensure complementarity of basic and specialised public services offered on both sides of the border.

Openness and accessibility of the EU external border will be improved by building new and modernising existing border crossings and simplifying visa procedures.

Institutional support for cross-border cooperation on the national, regional and local levels will consist of strengthening cross-border cooperation in spatial and socio-economic planning by developing documents and procedures that will ensure integrated planning of environmental protection, water management and extension of cross-border infrastructure. Additionally, necessary national laws will be amended, in line with EU regulations, to solve cross-border problems with water resources, to simplify administrative procedures for crossing the border, and to improve permeability of the border.

Objective 3. To improve Poland's connectivity at many levels by developing transport and telecommunications infrastructure.

(1) Description of the problem

Mutual connectivity between major cities in Poland in the second half of the 20th century proved to be inadequate to the needs of the market economy. At the same time, transport networks (road network, railway network and waterway network, e.g. Odra Waterway) became quickly decapitalised. Consequently, regional differences became more severe and certain regions became less accessible from other parts of Poland (Western Poland with Wrocław and Szczecin, South-East Poland with Rzeszów) and from Europe (east of Poland, tourist regions of Masuria and the Carpathians). There is a set of areas whose extremely poor spatial cohesion with the rest of the country became established, e.g. Kłodzko Valley, Usedom island, Bieszczady Mountains, Central Pomerania and northern Masuria. Bad technical condition and underdevelopment of second degree land infrastructure (voivodeship roads, regional railway lines) became one of the reasons for poor access to public services located in voivodeship, sub-regional and, in certain regions, poviat cities.

At the same time, in the context of lack of new investments and after a transitional economic slowdown at the beginning of 1990's, the daily mobility of the population increased. It was accompanied by a significant increase in movement of goods and road transport (including certain transit routes). The traffic generates significant costs, mainly resulting from the burden on the natural environment (including CO_2 emissions and division of the natural environment), overuse of roads and road accidents. At the same time, railways proved to be less economically competitive, and less logistically, technically and institutionally prepared to serve as an alternative, more environmentally-friendly mode of transport. Each mode of transport was developing independently. This led to near lack of multimodal solutions.

Investment slowdown in transport during the pre-accession transformation had strong institutional background. It was a result of a disturbance in the hierarchy, and inertia of spatial planning, detachment of the transport policy from the fiscal policy, delays in restructuring of state-owned transport companies and legal deficiencies. In spite of a significant change of external circumstances, transport network development plans formulated in the era of centrally planned economy remained in force. A mosaic network model was adopted in planning. The result is not only actual, but also forecasted lack of mutual connections between certain major urban centres and poor diagonal European connections (mainly from north-east to south west). Additionally, the country capital was marginalised in the target transport model. The initial transformation period was also characterised by a rapid decline of transhipment in Polish sea ports caused by their poor accessibility in comparison with ports in the Atlantic and competition from road transport. After 2000 the situation improved. Water transport adjusted to new economic and geopolitical conditions. Baltic Sea transport gained more significance, including container transhipment and ferry connections. Sea ports, however, are still poorly accessible from the nearest dynamic national economic centres (Warsaw and Poznań).

Due to: liberalisation of air transport, and consequently increased competition; intensified economic contacts with EU Member States, including increased temporary migrations; and increased prosperity of the society, and consequently increased tourist traffic, in particular in the last decade, the number of air transport passengers went up significantly. Air traffic grew over 2,5-fold since Poland's accession to the EU. This growth resulted in lack of throughput in Poland's airports. However, in spite of significant development of regional airports (with the exception of Warsaw) and better access to those airports (in particular in Eastern Poland, where road and railway access to existing airports improved), the majority of airports is still poorly linked with the transport network, in particular the railway network.

Transport problems are currently one of the main development barriers in functional areas of major and medium-sized urban centres. Transport problems significantly limit the spatial extension of labour markets, and indirectly, due to lack of public transport solutions, contribute to uncontrolled suburbanisation. The system transformation period started the spiral of increasing congestion of the road system accompanied by declining public transport service standard.

The rapid development of telecommunications in Poland involved primarily the development of mobile telephony infrastructure, and in urban areas also the development of cable television. Lack of wireless networks, due to previous negligence, limited access to broadband internet, first of all in rural areas. It results in much smaller development opportunities and difficulties in obtaining higher qualifications that are particularly significant for creating jobs outside of agriculture. There are regional differences in this respect (e.g. in Northern Poland internet access is better than in Eastern Poland).

The abovementioned negative characteristics of the transport system and telecommunications development became, to a certain degree, established in investment priorities of the first EU funding periods (2004-2006 and 2007-2013). Planned investments in transport are still very often detached and to a small degree (in accordance with the new spatial and regional policy paradigm) exploit all development potentials of areas across Poland. Therefore, even if operation programmes will be fully implemented, spatial accessibility of many areas and regions in the years 2013-2015 will still be poor. Railways (in spite of absorbing large amounts of aid) will not increase its market share in cargo and passenger transport in this financial perspective.

In spite of the abovementioned difficulties, since 2008 a number of transport investment projects were completed:
As regards railways, projects from the previous perspective of the Sectoral Operational Programme Transport (SPOT) were being finalised. The following lines were modernised:

- Warsaw – Łódź Fabryczna. Stage I – section Skierniewice – Łódź Widzew,
- no. 8. Stage I: section Warszawa Zachodnia – Warszawa Okęcie and construction of the link Warszawa Służewiec – Lotnisko Okęcie, Phase 1: Development of project documentation,
- no. 8 Stage II: section Warszawa Okęcie – Radom – Kielce, Phase 1: development of documentation.

Also, projects funded by the Cohesion Fund were implemented, e.g. modernisation of the following railway lines:

- E 59, section Wrocław - Poznań, stage I,
- C-E 59, section Międzylesie – Szczecin, development of the pre-project documentation,
- E 30, section Węgliniec – Zgorzelec and Węgliniec – Bielawa Dolna,
- E 20, section Siedlce – Terespol, stage I,
- E 65, section Warsaw – Gdynia, stage I,
- E 30, section Węgliniec – Legnica.

Railway network modernisation process was intensive and included preparatory work under Operational Programme Infrastructure and Environment. The following railway line modernisation projects were launched:

- E 65/C-E 65, section Warsaw – Gdynia, LCS Gdańsk and LCS Gdynia,
- E 65/C-E 65, section Warsaw – Gdynia, LCS Ciechanów,
- Warsaw – Łódź, stage II, lot A – section Warszawa Zachodnia – Miedniewice (Skierniewice),

- E 59, section Wrocław – Poznań, stage II, section Wrocław – border of Dolnośląskie Voivodeship,
- Warsaw - Łódź, stage II, lot A – section Warszawa Zachodnia – Miedniewice (Skierniewice),
- no. 8, construction of the link to Okęcie Airport (from passenger station Służewiec to the station MPL Okęcie).

Moreover, using the available EU funding (under OPIE), as well as contribution from the state budget and the Railway Fund, it is planned to achieve the following objectives in the basic network: increase and number and length of sections with maximum velocity of 160 km/h; increase the number of grade separated road-railway intersections; and increase the maximum axle load to 221 kN.

Territorial accessibility of Poland, since 2007, was being improved by means of the multi-annual programme *National Road Construction Programme*[86]. Under the programme it is planned to build a network of efficient motorways, expressways and national roads, refurbish the existing ones, and improve their standard by changing their technical parameters. As a result of the programme, after 2008 many investment projects were completed and a number of new sections of national roads were brought into service.

In total, 1554 km of new national roads were built, including: 404 km of motorways (built as 15 separate projects), 459 km of expressways (39 projects), 153 km of bypasses (27 projects); also, 546 km of national roads were rebuilt (37 projects).The most important motorway projects brought into service were as follows:

- A1 section Gdańsk (Dusocin) – Toruń (Czerniewice); total length: 152.4 km; a Public – Private Partnership projects,
- A2 section Nowy Tomyśl – Świecko; length: 15.9; a PPP project,
- A4 section Zgorzelec – Krzyżowa; length: 51.4 km,
- Motorway Bypass of Wrocław A8; total length: 35.5 km.

The most important expressway projects were as follows:

- S3 section Szczecin – Gorzów Wielkopolski; total length: 81.6 km,
- Bypasses of Nowa Sól and Gorzów Wielkopolski as a part of S3 expressway; total length: 24.4 km,
- S7 from the beginning of Grójec bypass to Jedlińsk; total length: 41.8 km,
- S8 section Radzymin – Wyszków, including bypass of Wyszków; total length: 29.8 km,
- S8 in Warsaw from Konotopa junction to Powązkowska street; total length: 10.4 km,
- S22 section Elbląg – Grzechotki; length: 51.5 km.

At the same time, a number of bypass projects were completed along national roads, including bypasses of: Krośniewice, Ropczyce, Wasilkowo, Koźle (stage I), Lubliniec, Mszczonów, Mrągowo, Serock, Jabłonna, Gołdap, Kraśnik and Siewierz. In total, since 2008 27 bypass projects were completed placing transit traffic outside of cities and towns. It improved road safety.

On the other hand, existing financing sources of air traffic infrastructure and services in airports with low air traffic density proved to be insufficient. Consequently, costs incurred by air transport companies in all airports in Poland increased. In spite of investments in telecommunications

[86] In the period 2007 – 2010 the National Roads Construction Programme 2008 – 2012 was being implemented (adopted by way of a resolution of the Council of Ministers of 25th September 2007), while on 25th January 2011 the National Roads Construction Programme 2011 – 2015, a continuation of the previous multiannual programme, was launched. The main goal of those programmes is to create a national road network with much improved parameters, including building the backbone network of high-capacity roads that will ensure connections between major economic centres in Poland. As a result of the investment plan and preventive measures, road safety will be much improved as well.

networks planned in the near future, broadband internet access rate in Poland still falls behind the European average.

(2) Outline of future actions

As regards the transport system, the National Spatial Development Policy will aim, first of all, to improve territorial accessibility of Poland at different spatial levels. This objective will be implemented by ensuring alignment of transport investment priorities in medium-, and long-term strategic documents and EU guidelines on Trans-European Transport Network. Priority will be given to transport projects intended to improve internal and external accessibility of Poland. The projects will generate an added value by ensuring a coherent, sustainable transport system. In the context of ensuring cohesion between Central Poland on the one hand, and Western Poland, Central Pomerania and Eastern Poland on the other, it will be important to enhance infrastructural links between urban centres located at a larger distance from major socio-economic centres in Poland and cities forming the polycentric metropolis network.

Land and water investments intended to improve access to Poland from other European countries will also receive high priority. Transit projects, in particular road transit projects, will not be a priority for the spatial policy's accessibility component. As regards cities located at a larger distance from major socio-economic centres, connections between those cities and the major city network will have a higher rank, than links between those cities.

In order to enhance development diffusion processes, at the national level support will be given (in addition to regional measures) to certain investment and organisational projects to improve access (also by public transport) to major cities that form nodes of the emerging metropolis network from adjacent areas – sub-regional public service centres and rural areas. It will generate new investment and income opportunities for local people. National measures will also include the extension and modernisation of access routes to geographically remote areas, including borderlands, from socio-economic centres.

The second key direction of the policy will be to attempt to minimise external transport costs. It will be achieved by technological changes, institutional (including organisational and fiscal) changes and investments, in particular in alternative modes of transport. Transport market segments predestined to increase the share of railway and waterway transport will be defined. The share and role of railway transport should be increased gradually starting in 2015, when motorway and expressway networks will be significantly advanced. In passenger transport, priority will be given to:

a. connections between major urban centres (including international connections) accompanied by high-standard railway service,
b. commuter lines in metropolitan areas and certain medium-sized urban centres integrated with public transport systems.

In cargo transport, support will be given to modernisation and construction of infrastructure enabling intermodal transport (including intermodal centres and terminals) and bulk transport between metropolitan areas, border crossings, sea ports and other key economic centres. As regards inland waterway navigation (Fig. 9.), priority will be given to the modernisation of the Odra Waterway. In maritime navigation, priority will be given to investments in improving access to terminals of Polish sea ports of key significance for the economy (Szczecin, Świnoujście, Gdańsk and Gdynia) and to auxiliary ports, such as Elbląg, in particular from land using inland waterways.

Investments in railway and waterway transport will have to be large enough to ensure competitiveness of these modes of transport in comparison with road transport. This means that new investment projects will have to feature state-of-the-art technologies. Due to the scope of

investment projects, railway transport policy will have to extend beyond 2030 horizon. Moreover, development of different modes of transport will be aided by: introduction of the road pricing system and administrative preferences for intermodal solutions.

The third set of measures will be aimed at integration in telecommunications, primarily by supporting the development of ICT networks in rural areas and preventing digital exclusion of social groups and regions. Telecommunications infrastructure development will be based on private investments. However, private investors will be supported by regional institutional measures. Public support for the development of telecommunications infrastructure will be correlated with territorial cohesion measures (described under Objective 2.) intended to ensure access to basic public services and goods that are prerequisites of development for rural populations. Taking into the account measures to enhance spatial structure's resistance to natural calamities and loss of energy security, and to develop spatial structures supporting national defence capabilities (described under Objective 5.), actions will be taken to integrate the development of technical infrastructure, in particular telecommunications infrastructure, with the development of energy infrastructure, water and sewage infrastructure, and transport infrastructure. Thus, synergy and cohesion of spatial policy will be ensured. It is necessary for the development of fast and capacious telecommunications networks available to all people, regardless of their place of residence[87].

Spatial policies to ensure transport and telecommunications accessibility will be implemented by means of the following measures:

3.1. Improving access to cities and regions in Poland,
3.2. Decreasing external transport costs,
3.3. Improving telecommunications accessibility,
3.4. Strategic management and implementation of investment projects in stages.

[87] Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions. A Digital Agenda for Europe KOM (2010) 245.

Re. 3.1. Improving access to cities and regions in Poland

3.1.1. Improving mutual accessibility of major urban areas

This objective will be achieved by improving mutual time accessibility of those urban centres (voivodeship cities and other regional cities) where the accessibility is the poorest (at present and after the completion of current projects), and at the same time where it is the most desired for socio-economic and spatial development of Poland. Access to Warsaw from: Wrocław, Szczecin, Rzeszów and Lublin must be improved, as well as connections between: Warsaw and Białystok, Gdańsk and Szczecin, Wrocław and Poznań, Gdańsk and Poznań, Warsaw and Bydgoszcz (Fig. 23. and 26.).

Additional investment effort must focus on the further improvement of accessibility within the integrating bipolar and multi-polar systems, such as Warsaw – Łódź, Bydgoszcz – Toruń, and Upper Silesia Agglomeration – Kraków – Częstochowa – Bielsko-Biała. All those measures will involve, *inter alia*, filling in gaps in the target grade separated road network (motorways and expressways), changing the hierarchy of priorities in certain road projects, laying foundations for the target high-speed rail system, modernising certain key railway connections by improving travelling standard and increasing travel speed to 200-230 km/h, as well as modernising the existing railway system to significantly shorten travel time between urban centres (by achieving average speed of 120-160 km/h) on the following (and other) lines: Warsaw – Lublin (– Kiev), Warsaw – Białystok – Ełk (– Kowno), Szczecin – Tricity, Olsztyn – Iława – Toruń – Poznań, Szczecin – Poznań, Radom – Kielce – Cracow.

An important infrastructural investment priority is to increase the role of major urban centres by building complete ring roads and to increase the number of bridges on Vistula (Nowy Korczyn, Połaniec) and other major rivers.

3.1.2. Improving access to cities and regions in Poland in the European context

To ensure full socio-economic development of Poland, access to cities, sea ports and areas remote from socio-economic centres in Poland it will be important to strengthen the integration of the Polish transport system with the Trans-European Transport Network both vertically and horizontally. Measures to this end will include raising the rank and priority of road and railway projects along the following routes: Wrocław – Prague, Lublin – Lviv, Lublin – Kiev, Warsaw – Łomża – Ełk – Kaunas (*Via Baltica*), Warsaw – Białystok – Minsk – Moscow , Warsaw – Minsk, Rzeszów – Košice, Wrocław – Brno – Vienna (Fig. 21.). This objective will be achieved by launching civilian airports in Eastern Poland (first, in Lublin and Szymany and later in Białystok). Depending on economic viability analysis results, airports may also be opened in Kielce and Koszalin. In order to facilitate the development of air transport in those regions, a funding solution must be found to finance air transport infrastructure and ground services from regional funds, should it not be possible to cover the cost from fees paid by transport companies. All existing and planned airports will be serviced by rail. The question of location and possible construction of a central intercontinental airport in Poland is still open. Modernisation of infrastructure of, and improving access to sea ports (terminals) will improve spatial access to major port cities in the entire Baltic Sea region.

3.1.3. Improving access to sub-regional centres and rural areas

This objective will focus on improving access to concentration places of public services at different levels and integrating labour markets of major urban centres and adjacent regions. It will mean priority for road and rail projects connecting major cities with sub-regional centres and the most important poviat centres.

It will ensure sub-regional centres and rural areas access to larger cities, i.e. innovation centres, science and knowledge centres, labour markets, education, healthcare, etc. It is also a prerequisite

of innovation diffusion to other areas. The access will enable pendular mobility of rural populations and will contribute to the increased employment. Accessibility is also a condition of intensive exploitation of the most important areas and attractions for tourism.

Difficult access to public services, e.g. to water supply and sewer network, or waste recovery, recycling and disposal infrastructure, or poor quality thereof, increases depopulation rate in rural areas and generates further social problems (e.g. unemployment and social passivity). It results in economic and social marginalisation of areas with poor accessibility. Ensuring access to public goods and services and improving their quality enables the development of rural areas.

3.1.4. Improving access from areas with the worst time accessibility to major cities

Extension of the transport infrastructure will enable the strongest growth centres to influence other centres. It is very important for improving competitiveness of Poland's regions as coherent territorial units. In order to use different development potentials of Poland's territories it is necessary to build transport networks and coordinate sectoral policy implementation practices. A comprehensive programme will be implemented to improve transport access to voivodeship centres, strengthen sub-regional centres and develop the natural potential of rural areas. Dissemination of assets from major growth centres (voivodeship cities) to other territories, including sub-regional and local centres, will result in an increased diffusion of development impulses from major cities to adjacent and distant areas. A significant role in this process will be played by public transport ensuring good connections with poviat and sub-regional cities.

There will be special measures dedicated to the following regions: Central Pomerania, North Masuria, Bieszczady and Kłodzko Valley. Apart from the intervention priority for roads and rail running through those regions (including roads and railway lines connecting Gdańsk – Szczecin, Warsaw – Białystok – Ełk – Suwałki, Wrocław – Wałbrzych – Jelenia Góra – Zgorzelec, Warsaw – Ełk, Wrocław – Brno) support will be given to local investment projects, such as construction of a bridge to Usedom and raising the rank of the road Krosno – Sanok.

Re 3.2. Decreasing external transport costs

3.2.1. Decreasing external transport costs, including environmental costs

Decreasing external transport costs may be achieved by organisational and investment measures. This objective is planned to be achieved by including alternative transport modes (other than road transport) and the related infrastructure in mid-term strategies and investment plans. Airspace throughput will have direct impact on costs (including external costs) of air transport.

This objective will be achieved by modernisation of the railway network intended to ensure high standard and shorten travel times. High quality rapid service is perceived as one of prerequisites for rail transport to be competitive compared to individual road transport on routes between agglomerations (Fig. 24., 25., 26.). At the same time, modernisation of other selected lines will contribute to ensuring efficient railway cargo services system. Support will be given to intermodal systems, e.g. through building a network of combined transport terminals (major cities, cargo border crossings, river and sea ports). Improved road access to environmentally valuable areas (including tourist attractions) will involve raising the standard of, and safety on roads leading to those areas without generating transit traffic within those areas.

A parallel measure, also significantly contributing to decreasing external transport costs, will be to optimise road transport through coordinated application of smart information and organisation solutions.

Pro-ecological nature of water transport should be taken into the account in integrated national and regional spatial plans. Nevertheless, the development of this mode of transport should be coordinated with river basin management plans and subjected to long-term economic feasibility assessment. Resistance of valuable ecosystems to anthropopressure should also be taken into

account. When improving access to Polish ports and developing waterways for tourist purposes one must take into consideration possible collisions with protected areas, including Natura 2000 sites.

In the perspective of 2030 Polish waterways will be modernised to achieve class III (in particular, Odra Waterway from Gliwice Canal to Szczecin, including a connection with Berlin and European waterways system through Odra – Spree and Odra – Havel canals). Existing class IV and higher sections will be preserved. Due to lack of sufficient water resources and the need to protect unique flora and fauna, the entire Odra Waterway will not be modernised to achieve class IV. Similar investment restrictions and opportunities are present in other navigable waterways: connection from the Odra river basin through Bydgoszcz to Gdańsk (programme development, conceptual work and investment projects for waterway E-70 are in progress in six voivodeships), and Vistula from the mouth of Przemsza. Waterways in the east of Poland are planned to be developed mainly for tourist purposes.

Integrated spatial approach to the development of ports and port regions will improve access to Polish ports from land and sea and support their integrated development in a broader context of regional and national economic processes. It will be the key element of integrated local spatial planning for all seaside gminas combining measures on land and at sea. The integrated approach will also introduce specific standards for housing and development in the seaside.

3.2.2. Improved accessibility within functional areas; preferences for the development of public transport

The most important measure to achieve this objective will be to integrate public transport systems in a city, its functional area (priorities for metropolitan areas) and region. It will include improvement and development of rail transport systems (agglomeration rail, fast tram) and rapid busses. The objective will also be achieved by introducing obligatory cooperation between gminas within functional areas to create joint urban and suburban transport systems and "park and ride" systems. Local planning documents for metropolitan areas will define plan progress indicators in the form of a required share of people commuting to major urban centres (to work, school and in other purposes) using public transport, including the "park and ride" system.

3.2.3. Building an integrated multimodal transport system

Road, rail, air and water transport will be integrated by ensuring complementarity of those modes of transport in mid-term strategies[88]. Those strategies will take into consideration costs and benefits of different modes of transport in the context of overall development, and extension of smart transport systems. In terms of investments, it will be essential to create favourable conditions for operators: to build and extend transhipment and passenger transfer terminals for different modes of transport (using state-of-the-art technical solutions); to complete investments ensuring better road access to sea and river port terminals; and to integrate the network of airports with the existing and planned road and rail network, in line with the EU joint transport policy objective to create European Single Transport Area.

Intermodal solutions in public passenger transport will be preferred in agglomerations. At the same time, administrative preferences for intermodal solutions will be introduced.

Re 3.3. Improving telecommunications accessibility

On the national level, the development of wire and wireless infrastructure will be supported to improve access to broadband internet, primarily in rural and less-populated areas. The support will be intended to ensure all citizens, regardless of their place of residence, access to information and possibility to use internet for economic activity. It will also contribute to the enhancement of

[88] In particular, in the Mid-Term National Development Strategy 2020, and the transport development strategy.

social capital level. Telecommunications infrastructure investments in an area contribute to the development of the areas, in particular by enhancing its attractiveness for entrepreneurs and local people. The first stage will involve the development of: a network of public internet access points and electronic administration access points on local, regional and national levels. Certain public services will be available in the internet. Measures to disseminate electronic services are intended to contribute to the development of healthcare and public administration by improving their quality and availability. Propagation of internet and geographical information systems will enhance the development of teleworking, electronic learning systems, science networks. It will also generate progress in science and at the same time, decrease the load on transport systems and improve the quality of living. Spatial information infrastructure[89], as a result of implementation of the INSPIRE Directive in EU Member States, will cover all public administration levels and will serve all its users in Poland and in the European Union. Electronic spatial databases will be available to public administration staff, entrepreneurs and all citizens (search and browse options). Generally available digitised databases, and land and building cadastres will improve the safety of investments and business.

Digitisation of spatial databases, an essential prerequisite of planned spatial management, will be the beginning of far-reaching changes in administrative structures and spatial development sciences. Data available to all through spatial information infrastructures will contain spatial development plans at national and voivodeship levels, including functional area development plans and local plans. Access to spatial information will be ensured to all, *inter alia* by providing appropriate equipment and staff training to public libraries.

The protection zone around the "90 m Radio Telescope Hevelius" should be treated as a special case. The telescope is a priority investment of the Toruń Centre for Astronomy of the Nicolaus Copernicus University in line with the priority list of the Polish Roadmap for Research Infrastructure developed by the Ministry of Science and Higher Education in 2011. Location of the facility in Tuchola Forest, Wdecki Landscape Park near the village of Dębowiec fulfils radio silence requirements necessary for such instrument. The telescope must be placed at a distance from broadcasting stations: radio stations, TV stations, mobile telephone network stations, wireless internet stations, etc. In order for the facility to operate, it is necessary for spatial development plans to demarcate a protected zone with limited economic functions in the radius of ca. 7 km around Dębowiec, and a zone free from radio stations within 10 km radius around Dębowiec. The zone will extend to the following gminas: Osie and Śliwice in Kujawsko-Pomorskie Voivodeship, and Osiek in Pomorskie Voivodeship.

Re 3.4. Strategic management and implementation of investment projects in stages

Based on the objectives and outline of future actions, the scope of essential investment projects was set out. Assumptions for the planned road, rail and airport investments are in line with the integrated development paradigm combining spatial planning with socio-economic planning. Implementation of the defined investment package will enable the desired development of functional connections network covering major urban centres in Poland that are in an open system with the European metropolitan centre network.

The implementation of the largest transport projects, in terms of scale of investment and financial expenditure, i.e. High Speed Rail (HSR) and Central Airport (CA) could strengthen both internal connections within the Polish transport system (improved mutual accessibility of major urban centres), and external European and global connections. However, in the context of the economic crisis getting longer, the final decision about such significant investment efforts in the transport sector, which will require a schedule for the abovementioned projects to be set, will depend on many factors. The following conditions will be taken into the account: current and

[89] Full implementation of monitoring regulations, including providing access to spatial data sets, will be achieved by 2015, in accordance with the Act on spatial information infrastructure of 4th March 2010 (Dz.U. of 2010, No. 76, item 489).

future macroeconomic trends in Poland, the resultant transport demand forecasts, conclusions from feasibility studies for both projects and the economic justification of the projects.

The proposed scope of investments is an implementation of the current Government plans set out in laws, strategies and operational documents laying down the assumptions for infrastructural projects in the transport sector[90]. An important added value of NSDC 2030 is that it indicates "missing" connections in the current plans. Those connections, however, are important for the integrated development system. Another added value of NSDC is that it raises the rank of certain connections in comparison with the current strategic perspective (Fig. 23. and 26.).

Investment projects will be divided into stages that will fulfil different operational objectives. Depending on changing conditions and spatial policy objectives updates are possible. Investment projects formally planned for the period 2007-2015 were included in the document in accordance with their current standard (Fig. 21. and 24.). It was assumed that new grade separated roads should be built to a motorway standard, or at least provide a potential for raising of the standard in the future.

Main roads corresponding to the current national roads network were divided into three basic categories, in accordance with the current and objective knowledge, depending on their role in the socio-economic system of Poland:

a. Core backbone network of grade separated roads, motorway standard, possibly in a new location and with higher technical parameters (Class A).

b. Auxiliary grade separated roads, expressway standard, partly in new locations, partly with higher technical parameters; other sections located along existing roads with the potential to improve parameters (Class S).

c. Other national roads; it is assumed that their length will be less, since some of the roads will be transferred to be managed by voivodeship authorities; the roads to be gradually modernised in line with existing technical parameters, bypasses will be added.

The key target is to achieve by 2030 a backbone network of fast roads (motorways and/or expressways) to ensure connectivity between major cities (i.e. in particular Warsaw, Gdańsk, Poznań, Bydgoszcz, Toruń, Łódź, Wrocław, Upper Silesia Conurbation, Cracow, Rzeszów and Lublin) and an open international system of European metropolises (Berlin, Prague, Vienna, Bratislava, Budapest, Kiev, Minsk and Moscow – Fig. 23.). An additional element of the network will be bypasses of major urban centres – "major" bypass of Warsaw, bypass of Cracow, bypass of Tricity, and full motorway bypasses of Poznań, Wrocław and Szczecin (after 2030). Key elements of the auxiliary expressway network will include sections ensuring connectivity in areas with insufficient accessibility, including Central Pomerania, Masuria, Eastern Poland, Podkarpacie and Kłodzko Valley.

It was assumed that in order to achieve the network effect, division of road projects into stages will involve converting roads into expressways (or building new expressways) and then raising selected sections to the motorway standard (e.g. section Warsaw – Cracow, Grudziądz – Poznań – Wrocław, Łódź – Wrocław, Warsaw – Lublin, Warsaw – Białystok, Szczecin – Gorzów Wielkopolski). The process may also involve building selected roads to a motorway standard without the intermediate stage (e.g. "major" bypass of Warsaw, the section Warsaw – Toruń – Bydgoszcz, Via Baltica, Gorzów Wielkopolski – Poznań, Wrocław – Prague, i.e. Kostomłoty - Lubawka).

[90] Including: Natioal Roads Construction Programme 2011-2015 adopted by way of a resolution of the Council of Ministers of 25th January 2011, Railway Transport Masterplan in Poland by 2030 adopted by the Governmetn on 19th December 2008, Airfield Network and Air Traffic Ground Equipment Development Programme adopted by the Government on 8th May 2007.

Under NSDC 2030, it is planned to add "missing motorway and expressway connections" (e.g. connection of the Via Baltica expressway with Via Carpathia, section Białystok – Suwałki, and the road S16, section Suwałki – Toruń) necessary to ensure full socio-economic functionality of Poland and its regions.

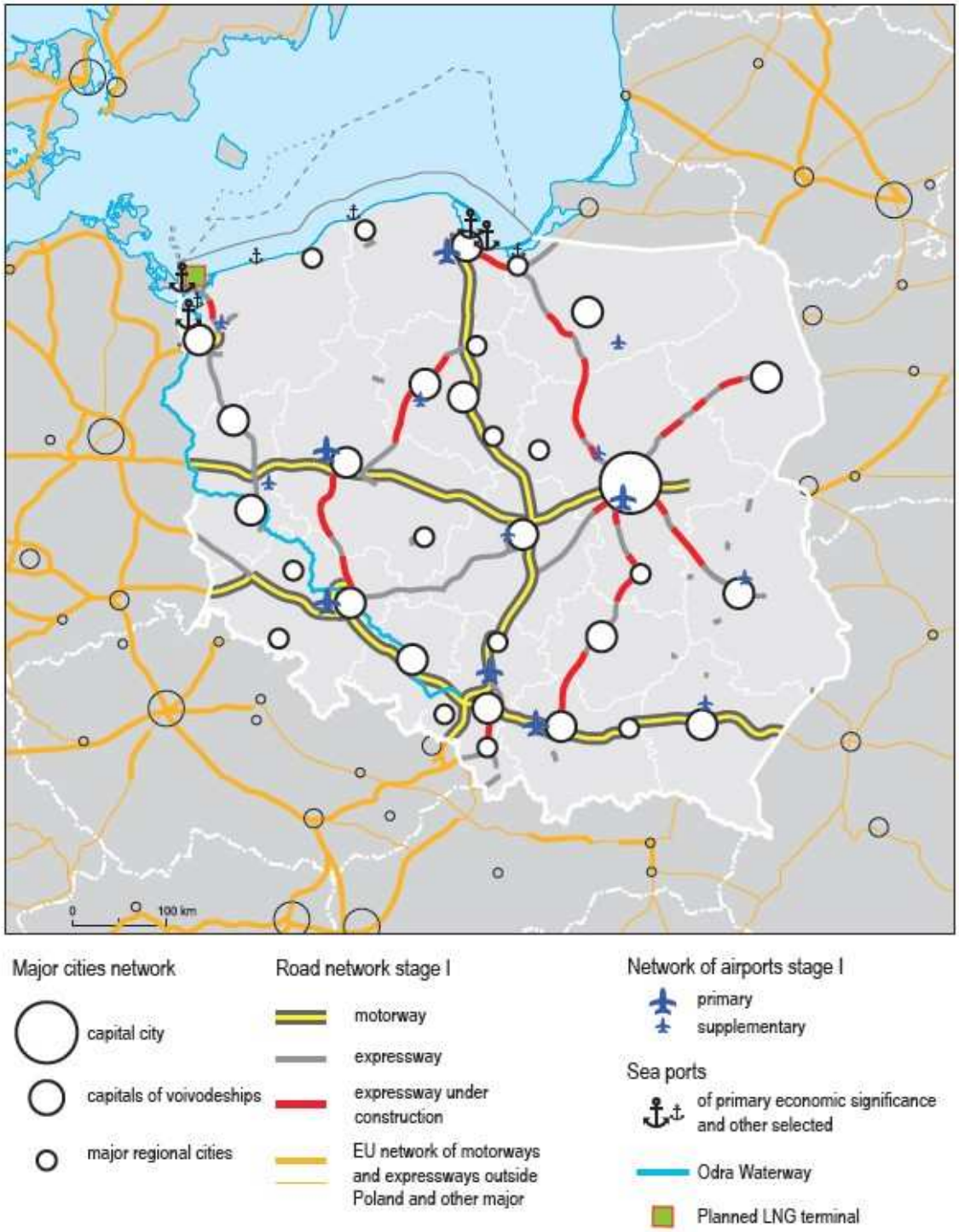
In case of railways, three basic railway line categories were defined:

a. high speed rail (>200 km/h) for passenger transport,
b. conventional rail, including:
   - lines enabling top speed of 120-200 km/h; mainly modernised existing lines (with new sections, e.g. in functional areas of major urban centres) fully integrated with high speed rail, intended firstly for passenger transport, and secondly for cargo transport,
   - lines enabling top speed of 100-120 km/h; modernised existing lines integrated with the intermodal terminal system, intended firstly for cargo transport (including combined transport; fast cargo lines), and secondly for passenger transport.

The key element of the transport policy for rail will be the revitalisation and modernisation of railway lines in large parts of Poland. Therefore, by 2030 it will be a strategic task to strengthen the role of railway transport through investments, organisational and technological changes intended to significantly shorten travel times and improve passenger service standard. An additional element will be new and modernised national, and cross-border, connections between Central Pomerania, Masuria, Eastern Poland and Kłodzko Valley on the one hand, and all neighbouring regions along the top-priority functional directions on the other.

In addition to the existing plans for railways, NSDC 2030 postulates modernisation and construction of those lines that are necessary to service functional connections from certain regions located mainly in the north-west, north-east and south-east of Poland. Lines used to service key functional relations with Germany, Kaliningrad Oblast, Lithuania, Belarus, Ukraine, Czech Republic and Slovakia will also be added (Fig. 26.).

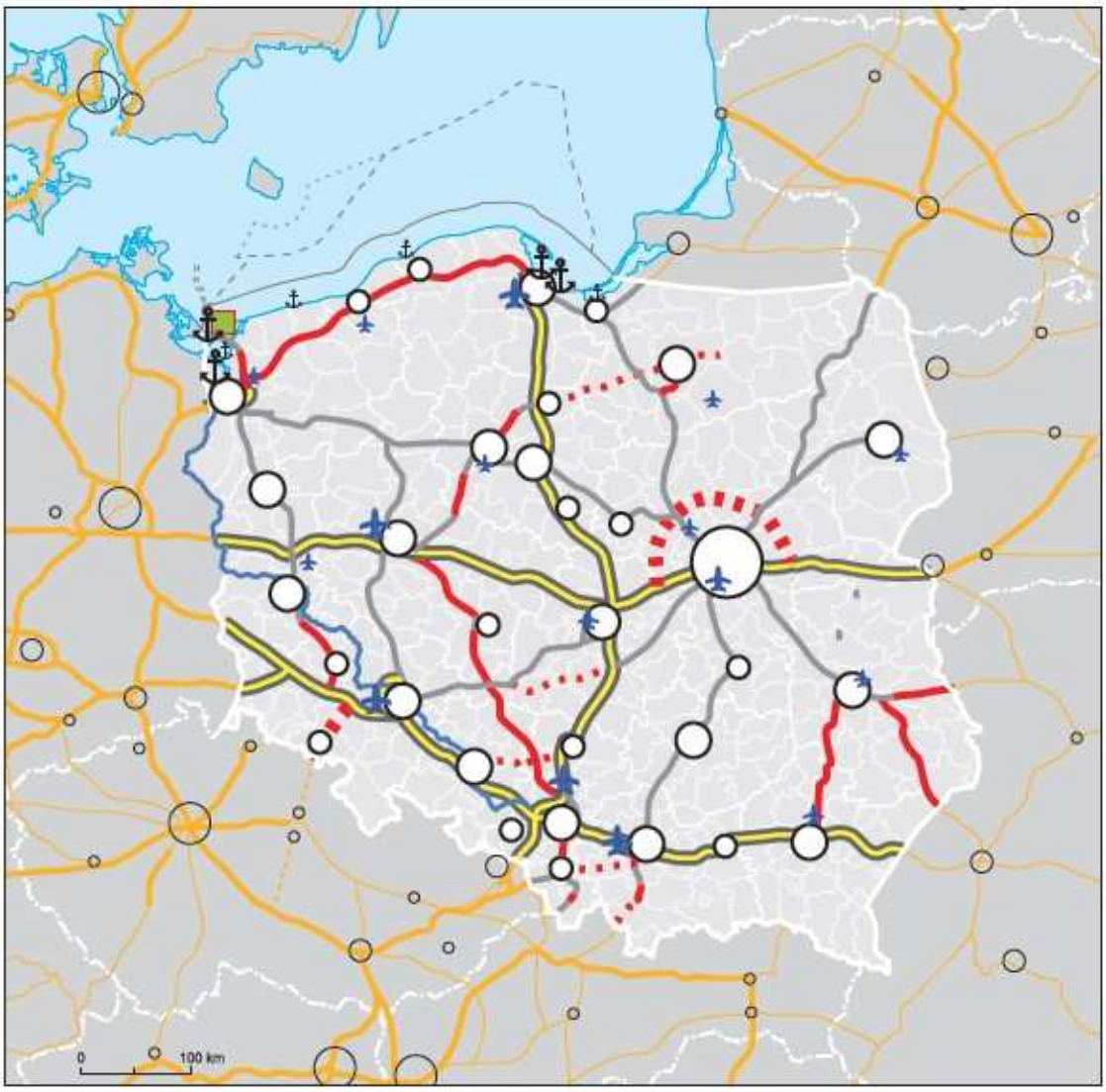
Fig. 21. Expected development of the road network compared to the development of airport network, sea port network and Odra Waterway – stage I*



* implementation of individual projects will depend on the transport policy of the Government

Source: MRD in cooperation with IGSO PAS.

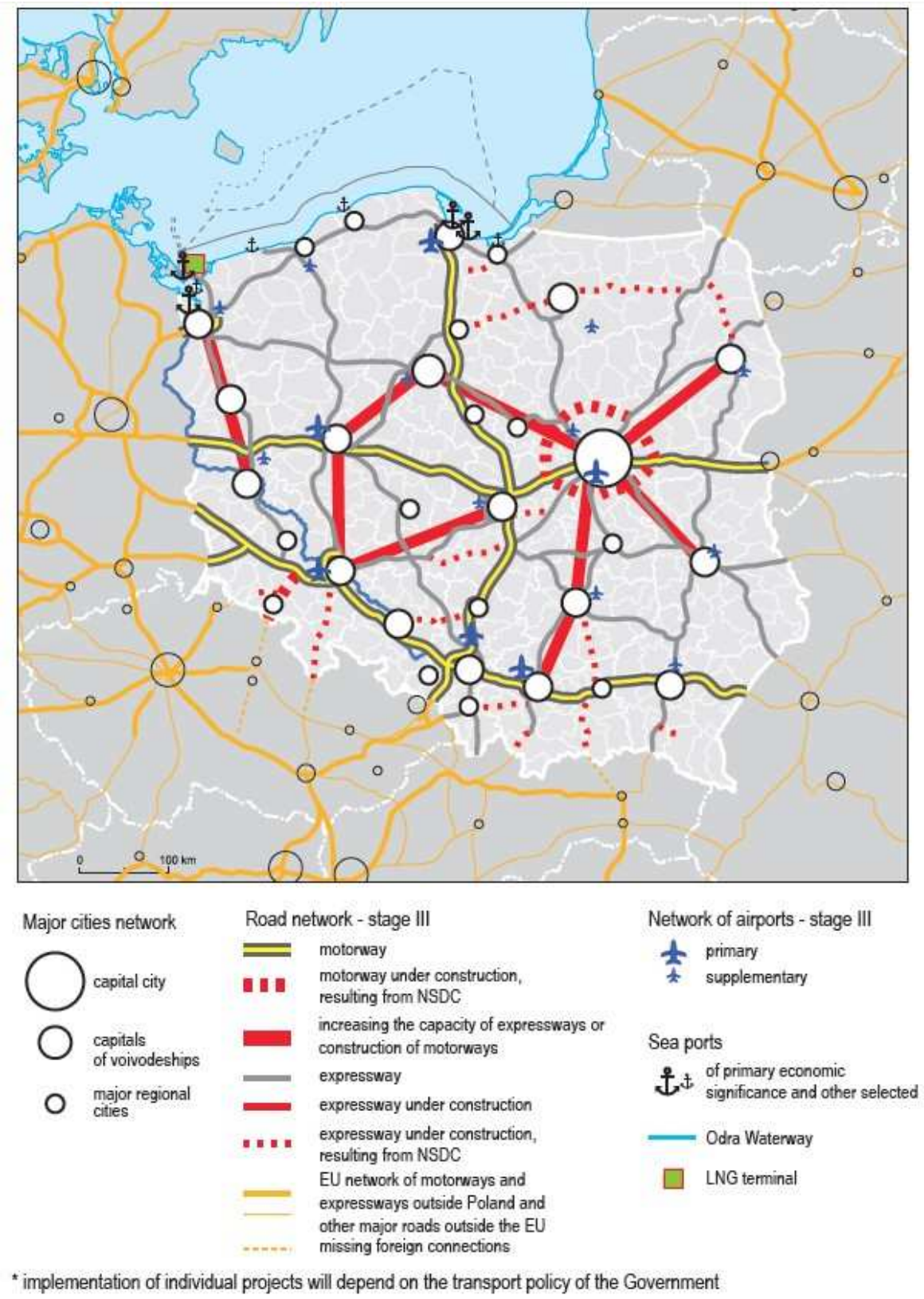
Fig. 22. Expected development of the road network compared to the development of airport network, sea port network and Odra Waterway - state II*



* implementation of individual projects will depend on the transport policy of the Government

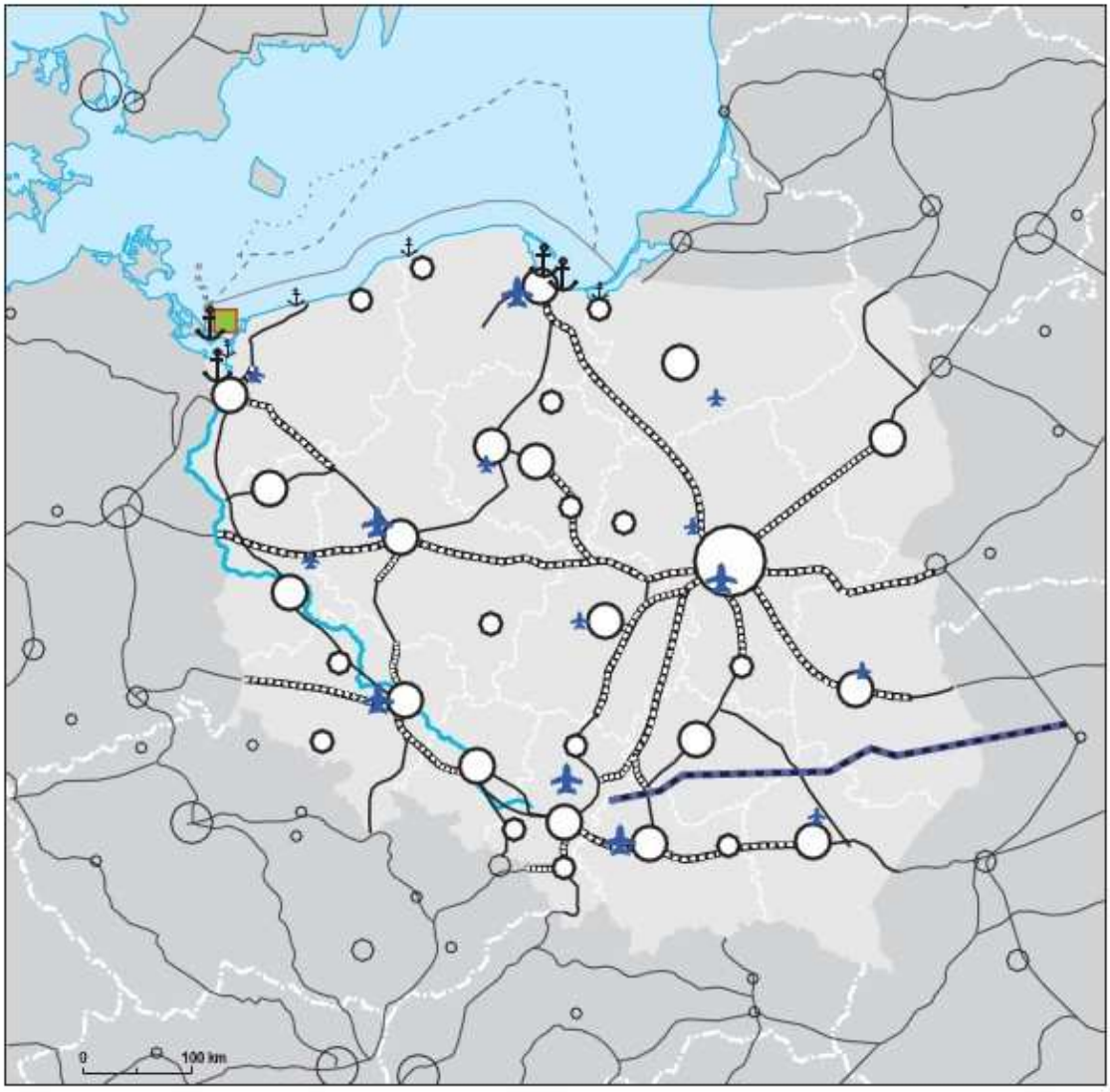
Source: MRD in cooperation with IGSO PAS.

Fig. 23. Expected development of the road network compared to the development of airport network, sea port network and Odra Waterway – state III*



Source: MRD in cooperation with IGSO PAS.

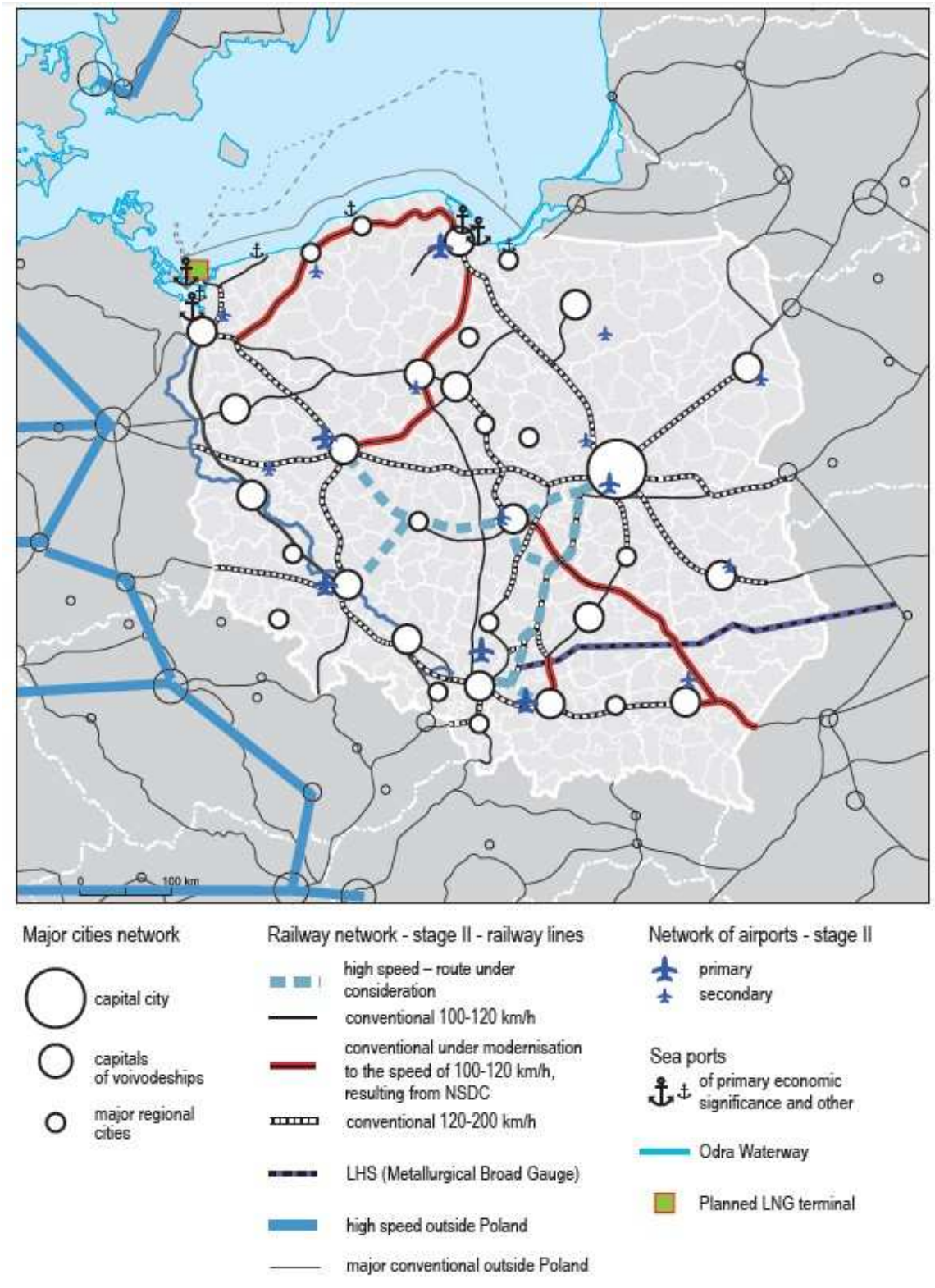
Fig. 24. Expected development of the railway network compared to the development of airport network, sea port network and Odra Waterway – stage I*



* implementation of individual projects will depend on the transport policy of the Government

Source: MRD in cooperation with IGSO PAS.

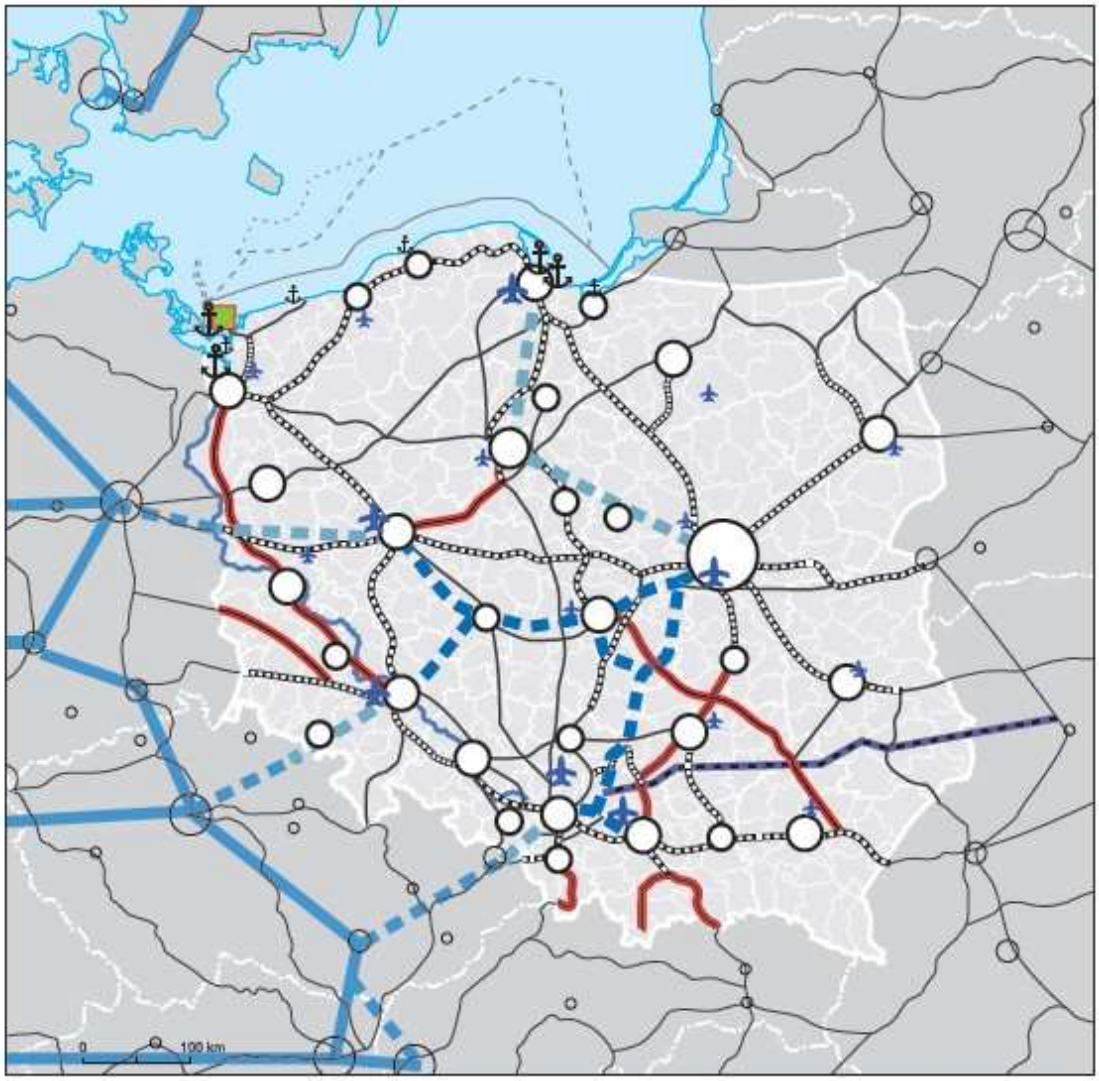
Fig. 25. Expected development of the railway network compared to the development of airport network, sea port network and Odra Waterway – state II*



* implementation of individual projects will depend on the transport policy of the Government

Source: MRD in cooperation with IGSO PAS.

Fig. 26. Expected development of the railway network compared to the development of airport network, sea port network and Odra Waterway – state III*



* implementation of individual projects will depend on the transport policy of the Government

Source: MRD in cooperation with IGSO PAS.

Objective 4. To develop spatial structures supporting the achievement and preservation of Poland's high-quality natural environment and landscape.

(1) Description of the problem

Low rank of spatial planning, lack of hierarchy of plans, lack of protection plans for ecologically valuable areas, and low importance of physiographic analyses occurring in Poland are reasons for excessive exploitation of natural environment generating socio-economic development barriers.

As a consequence of industrial restructuring, lower fertilizer input in agriculture and increased ecological awareness of the general public, the amount of pollutants was reduced and the condition of Poland's natural environment improved significantly. Many environment quality parameters are within European average. In spite of significant efforts made over the last few years, negative impacts of policies followed in the period before system transformation are still visible.

Problems that are still to be solved: unsatisfactory quality of surface waters resulting from treatment of insufficient share of waste water and from lack of efficient municipal waste management system; local soil poisoning in post-industrial areas; and open cast mining deteriorating the landscape and degrading the environment. Additionally, there are consequences of coal-reliant economy. There is no satisfactory solution of air quality problems resulting from dust emissions, periodic high ozone concentrations and accumulation of transport-related pollutants. Disturbances include: lower biotic potential of habitats manifesting itself as progressing reduction of biodiversity; increasing drought, flood and local flooding risks; and local deterioration of living standard related with quality of the environment. The problems are not distributed evenly across Poland.

Changing functions of certain rural areas associated with intensive development of cities, expansion of transport and municipal infrastructures, and intensive changes in farming technologies result in escalating conflict between preservation of ecological spatial cohesion and socio-economic development. Ecological spatial cohesion is also being deteriorated by uneven afforestation of Poland and fragmentation of forests accompanied by the decreasing share of afforested areas and young forests in the overall age structure of forest stands. Changing space use forms accompanied by weakness of spatial planning are destructive for the landscape that constitutes a synthetic picture of natural environment and environmental processes (Fig. 27.). Progressing appropriation of open spaces decreases ecological cohesion of Poland.

Decreasing share of green areas in cities and construction of new buildings in air corridors that cut off open spaces from inner cities deteriorate climate conditions and quality of living. River valleys and wetlands are being developed at the expense of flood retention areas. Dams built across rivers, even though often necessary for socio-economic development of Poland, still change water regime and reduce migration possibilities of aquatic organisms (including anadromous fish[91]).

[91] Otherwise known as migratory fish, e.g.: eel, sturgeon or sea trout.

Fig. 27. Aesthetic qualities of landscape

Source: Śleszyński P., 2007, *Ocena atrakcyjności wizualnej mezoregionów Polski,* w *Znaczenie badań krajobrazowych dla zrównoważonego rozwoju. [Assessment of visual attractiveness of mezzo-regions in Poland* in *Importance of Landscape Studies for Sustainable Development]. Profesorowi Andrzejowi Richlingowi w 70. rocznicę urodzin i 45-lecia pracy naukowej"* Geography and Regional Studies Department, Warsaw University, Warsaw 2007, pp 697-714.

Forest and farmland retention capacity significantly reduced as a result of negligence and defects of drainage systems cause: permanent loss of sensitive natural ecosystems (forest and farmland wetlands and small ponds), degradation of peatlands and deterioration of ecosystems. Manmade changes in water conditions affect over 80% of forests in hydrogenous habitats and droughts are becoming a problem for agriculture. The Accession Treaty added Natura 2000 network to the national area protection system. The Natura 2000 network protects biodiversity and landscape

diversity of Europe while maintaining controlled socio-economic development opportunities. The network, apart from new sites, including river valley ecological corridors and maritime sites[92], covers a part of areas protected by the national system (KSOCh[93]). In the national system, protected landscape areas and site protection measures[94] established locally were intended to ensure ecological connectivity of national parks, nature reserves, landscape parks and river valleys. Consequently, in Poland there are two poorly coordinated nature conservation systems with significantly different demarcation criteria and management rules for nature and landscape protection. Green areas in urban areas, with few exceptions, are disconnected from the system, and the actual level of protection does not reflect their function in urban ecosystems and role in maintaining appropriate biodiversity.

Areas where nature conservation level is regulated by statutory measures inherently fail to ensure the protection of needs of protected flora and fauna species. Similarly, the existing statutory nature conservation measures do not fully correspond to high protection needs of biocentres and areas exceptionally prone to lose landscape assets, in particular where those assets may become a development potential in areas with poor economic position and spatial accessibility (Diagnostic maps 11. and 12., Chapter VIII.). Additionally, it is necessary to manage land intensively used for socio-economic development with different leading functions to protect migration needs of organisms and to maintain ecological cohesion. Prompt legal changes are necessary, *inter alia*, to increase public acceptance for conservation restrictions limiting use of valuable ecological space and landscape, and to enable appropriate studies to be carried out.

Ecological corridors running across Poland, regardless of their rank in national and continental ecosystems, are poorly defined in the law. There are no specific measures that would define and protect their functions in spatial development plans[95]. Importance of this problem is increased by the requirement to ensure coherence of the Natura 2000 network and integrity of Natura 2000 sites in the light of conservation objectives. This requirement has direct impact on location of roads, technical infrastructures and other investments with significant environmental impacts.

In spite of numerous amendments of the area protection system, there is no sufficient legal basis to protect ecological corridors, to establish a permanent network of ecological corridors, and to define spatial structures supporting the development of rural areas' functions that would ensure preservation of cultural space and good environmental condition of existing nature assets. The problem is aggravated by the lack of clear laws on cultural heritage, including cultural heritage linked with protected environmental space. There are also no specific regulations on landscape management, nor on current space management dispositions changing its economic dimension. Poland signed, and ratified in 2004, the European Landscape Convention[96]. The Convention, reminding that an object and its surroundings form a unity[97], clearly stipulates the need to identify and protect characteristic landscapes defining identity of a place, and makes it mandatory to shape cultural landscapes emerging both as a result of deliberate influence on landscape, and in consequence of day-to-day relations between people and their surroundings.

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[92] Natura 2000 sites: Ujście Odry, Zatoka Pomorska, Przybrzeżne Wody Bałtyku, Ławica Słupska i ujście Wisły, on the 31st December 2009 were designated as Baltic Sea Protected Areas (BSPA) under the Helsinki Convention. Also, boundaries of four BSPAs earlier demarcated were adjusted to Natura 2000 site boundaries.

[93] See 52.

[94] Nature monuments, documentation sites, ecological features, nature-landscape complexes.

[95] The first consistent ecological connectivity system at the interregional level designed in Poland was ECONET Polska. It still is a point of reference for predicting ecological conflicts that may occur during transport infrastructure development. This system – nor a nuber of following proposals – does not, however, meet the requirement of ensuring consistency of the Natura 2000 network. Closest to the requirements is the proposal developed in 2005 at the request of the Ministry of Environment by the Mammal Research Institute PAS in Białowieża, based on an analysis of movement of large predatory mammals. All of the mentioned projects, however, must be elaborated in detail on regional and local levels.

[96] European Landscape Convention, done in Florence on 20th October 2000 (Dz.U. of 2006, No. 14, item 98).

[97] ELC, Article 1: "Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors".

Water resources in Poland[98] are distributed unevenly. The central part of Poland, as a result of natural processes (dry and wet years), is affected by water deficit whose intensity and spatial scope differs. Characteristic features include: great variability in time of annual water averages, variability of distribution of water amounts in individual years, and the consequent occurrence of severe floods in wet periods and severe droughts in water shortage periods. With the current level of ground water resources and relatively small surface water resources, Poland should use its limited water reserve (on average 1600 m^3/citizen) very rationally and protect it against pollution (Diagnostic maps 15. and 21., Chapter VIII.). Due to the fact that nearly entire territory of Poland (99.7% of surface area) is the catchment area of the Baltic Sea, restrictions on the discharge of nitrogen, phosphorus and biodegradable pollutants, originating primarily from municipal waste water and farming, to water should be treated very severely. Effective reduction of agricultural pollutants depends on land surface management and farming practices. As regards sea, there are big hopes for the introduction of maricultures to recover biogenic substances[99].

The National Municipal Waste Water Treatment Programme[100] launched in 2003 is used primarily to finance construction of waste water treatment plants and sewer systems in demarcated agglomerations with over 2000 population equivalents (PEs)[101] and in exceptionally valuable nature areas. Individual solutions with equivalent treatment efficacy, other programmes and additional funding is required to ensure waste water treatment in rural areas with mainly scattered housing and in recreational areas.

Waste treatment methods are defined by the National Waste Management Plan and voivodeship waste management plans that enable regional planning for waste management installations and sites. In waste management regions with at least 300,000 inhabitants, thermal waste treatment is the preferred method. National Plan for Radioactive Waste Management and Spent Nuclear Fuel Management (NPRWMSNFM) is intended to ensure safe management of radioactive waste and spent nuclear fuel from energy production, industry, medicine and science sectors (including the research reactor). The priority issue is the location, design and construction of a new surface landfill for radioactive waste that must be put in service in 2020[102]. In the longer timeframe, NPRWMSNFM foresees a programme for the development of scientific and research background to be established to explore deep storage possibilities for highly radioactive waste and spend nuclear fuel.

(2) Outline of future actions

National Spatial Development Policy should meet the following challenges:

- to satisfy present development needs of the society with minimal ecological and social conflict,
- to secure further socio-economic development opportunities based on well-preserved natural and cultural resources, as well as local environmental features,
- to ensure a rational combination of socio-economic development, protection of water resources and availability of water resources,

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[98] Fuel resources were discussed in the problem description, Objective 5. (Chapter V.).

[99] However, those measures are not a part of the national environmental protection policy system at the moment. Their promotion would enable a more cost-effective reduction of pollutants discharged into the sea and inland waters.

[100] National Municipal Waste Water Treatment Programme (NMWWTP) is an instrument for the implementation of Directive 91/271/EEC in Poland by the end of 2015. Adopted by the government on 16th December 2003, the programme is continuously updated and reviewed. NMWWTP 2009 update of 2nd March 2010 indicated priority investments required to fulfil accession obligations. NMWWTP 2010 update of 1st February 2011 put in realistic investment completion dates in agglomerations that, due to project delays, will fail to achieve the planned aims by the end of 2010. The Programme is supplemented by "Programme to provide waste water treatment plants and sewer systems to agglomerations with less than 2,000 PEs", and "Programme to provide agri-food industries with the size of at least 4,000 PEs discharging waste water directly to water bodies with equipment ensuring meeting of Polish statutory water protection standards".

[101] PEs – population equivalents; a parameter used to determine waste water treatment installations' capacity. It is the number expressing the ratio of the sum of the pollution load produced during 24 hours by industrial facilities and services to the individual pollution load in household sewage produced by one person in the same time.

[102] This date is due to capacity limitations of the existing and operating National Radioactive Waste Landfill in Różan.

- to ensure security by taking actions to reduce flood risk and drought hazard,
- to ensure development continuity and opportunities in many parts of Poland by effective protection of natural underground resources (including healing, thermal and saline waters) against non-sustainable and illegal exploitation.

The above definition of intervention areas means that development policies to reduce pollution, achieve and maintain good biological and chemical condition of water, increase quantity of water resources and improve waste management to eliminate environmental risks will still have a notable spatial dimension.

To ensure usage of high quality environmental and landscape features, mechanisms are required to reduce number of spatial conflicts and to support management of environmentally valuable areas. Preservation of natural and cultural heritage, including the most valuable parts of natural space, in the socio-economic development process will require an active participation of various public bodies and local communities. Ensuring development opportunities will be an important element of the solutions to be adopted.

National Spatial Development Policy to a greater extent than now must counteract fragmentation of habitats and provide solutions enabling the best possible spatial ecological connectivity to be achieved in order to facilitate migration and to satisfy needs of protected species. Preserving high environmental potential of Poland requires long-term actions to be taken to mitigate and solve conflicts between nature conservation objectives and landscape protection on the one hand, and increasing pressures from housing, transport and tourism on the other. It will be achieved by managing planned functional and landscape functions. Spatial planning will increasingly involve location of structures and land use forms responsible for timing and presence of water in the landscape – availability of water in areas threatened by droughts, building natural retention capacities and slowing down the flow of flood water. One of the tasks of spatial planning is to limit functions in areas at risk of flooding and to reduce flood risk. Planning and fiscal instruments must be used to support this process.

The implemented solutions must protect valuable wetlands, in-field trees, roadside trees and green areas, and influence conservation and development of cultural landscape. Emerging ecological spatial structures, including watercourse valleys, farmland and forests will influence functional areas of cities, rural revitalisation and development of rural areas.

The applied spatial planning instruments will ensure more correlation between the spatial policy and sectoral policies, in particular rural development, regional, forestry, energy, urban policies, whose aim is to decrease water deficit and environmental burdens.

Answering challenges enumerated in the description of the problem require action to be taken in the following fields:

4.1. Integrated coherent national ecological network as the basis for conservation of the most valuable environmental and landscape assets,
4.2. Counteracting environmental space fragmentation,
4.3. Introduction of landscape management compliant with the European Landscape Convention,
4.4. Rational management of limited surface and ground water resources, including prevention of water shortage for people and economy,
4.5. Achieving and maintaining good condition and potential of waters and of related ecosystems,
4.6. Decreasing environmental burdens of pollutant emissions to water, atmosphere and soil,
4.7. Securing economically valuable mineral resources and increasing use of recycled materials.

Re 4.1. Integrated coherent national ecological network as the basis for conservation of the most valuable environmental and landscape assets

This objective will be achieved by establishing a coherent system of nature and landscape conservation areas. The basis for the system will be the integration of the extended KSOCh network, Natura 2000 network, and legally binding ecological corridors system connecting key areas. Integration of areas included in different networks will continue under the new system. Future conservation measures will include Pan-European Ecological Network (PEEN)[103] and new UNESCO biosphere reserves.

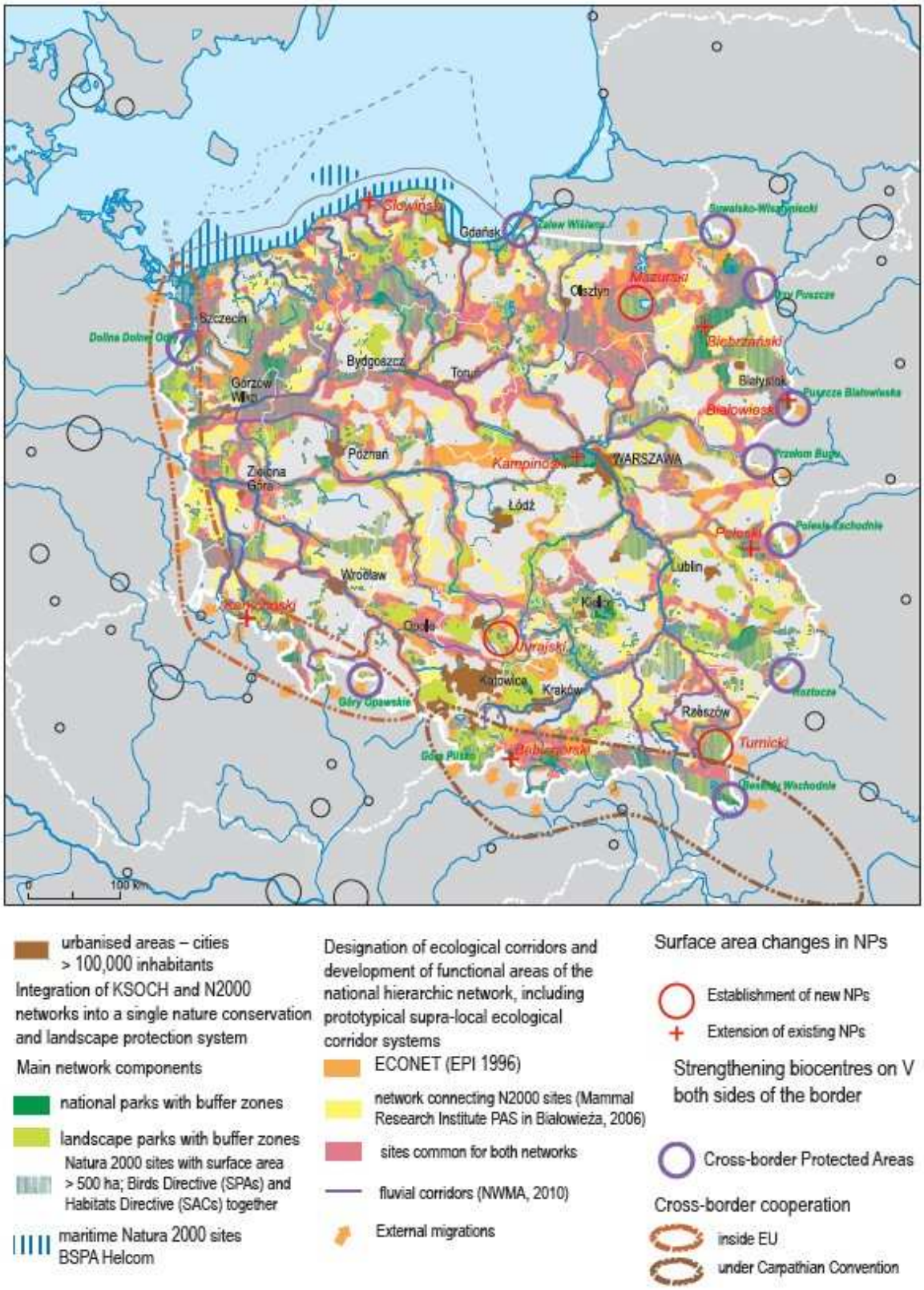
In order to increase protection of functions in key areas, environmental values and landscape of Poland, the following new national parks will be established: Jurajski NP, Mazurski NP, Turnicki NP. Also, certain existing national parks will be extended (Fig. 28.). New areas will be added to the network of landscape parks intended to protect the most valuable regional landscapes that are significant for the protection of cultural heritage and ecological connectivity.

Establishing new areas protected by the strictest conservation regimes will require intensified education, promotion and public acceptance of the proposed socio-economic development strategies. Those strategies will facilitate the change of the current land use and improve living conditions for local people.

The task of the ecological corridors system is to ensure environmental cohesion, including preservation of connectivity between biocentres, as well as biocentres and other areas of lower rank isolated in the space fragmentation process, in particular areas that may be used as a reserve for environmental compensation, that are less prominently regulated by the law as they are not part of the Natura 2000 system.

[103] The decision to establish the PEEN network based on existing sites designated on the basis of international agreements and teh Polish law was taken in 1995. This network is the main component of the Pan-European Biological and Landscape Diversity Strategy. Refusal to take part in the network is treated as lack of care for European nature heritage.

Fig. 28. Outline of future spatial policies for high nature value functional areas



Source: MRD.

The hierarchic system should comprise corridors of different ranks, demarcated based on migration needs, in particular land ecological corridors of international significance: Baltic Sea – lake district corridor, upland and mountain corridor connected by main river valleys. The network of major corridors should be then supplemented by a system of ecological corridors

with national significance: northern corridor, north-central corridor, south-central corridor, western corridor, eastern corridor, southern corridor and Carpathian corridor. The Baltic region should also be included into the ecological connectivity system.

Work on demarcation and exploration of ecological corridors conducted so far, studies and monitoring should enable the demarcation of corridors for the purposes of spatial planning for groups of organisms with similar needs, primarily for mammals, birds and fish. Single set of rules for demarcation of corridors based on available data should also be possible. Aquatic organisms migration corridors[104] should be based on morphological continuity of Poland's rivers, and include territorial sea and the littoral zone due to migration needs of anadromous fish. Established and verified corridors of continental or national significance should be allowed for in all planning documents and future strategies setting out the national spatial policy, or influencing the policy.

Voivodeship spatial development plans must demarcate functional areas of corridors, regardless of administrative borders. This topic should be coordinated in spatial development plans and municipal studies of adjacent administrative units. On regional and local levels it is necessary to provide details for each corridor, in line with appropriate plan scale. It is also necessary to adjust landscape structures within ecological corridors to living and migration requirements of protected species with specific territorial needs. Additionally, bird, bat and aquatic organism migration routes must be included in the system. The regional level is responsible for defining legal protection levels of biocentres and migration corridors.

Provisions in voivodeship spatial development plans should establish a coherent network of ecological corridors, defined for groups of species with similar territorial requirements. The network should be built using areas with the least transformed natural environment and areas with large share of semi-natural, woodland, peatland, wetland and other plants. A prerequisite for such network is spatial design, introduction and supervision of structural and functional changes in rural areas, and application of technical measures in many regions of Poland, in particular Central Poland. Measures in such areas should include afforestation, planting of in-field trees and shrubs, recreation of hydrological conditions maintaining areas free from housing, or introduction of restrictions on construction of engineering structures. Moreover, on the regional level integration of urban environmental systems with adjacent open areas should be ensured. This concerns in particular cities generating functional areas gravitating towards environmentally valuable areas.

In order to achieve the planned environmental objectives, the national ecological corridor system should be also linked with the continental system by ensuring development and protection of environmental structures satisfying migration and living needs of protected species listed in Annex II to the Habitats Directive 92/43/EWG[105] on both sides of teh border.

To this end, the following cross-border protected areas will be established with different functional and spatial programmes and varied protection levels: tripartite international Suwalsko-Wisztyniecki park, Tripartite Biosphere Reserve "Three Forests" on the Polish-Lithuanian-Belarusian border, Polish-Russian Vistula Spit and Vistula Lagoon park, International Biosphere

[104] *Ensuring morphological continuity of rivers in river basin districts in the context of good status and ecological potential requirements for single bodies of surface water. Needs and priorities assessment.* NWMA 2010.

[105] Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L of 22 July 1992 No. 206, p. 7, as amended) is the basis for designation of Natura 2000 sites (symbol PLH) of Community importance (SCI) which, upon Commission's approval, change their status to special area of conservation (SAC). Species and habitats for which designation of SCI/SAC is required are listed in Annex I (Natural Habitat Types Of Community Interest Whose Conservation Requires The Designation Of Special Areas Of Conservation) and Annex II (Animal And Plant Species Of Community Interest Whose Conservation Requires The Designation Of Special Areas Of Conservation). Special protection areas (SPA, symbol PLB) are designated under the Directive of of the European Parliament and of the Council 2009/147/EC of 30 November 2009 on the conservation of wild birds (consolidated version, OJ L of 26 January 2010 No. 20, p. 7) that replaced the Directive 79/409/EEC of 2 April 1979).

Reserve Białowieska Forest[106], Bug River Valley corridor, including TOCh Przełom Bugu, Tripartite Biosphere Reserve Polesie Zachodnie[107], International (Polish-Ukrainian) Biosphere Reserve Roztocze, and extension of the following reserves: biosphere reserve Babia Góra, bilateral Pilsko Mountain reserve and Biosphere Reserve "Lower Odra Valley". Moreover, attempts will be made to harmonise regulations for the protection of species in neighbouring conservation areas on both sides of the border.

Re 4.2. Counteracting environmental space fragmentation

Fragmentation of the environmental space is caused by infrastructure investments, unchecked urbanisation, economic activity (including growing tourist sector) and gradual concentration of urbanisation processes in functional areas around core cities in Poland. Counteracting fragmentation of environmental systems will involve mainly including natural environment potentials in the planning process and obligatory preference for solutions with the lowest environmental impact. It will also involve managing functional space of ecological corridors by means of local spatial development plans and municipal studies, in particular during planning of transport infrastructure, and allocating land for urbanisation. In strongly urbanised areas, in particular functional urban areas, internal urban ecological systems will be expanded and linked with open areas by a system of green rings. Urban valley systems will be kept unblocked. Measures for urban environmental systems will be included in integrated plans for urban functional areas. Planning will ensure protection of ecological connectivity and integrity of areas with the highest environmental value within the direct influence zone of major cities and their functional areas. First of all, the protection will be provided to National Parks, their buffer zones and interregional ecological corridors in natural recreational areas for metropolitan populations.

Spatial environmental compensation mechanisms accompanying investments, in particular in environmentally valuable areas and within cities' functional areas, will be used to enhance ecological cohesion. The purpose of environmental compensation as a strategic measure with spatial impact is to create conditions whereby the lost or threatened environmental feature may be transferred to another place, or whereby current protected functions are strengthened. Thus construed, compensation principle also concerns development of ecosystem functions in the investment planning process, such as CO_2 absorption, water treatment and storage, and other services of public interest that improve the quality of recreation and other areas.

Compensation measures are also applied to unblock and to keep open river and land corridors for migratory organisms. This set of measures includes permanent monitoring and standardised design of wildlife over- and underpasses. It is necessary to integrate measures to decrease risks to good conservation status of protected habitats and species in the investment procedure by planning appropriate compensation measures. It is recommended to align the order in which conservation plans or protection measures plans are prepared for Natura 2000 sites not only with conservation status of habitats and species, but also with the order in which cohesion projects, energy security projects and flood protection projects will be implemented, as stipulated in NSDC 2030.

In 2030, over 30% of Poland's territory should be covered by forests. Afforestation will be treated as an instrument to ensure ecological cohesion and water retention, in particular in mountainous and sub-mountainous areas with poor forest coverage located in upper sections of river catchment areas, as well as in areas adjacent to large urban centres. The basis for

[106] Strict conservation area of the Białowieża Forest National Park was listed on the UNESCO World Heritage List in 1979. In 1992 the entry was extended to cover the adjacent strict conservation area on the other side of the border in Belovezhskaya Pushcha NP; on the Polish side of the border, Biosphere Reserve Białowieża was designated covering the National Park and its surroundings (within boundaries of 2005).

[107] Since 2004 Belarus, Ukraine and Poland, under auspices of UNESCO National Committees, are preparing the designation of a Cross-border Biosphere Reserve Polesie Zachodnie. It will cover biosphere reserves that were designated since 2002: Polish Biosphere Reserve "Polesie Zachodnie", Ukrainian Shatsk Biosphere Reserve and the Belarusian "Nadbuzhanskaya Polissya" Biosphere Reserve. Belarusian partner's application to UNESCO was approved at the *Man and Biosphere* (MAB) session in October 2004.

afforestation programming will be the updated multiannual National Afforestation Programme[108] containing environmental guidelines to enhance forest coverage in individual gminas. The programme also includes conservation plans for Natura 2000 sites and it will be applied in line with land functions. In order to enhance environmental cohesion, areas intended for afforestation demarcated in voivodeship spatial development plans will have the status of a binding requirement.

In areas of intensive agriculture development characterised by permanent lack of areas that could be used to improve forest coverage rate, it will be particularly important to maintain in-field trees and shrubs. Those features will enable preservation and reinstatement of functions of local and regional ecological corridors in line with ecological conditions that exist in the planned planting areas. In order to strengthen environmental cohesion and increase protection level for traditional farmland landscape, it is recommended that voivodeship spatial development plans and municipal studies demarcate, in consultation with environmental protection authorities, farmland with the highest environmental value.

Re 4.3. Introducing landscape management compliant with the European Landscape Convention

In 2004 Poland ratified the European Landscape Convention (ELC)[109] and thus committed itself to caring for the quality of surrounding space, i.e. landscape. Landscape is an economic resource contributing to increased employment and influencing the quality of day-to-day life. It is also a cultural heritage. In order to ensure that Convention's goals concerning mutual relations between people and landscape are consistently realised in national, regional and local spatial development plans, it is necessary to act on three levels: investigate resources, manage resources and provide educational support. All measures must strictly comply with the constitutional requirement to ensure sustainable development and must concern both land and maritime areas, in particular regarding the view protection.

The ongoing process of historical value appraisal and essential protection requirements assessment for cultural heritage diversity should result in drawing up of national and regional lists of landscapes and objects with unique environmental, historical, archaeological and symbolic properties. Those landscapes and objects will be the basis for Poland's spatial identification and promotion of Poland and its regions worldwide. One of the outputs of this process should be also a list of endangered landscapes – a Red Book.

Apart from taking protective measures, landscape management involves also planning to use identified resources in the development process, changing functions of objects, and developing new structures. For protective measures to be effective, a systematic and multiphase process is necessary to strengthen general public awareness of the fact that securing national and regional identity etched in Poland's landscape is an element of the effort to safeguard common cultural heritage of Europe and high quality of living. Moreover, institutional changes are necessary in the conservation system. It is also necessary to change the law which is characterised by inconsistent definitions and protection levels offered by two acts of Parliament to the same area. In the current situation it is difficult to achieve synergy in managing symbolic space. It is also necessary to change the approach to current developments.

Steps will be taken to ensure legal protection of natural and historical landscapes with the highest environmental and cultural value, including urban and rural complexes, as well as archaeological sites. Protection and promotion measures will also be applied to current achievements of architecture and urbanism. Regional or local authorities, based on central uniform criteria for

[108] The National Forest Coverage Enhancement Programme (NFCEP) is an instrument of the National Forestry Policy (CM 1997). It was updated in 2003. The current hase three of the programme covers the period 2010-2020. The programme assumes 30% forest coverage in 2020 will be achieved.

[109] Convention of the Council of Europe, done in Florence on 20th October 2000 (Dz.U. of 2006, No. 14, item 98).

delimitation of landscapes, should establish rules for protection of unique areas possessing symbolic features, as well as features responsible for the identity and international, national and regional recognisability of the place. The rules should also define active spatial policies for the area that would enable preservation of historical values increasing region's competitive advantage, and development of contemporary values.

In order to reduce pressure on environmental and cultural heritage areas laws will be changed to enable effective recognition, protection and management of landscape. Since landscape is perceived through its scenic qualities, an obligation will be introduced to include landscape studies into the investment preparation process in areas covered by different forms of landscape protection. Additionally, methodological guidelines will be developed to improve the landscape aspect in environmental impact assessments. Also, it will be important to create a set of land management tools to ensure operability of protection plans and spatial management plans. Monitoring of valuable cultural landscapes will also be developed.

Public participation in planning will support integration of management of inherited cultural landscape and landscape related with current socio-economic relations on the one hand, with the management of objects protected by area conservation measures, protection of symbolic values that may be the basis for regional development potential, such as city silhouette and historical object silhouette, and objects important for local communities' cultural heritage, on the other. The procedures will also include revitalisation programmes for post-industrial and crisis areas. Moreover, the process will also involve coordinating regional development, tourism development, and recreational system development in environmentally valuable and touristically attractive areas. The coordination will aim to reduce tourism pressure on areas with the highest environmental value (national parks, nature reserves, and touristically attractive areas with low ecological capacity) and to enhance socio-economic development in adjacent areas, including areas with conservation restrictions, such as: landscape parks, protected landscape areas, cultural parks, registered historical rural complexes and estates, and archaeological reserves.

Re 4.4. Rational management of limited surface and ground water resources, including prevention of water shortage for human consumption and economic development

Water resources, as one of key elements of the natural environment, are a strategic resource for national development, as well as an important condition of regional and local development. Alarmingly low, compared to Europe (6%), water retention rate is an indication that more effort should be made to decrease runoff. In order to maintain appropriate quality and quantity of water, integrated strategic planning documents on national and regional levels will include provisions enabling coordination of measures under the National Water and Environment Programme[110]. Spatial planning to a greater extent will regulate coexistence of different water uses and retention time in the environment in order to reduce the risk to quality and quantity of water resources.

National, regional and local planning will also incorporate other water management planning tools, including measures laid down in the Water Framework Directive[111] and Flood Directive[112], river basin management plans, flood risk management plans, drought plans and conditions of using water in a water region and drainage basin[113].

[110] An instrument to implement the Directive of the European Parliament and of the Council 2000/60/EC of 23 October 2000 (Framework Water Directive) established in the Water Law.

[111] Directive of the European Parliament and of the Council 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy; Act of 5th January 2011 changing the Water Law Act and certain other Acts (Dz. U. of 2011, No. 32, item 159) implemented this Directive into the Polish law.

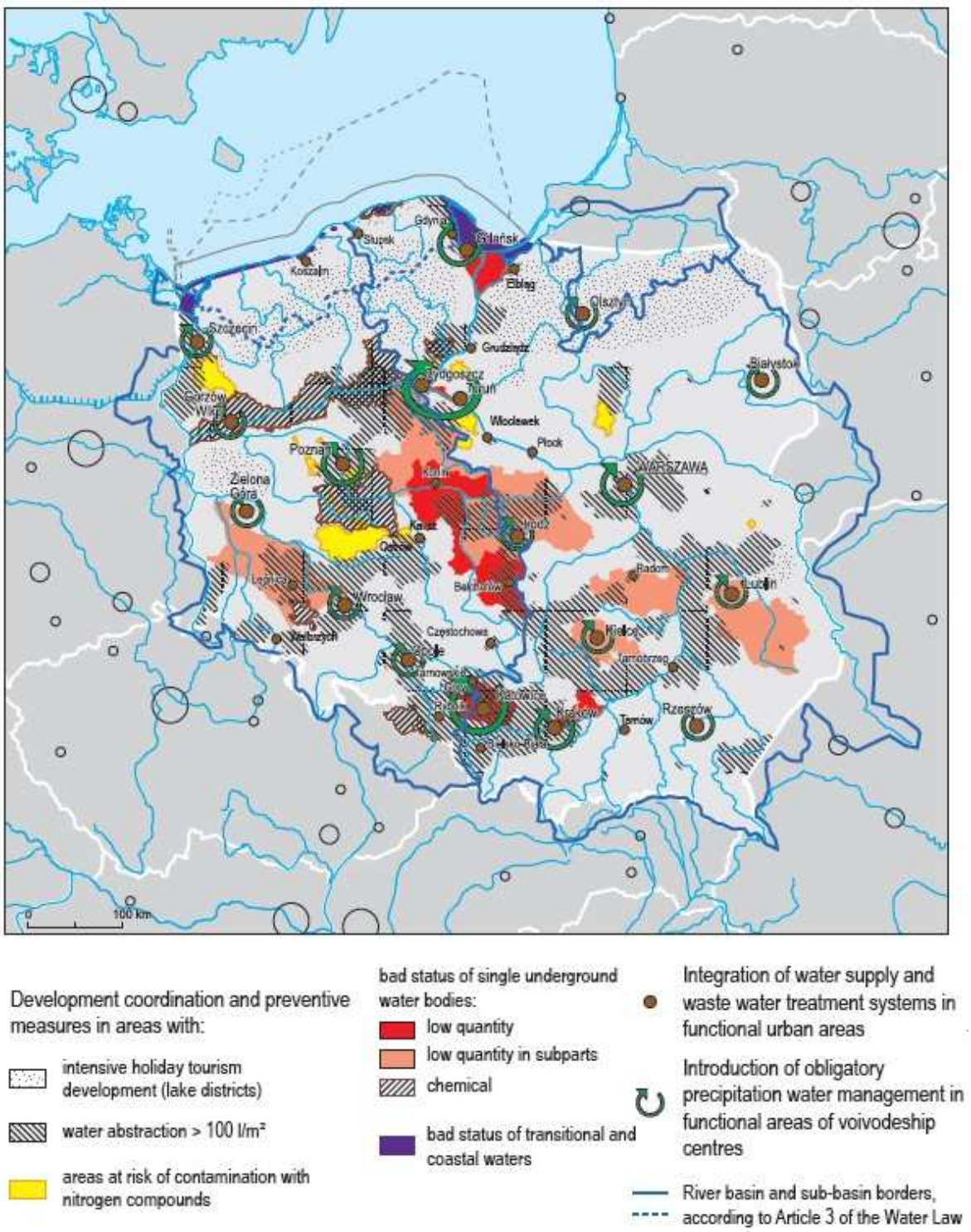
[112] Directive of the European Parliament and of the Council 2007/60/EC of 23 October 2007 on the assessment and management of flood risks; Act of 5th January 2011 changing the Water Law Act and certain other Acts (Dz. U. of 2011, No. 32, item 159) implemented this Directive into the Polish law.

[113] The mentioned water management planning instruments, defined in the Water Law Act, section VI, are designed and regularly updated by the President of the NWMA. On 5th January 2011 the Parliament adopted the Act changing the Water Law Act and certain other Acts which

Spatial policies intended to protect quality and quantity of water resources will also take the form of quantitative urban planning standards for nature sites and water retention in urban areas. This measure will be supported by fiscal incentives encouraging building owners to reduce discharge of precipitation water to municipal stormwater drainage system. The need to minimise effects of extreme calamities, such as floods and droughts, requires – apart from direct flood risk management measures – spatial planning to include measures intended to increase water retention up to 15% of average annual runoff. Such measures will consist of building large and small retention reservoirs, as well as installing micro-retention solutions in an area or in a building. To this end, voivodship spatial development plans will demarcate retention development areas taking into the account catchment water resource balance and flood risk management. Regional and local spatial planning documents will also optimise the use of hydraulic structures to generate hydropower taking into the account the needs of local communities and good water status requirements. Locations for hydraulic structures in the small and large retention systems will be chosen after an assessment of their impact on catchment balance, environmental protection objectives and sustainable socio-economic development of the region. Analysis results may drastically change the original planned land use, in particular in case of reservoirs whose intended function was to provide water to a region whose water needs were found to be smaller than initially expected.

harmonised the national legal framework with *acquis communautaire* and and changed definitions of the mentioned documents. River basin water management plans (RBWMP), flood risk management plans and river basin drought plans are adopted by the government. River basin water management plans were developed in 2010. Flood risk management plans are required to be completed by December 2015. RWMA directors develop water region water usage plans, as well as sub-basin water usage conditions where it is necessary to set special protection rules for water resources in a sub-basin.

Fig. 29. Selected water resource management directions



Source: MRD, prepared on the basis of an opinion by E. Nachlik, draft river basin management plans developed by National Water Management Authority and water quality monitoring data.

Rational ground water management ensuring an equilibrium between abstraction and replenishment will be regulated in national and regional plans, as well as municipal studies of ground, therapeutic and thermal water resources, in particular waters that are the basis of the economy in spas. Moreover, a requirement will be introduced to place water-intensive industries exclusively in areas demarcated in voivodeship plans.

Re 4.5. Achieving and maintaining good status and potential of waters and of related ecosystems

This objective is intended to reduce water shortage and protect water quality. Gminas and voivodehisp authorities within functional areas will be required to cooperate to improve viability of municipal services and enhance cost-effectiveness of public water supply, waste water management and municipal waste management. Integrated municipal services planning in urban functional areas will involve modernisation and expansion of the water supply and sewer networks, as well as of municipal waste treatment facilities servicing sub-regions with populations of at least 150 thousand. After completing pipeline networks in an agglomeration, modernisation or replacement of old network sections will commence. Effective water supply and sewer network management will require state-of-the-art monitoring and control technologies to be implemented. Closed water circuits will be installed not only in industrial facilities, but also in municipal systems – including stormwaters. Stormwater will be retained to increase water resources and used within agglomerations. It will be mandatory within urban functional areas.

The basic rule of balancing will be to integrate water abstraction management and waste water discharge management within balance units in a catchment. Voivodeship spatial management plans, after consultation with Regional Water Management Authorities, will demarcate ecological functional areas to protect water quality in watercourses and reservoirs. In those areas joint water and waste water management planning will be obligatory. This form of management will be introduced primarily in areas with predominantly scattered housing where low population density makes it impossible to demarcate an agglomeration for waste water treatment purposes and that are not covered by the National Municipal Waste Water Treatment Programme. Individual systems must be applied in those areas.

After 2015 VSDP and municipal studies will demarcate groundwater protection areas and wetland regeneration areas. In those areas restrictions on the freedom to use farmland will be introduced, including restrictions on permanent land use, planting new forests, and modifications of in-field trees and farmland-forest borders to prevent area contamination. The condition of effective protection of principal groundwater reservoirs is to introduce in demarcated protected zones obligations and prohibitions reflected in planning documents at all levels. Moreover, water protection functional areas may be demarcated to prevent area contamination caused by farming. Maritime area plans will safeguard areas for biological seawater treatment methods.

In cross-border areas cooperation in managing common water resources will continue and will be intensified. The cooperation is intended to achieve good quality status of water resources and to develop them. The cooperation is based on international agreements and cooperation programmes with different legal basis. The cooperation on the German and Czech borders is based on EU regulations and concerns managing common hydrographical unit: International Odra River Basin District. On the Slovak border, cooperation concerns upper sections of Danube and Vistula catchments. On the other hand, on the Ukrainian and Belarusian borders the integrated management of the San and the Bug catchments, and a section of the Dniester catchment shared with Ukraine, is based on bilateral agreements and international cooperation under the Water Convention[114]. Scope of cooperation is determined by: flood risk management needs; emergency management needs in case of contaminants that may threaten water quality in international sections of river basins; balance water investigation needs; good ecological status needs; water abstraction and transfer needs for human consumption and industry. The Bug catchment will receive support for infrastructural projects intended to reduce pollutant load in border rivers and the Baltic Sea. Pollution reduction by 2030 will require a very efficient municipal waste water treatment plant to be built in Brest, Belarus, and waste water management problems to be solved in Ukrainian parts of the catchment area.

[114] The Convention on the Protection and Use of Transboundary Watercourses and International Lakes, signed in Helsinki in 1992 (Dz. U. of 2003, No. 78, item 702).

Re 4.6. Decreasing environmental burdens of pollutant emissions to water, atmosphere and soil

The primary aim of planning will be to develop spatial structures minimising energy needs, reducing greenhouse gas emissions, enabling a more complementary use of RES to diversify energy sources for gminas, and reducing the burden of low emissions requirement. Locations for investments should also be chosen allowing for energy policies of gminas using biomass from waste, or thermal waste treatment methods.

Municipal and industrial, including hazardous, waste collection problems and waste management problems will be solved by optimising waste management systems, including adopting laws facilitating waste management installation projects. The basis for municipal waste management installation projects is the National Waste Management Plan[115] prepared regularly. In accordance with the Plan, the system should be based on waste management plants (WMPs), i.e. regional installations with capacity sufficient to take in and process waste from an areas with a population of at least 150 thousand. Regional installations service waste management regions defined in voivodeship waste management plans. Waste management infrastructure sites, including limited use zones demarcated due to sizeable impact of those installations, are under special surveillance to ensure that environmental protection criteria are met.

This measure should also result in reduced environmental burden caused by cumulated emissions that accompany congestion, including transport-generated noise. Infrastructural investments require a special approach to be taken to cultural landscape management when planning noise reduction measures, in particular in protected landscape areas and in the vicinity of protected silhouettes of historical objects.

Re 4.7. Securing economically valuable mineral resources and increasing use of recycled materials.

Current forms and methods of mineral resources protection used in spatial planning are insufficient to solve conflicts of interest in managing areas above mineral resources, managing accompanying protected environmental assets and to safeguard the possibility of mineral exploitation regardless of the degree to which the deposit has been explored.

Mineral deposits (construed to include also resources of therapeutic waters, thermal waters, sea sand and peat), as well as exploitation thereof in accordance with their value, will be protected by the law and spatial plans. Mineral exploitation will comply with deposit exploitation plans drawn up by the minister responsible for economy for each mineral. The plans will take into the account the development of Poland at present and in the future, as well as the requirement to preserve the environment for future generations, as far as possible, in an unchanged state. Drawing up exploitation plans will enable the management of land and of deposits connected and unconnected with the land. It will reduce social conflict potential and at the same time safeguard state's strategic interests and interests of local communities. The plans will be the basis to issue mineral deposit exploitation concessions. Minister responsible for economy will consult mineral deposit exploitation plans before mineral extraction concessions are granted. Potential concession areas will be included in spatial development plans at all levels in order to reserve land. The time frame of reservation will be stipulated in integrated voivodeship development strategies in consultation with ministers responsible for economy and environment.

Permits to explore and exploit new strategic deposits will be issued after a broad multi-criteria economic viability analysis. The analysis will include social and ecological aspects, such as costs of conflict between existing and planned functions for the prospective extraction area.

[115] Act of 27th April 2001 on waste (Dz. U. of 2010, No. 185, item 1243, as amended) introduced obligatory waste management plans, to be updated at least very 4 years. Since 1st January 2011 the National Waste Managemet Plan 2014 is binding. It was adopted by the Council of Ministers on 24th December 2010 by way of Resolution No. 21 (M. P. No. 101, item 1183). Those strategies enable regional planning of installations, as well as designated landfill sites.

In this context, it is particularly important to define strategic raw materials: fuels, metallic raw materials, chemical raw materials and rock raw materials. Inclusion of unmanaged deposits of those raw materials must be obligatory. It is also necessary to develop a policy whose goal will be to create conditions for increased use of recyclable materials, in particular in the context of reducing environmental burden from extraction and transport of construction aggregates.

Objective 5. To enhance spatial structure's resistance to natural calamities and loss of energy security, and to develop spatial structures supporting national defence capabilities

(1) Description of the problem

Poland's space is characterised by varying degree of resistance to different threats, including:

- threats with major impact on national energy security,
- natural calamities,
- defence threats.

The key problem of national energy security is poor diversification of energy sources. The following fuels play the key role in Poland's energy balance: coal (58% in 2010), oil and natural gas (35% in total)[116] (Diagnostic maps 13. and 19., Chapter VIII.). In spite of Poland's substantial and varied renewable energy sources (RES) (Diagnostic map 20, Chapter VIII), the share of those sources in total energy production is less than 6%. It is the result of historical and technological conditions, as well as, mainly, environmental, spatial and infrastructural barriers[117]. Key role in electricity generation is played by solid fuels extracted in Poland (ca. 90%). Poland's energy sector still based mainly on coal (at the current technological level) is facing an important challenge of introducing European Union policy to reduce emissions of CO_2 and other greenhouse gases. One may suppose that Poland will face the biggest problems realizing goals of the EU energy and climate package[118]. Another serious problem is the depletion of currently exploited fuel deposits, in particular lignite and coal. Investments in new mines and land reclamation (in particular, in disused open-cast lignite mines) are required, as well as in exploration of non-conventional fuels, e.g. shale gas.

One of the most serious problems of the Polish energy sector is the National Electrical Grid (Krajowy System Elektroenergetyczny)[119]. Today's technologies do not allow for storage of large quantities of electricity. Amount of electricity generated must match the current demand for it. The electrical grid, comprising power plants, transmission and distribution lines, is a system capable of safeguarding electricity supplies. Parts of this system are classified by law as critical infrastructures[120]. Features of the Polish electrical grid:

- obsolete technologies in the energy sector and bad technical conditions of power units,
- decapitalised transmission and distribution grids (average actual decapitalisation rate of the power grid is 70-80%),

[116] Source: Fuel and energy management 2009, 2010, CSO, Warsaw 2011.

[117] The share of RES in gross electricity use in 2000's was growing permanently. On the other hand, the share of biofuels in the transport fuel market, which at the beginning of the decade displayed a significant growth, decreased in ca. 2007 due to a fiscal policy change. Source: Annex 1 to the "Poland's Energy Policy by 2030".

[118] The agreement in force since 2009 (EU Energy and Climate Package) stipulates, that by 2020 the Union must reduce carbon dioxide emission by 20%, with a 30% reduction option, provided respective international agreements under Climate Convention are concluded; increase energy effectiveness by 20%; and generate 20% of electricity from renewable sources. The Package regulates in detail emissions trade (EU ETS). The key documents are: EU ETS Directive 2009/29/EC and the non-ETS Decision of the European Parliament and of the Council 2009/406/EC of 23 April 2009. Targets for Poland: 15% of the final energy demand in 2020 to be covered by RES. It was also negotiated that own emissions may be increased by 14% in the so-called non-ETS sector (not covered by the emissions trading scheme) and that free emission rights may be granted. Other provisions of the package concern promoting RES, vehicle emission standards, fuel specifications, carbon capture and storage, joint efforts to reduce emissions, including protection against moving production in the heaviest load industries outside of the EU.

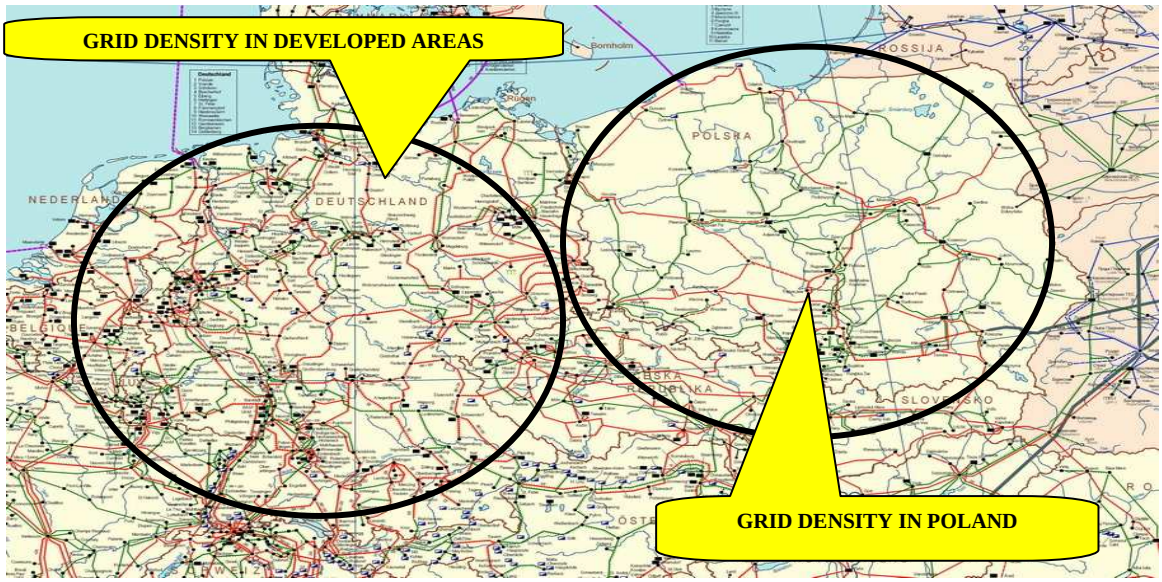
[119] The National Electrical Grid comprises all facilities for distribution, transmission and generation of electricity (baseload power plants, co-generation plants, pumped storage plants, utility power plants, decentralised energy sources, including RES) connected to form a system enabling continuous and uninterrupted electricity supply.

[120] Act on 26th April 2007 on crisis management (Dz. U. of 2007, No. 89, item 590, as amended)

- exceptionally bad condition of distribution grid in rural areas; these grids are characterised by high failure rate (50,000 km of medium voltage grid, and over 150,000 km of low voltage grid must be modernised immediately).

The chief operational problem of Poland's electrical grid is underinvestment. Electrical grid development – compared to neighbouring countries (Fig. 30.)[121] – shows the gap Poland must bridge.

Fig. 30. Transmission grid scheme in a part of Europe



Source: 2nd Report on the impact of laws on the operation and development of fuel and power lines essential for Poland's energy security; Cooperation agreement on creating new legal solutions facilitating infrastructure projects, Warsaw, March 2010.

The problem is aggravated by the location of power plants that are placed mainly in the southern and central parts of Poland. It increases the significance of the national transmission grid for energy security. The condition of the distribution grid also influences development perspectives of parts of the country, e.g. it is one of the most significant development barriers in Northern Poland. Also, security of power supply to certain major cities (Warsaw, Wrocław, Poznań, Szczecin) is unsatisfactory and may become a serious development barrier. The biggest shortage of the gas transmission network capacity occurs in Central Pomerania and Western Poland. The following regions display the most serious overall underinvestment in energy infrastructure (electricity and gas transmission lines): Pomerania, Warmia, Masuria, and voivodeships in Eastern Poland (Diagnostic map 14., Chapter VIII).

Deteriorating condition of the power network accompanied by longer periods of problems with access to existing installations and difficulties with building new installations will result in an increasing frequency, and growing scale of disturbances. Perceptible results of the disturbances are as follows: ageing of the existing network (mainly transmission lines) and future accumulation of indispensible modernisations of all networks.

The electrical sector, therefore, faces an enormous challenge. An intensive modernisation of power generation, transmission and distribution grid is essential. It is also necessary to replace old power generators with modern units that meet strict environmental criteria.

[121] 2nd Report on the impact of laws on the operation and development of fuel and power lines essential for Poland's energy security; Cooperation agreement on creating new legal solutions facilitating infrastructure projects, Warsaw, March 2010.

In 2008 a new power unit with 460 MW installed power was put in operation in Pątnów II Power Plant, and in 2009, a new 460 MW power unit in Łagisza Power Plant. In 3rd quarter of 2011 a new 858 MW power unit was put in service in Bełchatów Power Plant. Thanks to advanced technologies that were used, its technical parameters enable very effective electricity generation, and at the same time compliance with all requirements laid down in European Union's Directives concerning pollutant emissions. Moreover, the unit is being prepared to operate with a carbon capture and sequestration system (CCS).

Also electrical grids are being modernised and replaced. In the years 2008-2010, as a result of investment projects, the length of overhead lines and underground cables increased for all voltage levels. In this period, the number of high and medium voltage substations also increased. The dynamics of the abovementioned projects is shown in the table below.

Table 2. The most important data that characterise transmission and distribution grids in 2008 and 2010.

Item	Measuring unit	2008	2010	Dynamics [%]
Overhead electrical lines				
high voltage (100 kV and up)	km	45 578	46 112	101.17
medium voltage (1 kV – 100 kV)	km	234 202	234 741	100.23
low voltage (below 1 kV)	km	289 723	289 977	100.09
Total	km	***569 503***	***570 830***	***100.23***
Length of cable lines				
high voltage (100 kV and up)	km	116	164	141.38
medium voltage (1 kV – 100 kV)	km	66 309	68 998	104.06
low voltage (below 1 kV)	km	134 163	140 320	104.59
Total	km	***200 588***	***209 482***	***104.43***
Electrical substations				
high voltage (100 kV and up)	units	1473	1507	102.31
medium voltage (1 kV – 100 kV)	units	242 148	246 562	101.82
Total	units	***243 621***	***248 069***	***101.83***

Source: Statistics of Elektroenergetyka Polska, ARE S.A.

Poland's location in the transitional climate zone characterised by high degree of variability, as well as expected climate changes (Fig. 3.), suggest that frequency of extreme natural phenomena will be increasing in cycles. Also, minimum and maximum values of those phenomena will be growing. The phenomena will include, in particular, floods, rainstorms and consequent landslides, as well as droughts. There may be regional increase in frequency of tornados. A relatively small group of natural calamities occurring in Poland makes flooding the most severe natural calamity that generates the highest losses; floods may have different origin: rainfall, thawing snow, storms and blockage (Fig. 31.). Observations of the Institute of Meteorology and Water Management in the period 1945-2005 show, that floods caused by rainfall occur usually in the upper section of the Odra basin, in particular in the sub-basin of Nysa Kłodzka, and in the upper part of the Vistula basin, in particular sub-basins of Poprad and Dunajec. Floods caused by the thaw usually occur in the middle section of Odra basin, and sub-basins of Warta and Bug. Floods caused by sea storms at the mouths of Odra and

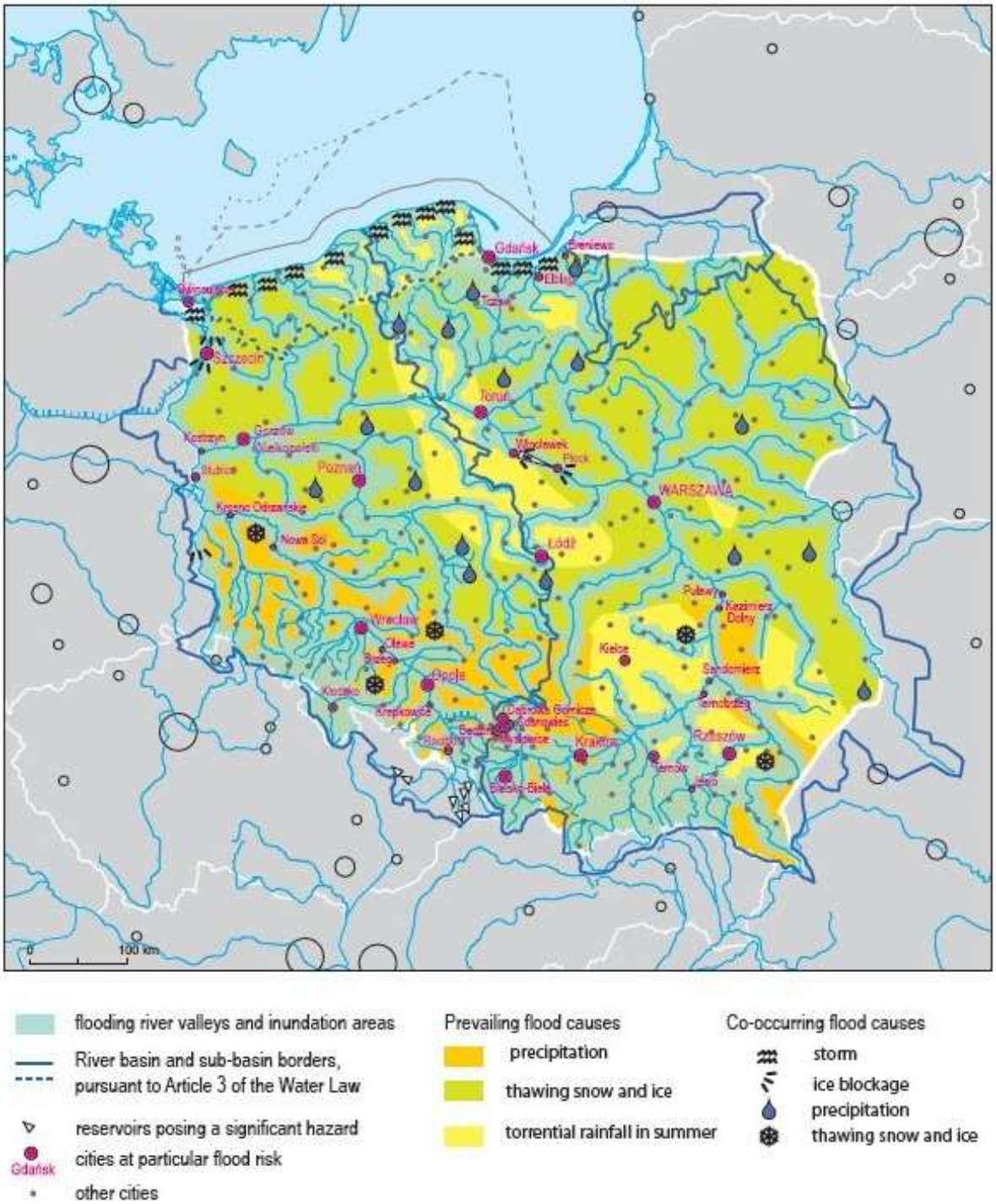
Vistula, as well as in Żuławy Gdańskie and Żuławy Elbląskie may be dangerous. Expected consequences of the climate change include:

- more intensive precipitation in summer and winter that will escalate the magnitude and frequency of flood and landslide risk[122],
- growing flood risk along lower Vistula and Odra caused increasing frequency of ice dams,
- increasing frequency of droughts, primarily in central-western and central Poland (Diagnostic map 21., Chapter VIII.), causing water supply difficulties for municipal purposes, agriculture and industry[123], as well as threatening certain environmentally valuable areas, Lack of the tradition and technical possibilities to use irrigation in agriculture (e.g. using groundwater) may lead to decreasing productivity in areas threatened by droughts,
- increasing activity of the Baltic Sea. It will cause increased abrasion of seashore and more frequent flooding of the coastline in consequence of periodically and permanently rising sea level. This phenomenon will be particularly significant for urban areas of TriCity where rising groundwater table may put entire districts inhabited by hundreds of thousands of people at risk. Independently, due to increasing infiltration of salty seawater, the drinking water supply problem and security problem of the population of Żuławy will escalate.

[122] Summer precipitation will occur in large and small river valleys, winter precipitation primarily in mountainous and sub-mountainous areas of the Carpathians and the Sudetes.

[123] Areas particularly vulnerable to low precipitation, and consequently to severe droughts, are concentrated in Wielkopolska, Lubuskie Voivodeship, Kujawy, locally in Masovia and Łódzkie Voivodeship.

Fig. 31. Flood hazard in Poland



Source: MRD, based on E. Nachlik, L. Starckel, Z. Kundzewicz, J. Zaleski, J. Wiśniewski, M. Maciejewski, *Opinions prepared for the purpose of NSDC.*

Increasing negative consequences of natural phenomena that influence regional and territorial potentials and – in a longer perspective – ecosystems' ability to provide certain services, make it necessary to develop an action plan to adjust space to the climate change.

Protection against natural threats was not as important part of national spatial policy in the last fifty years as it should be. Lack of care to ensure protection against intensive land development, in particular housing in, and urbanisation of floodplains, is the main reason for enormous losses generated in case of an extreme flood. Plans to build flood prevention

facilities, primarily retention reservoirs and polders intended to be flooded in case of high water levels, were abandoned. Also, no comprehensive drought protection programme was implemented, as it was assumed that the protective role will be played by multi-purpose large retention reservoirs used both to reduce water surges and to supply rivers in dry periods. Those assumptions turned out to be a failure, as the total capacity of all retention reservoirs equivalent to 5.7% of the average annual outflow does not enable an effective reaction to local water shortages in dry periods, nor a reduction of water surplus consequences during high water periods. Only a part of the total capacity of multi-purpose reservoirs is used as flood reserve, therefore their impact on the reduction of flood wave depends largely on a correct reservoir capacity management during high water periods. On the other hand, the main function of dry reservoirs (polders), that are missing from the system, is to reduce the extreme flood wave and store high water for a long time.

Inclusion of state defence aspects in spatial development planning documents at all planning levels will make the territory of Poland more resistant to external threats. It will enable, *inter alia*, undisturbed operation of military facilities and complexes, and will facilitate defence projects. The surface area of those complexes (other restricted areas) is 224.3 ha which is equivalent to 0.7% of Poland's territory.

The majority (95%) of military maritime and land training areas are located on land owned by State Forests Holding, as well as in the sea in the Polish exclusive economic zone. Military airfield network comprises 24 airfields, and facilities co-used with civilian airports (40 airfield facilities in total).

Development Programme for the Armed Forces of the Republic of Poland 2009-2018 envisages garrisons to be located near cities with populations of over 100,000 and other places, depending on the analysis of the international situation. 70 garrisons and reinforcement bases, as well as 30 airbases, naval bases, and special bases – 100 facilities in total – will be dislocated across Poland. In comparison with 126 garrisons in 2008, it means that the number of military facilities is being gradually reduced. Also, the number of military complexes that form a part of those facilities is being reduced.

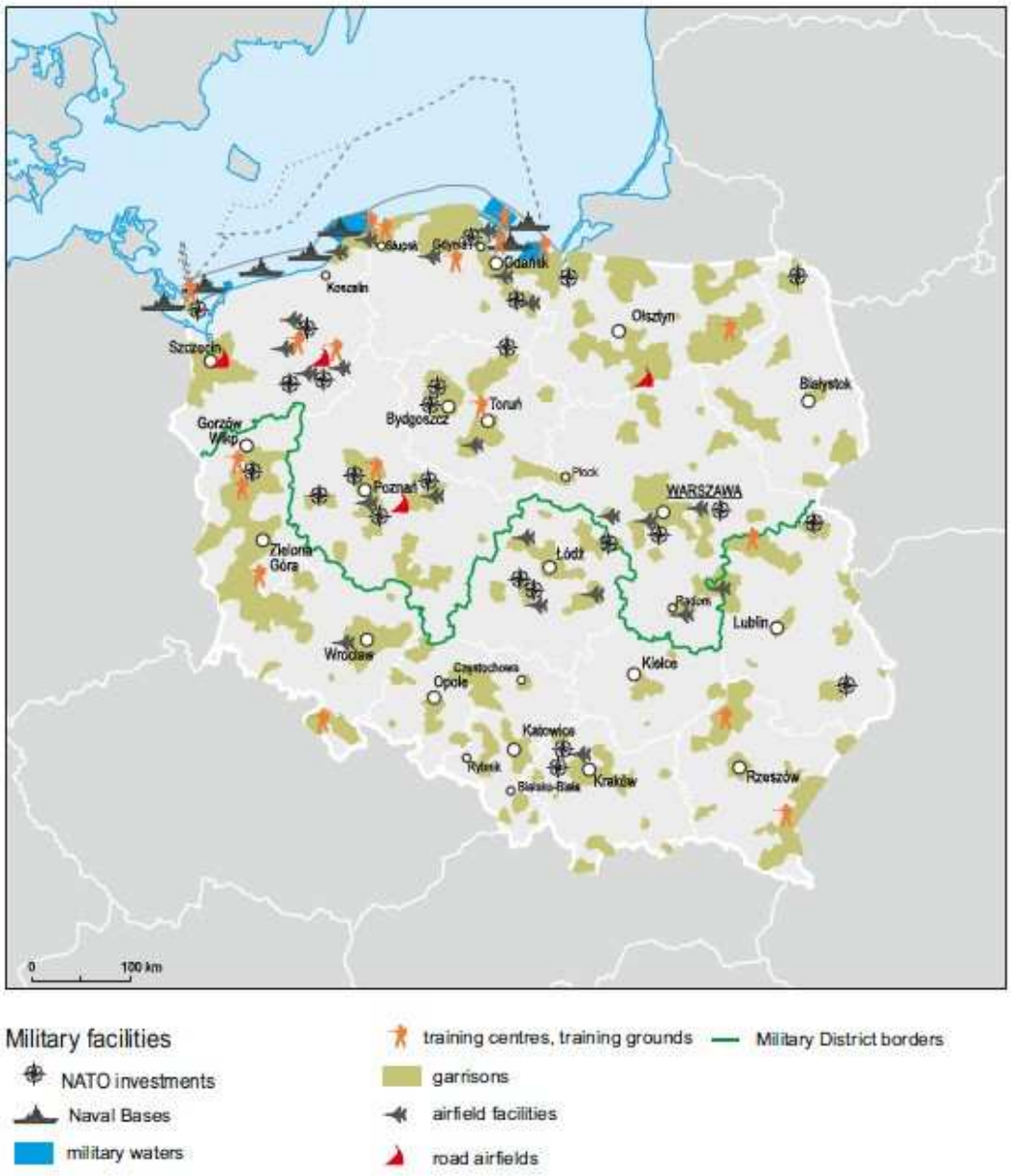
Investors are often interested in spatial resources in the vicinity of restricted areas, mainly due to the dynamic urbanisation process. It raises numerous problems with establishing protected zones, including demarcation of limited use areas set out in the Environmental Protection Law[124].

Critical infrastructure plays an important role in the operation of a civilised state. The higher a country's development level, the more it is dependent on the efficiency of critical infrastructure within the meaning of the Act of 26th April 2007 on crisis management. Critical infrastructure also includes military facilities designated following the criteria set out by the Governmental Security Centre. Facilities designated as crucial for state security and defence under the Act on the common defence duty of the Republic of Poland are a separate set of infrastructures serving purposes of national security, and in particular national defence. The following military facilities and defence problems have been accumulating for many years:

- complex, time-consuming location preparation procedure for NATO Security Investment Programme (NSIP) projects; the procedure depends, *inter alia*, on local authorities, e.g. whether or not a local authority prepared a local spatial development plan,
- urban areas increasingly encircling military complexes, often limiting their functionalities (emerging spatial conflicts in areas surrounding restricted areas),

[124] Article 135, paragraph 3a, Act of 27th April 2001 Environmental Protection Law (Dz. U. of 2008, No. 25, item 150, as amended)

Fig. 32. Location of military complexes



Source: Z. Lach, J. Skrzyp, A. Łaszczuk, *Problemy obronności i bezpieczeństwa państwa oraz wynikające z tego konflikty i ograniczenia rozwoju przestrzennego – rekomendacje dla KPZK [Defence and State Security Issues and Resultant Conflicts and Spatial Development Restrictions – Recommnedations for NSDC]*, National Defence Academy.

- designating areas significant for national defence and army needs, in particular training grounds, as nature protection sites without ensuring conditions for the areas to be used for the original purposes,
- deficiencies of the legal system that prevent efficient and effective introduction of defence requirements into spatial management plans[125],
- abandonment of planning and construction of non-military defence system facilities for civilians (including protection facilities against weapons of mass destruction); lack

[125] Lack of executive legislation regulating designation of protected zones in restricted areas. Consequently, inclusion of the protected zones into local plans depends on good will and efficiency of local authorities. In extreme cases, local authorities protract the plan design and adoption procedure.

of laws regulating this field results in insufficient protective measures for inhabitants in new residential areas, cities and agglomerations.

Land needs to be reserved for defence purposes. Designation of an area for defence purposes will mean a number of land-use restrictions. Such area may not be used for economic (mainly farming and forestry), environmental and housing purposes. Using such land reserves must not collide with needs at the time of danger.

A critically important topic for national defence is accessibility. Places threatened with a crisis, in particular borderlands and coastal areas, must be readily accessible.

An important defence issue is also the ability to ensure communication using several independent systems, both military and commercial that may be used in crisis situations. National geospatial information system is an essential element of spatial management and planning. A favourable action towards ensuring this system is realised is to implement the Act on spatial information infrastructure of 4th March 2010, as well as Global Monitoring for Environment and Security (GMES) supported by the European remote sensing and navigation systems (GALILEO).

(2) Outline of future actions

Spatial policy aimed at achieving national development targets must enhance country's resistance to various threats, such as energy security threats, natural calamities and defence threats. Security objectives are as follows:

5.1. Counteracting energy security threats and appropriate response to such threats;
5.2. Improving protection against extreme natural and man-made calamities;
5.3. Developing spatial structures supporting national defence capabilities.

Re 5.1. Counteracting energy security threats and appropriate response to such threats

Counteracting energy security threats and appropriate response to such threats is a major element of the development policy and has significant impact on national spatial development. Measures to achieve energy security targets will include both investments and planning. Energy infrastructure development by 2030 will have to address the following major challenges:

- reduce the risk to uninterrupted oil and natural gas supplies by taking action to diversify energy sources (in technical and geopolitical sense), and by building cross-border connectors to integrate energy grids (transmission grids, gas and oil pipelines) with grids in neighbouring countries,
- reduce CO_2 emissions to a level agreed in the European Union by: supporting investment projects at different levels (from baseload power plants[126] with zero or minimal CO_2 emissions down to household facilities); adjusting electrical grids to receiving electricity from scattered renewable sources (taking over power surplus from RES, including planned land and maritime wind farms, will require a few hundred kilometres of new transmission grid to be built including accompanying infrastructure),
- distribute power plants and transmission grid more evenly across Poland; gas transmission network may need to be expanded due to possible increased gas extraction in Poland,
- expansion of the highest voltage transmission grid required to connect new power sources, including RES and to receive power from those sources,

[126] Baseload power plant is a component of the electrical grid comprising facilities for electricity generation, transmission and distribution connected with each other to ensure continuous power supply to users.

- improve effectiveness of transmission, supply and energy use by developing smart grids,
- protect strategic mineral deposits, even if exploitation of those deposits is not envisaged in the coming years; it concerns primarily lignite, coal and natural gas,
- increase use of renewable energy sources by building new power units that will reduce energy transmission losses and increase energy security at following levels: national, regional and local.

5.1.1. Increasing energy security by expanding the system of connections with neighbouring countries' electrical grids

Projects implemented under this objective will be intended to increase the capacity of connections between the electrical grids of Poland and neighbouring countries: Germany (modernisation of existing lines and construction of a new connection), Slovakia, Lithuania (Ełk – Alytus) and Ukraine. It is also possible to build and modernise connections with Belarus and Russia.

5.1.2. Extension of internal grid. Improving security of supplies to major cities and Northern Poland[127]. Development of smart grids.

In order to ensure efficient operation and more even distribution of electrical grid (highest voltage grid: 400 kV and 220 kV), new investments in Poland will be concentrated in Northern and Eastern Poland (Fig. 34., Table 2.). In the first stage, extra high voltage transmission lines will be built, *inter alia*, between Łomża and Ełk and further on towards state border, from Ostrołęka to Olsztyn and Płock, and from Żydów to Gdańsk and Pelplin. In the next period, by 2020, the line from Ostrołęka will be extended to Stanisławów, and the one from Żydów through Piła to Plewiska. Also in this period, new lines will be built to connect Lublin with Chełm and Lublin with Siedlce. After 2020, the bulk of investments in high voltage transmission lines will be shifted to the west of Vistula and will be implemented along the north-south line. The length of 400 kV lines will increase, while the length of 220 kV lines will decrease. Capacities of east-west and north-south transmission lines, as well as of lines supplying distribution grid operators, will be increased.

Qualitative changes will include: replacing old 220 kV network with new 400 kV; closing 220 and 400 kV rings to increase supply reliability; building grids receiving electricity from RES and nuclear power plants located mainly in the north of Poland; ensuring protection of the National Electrical Grid against failures. Qualitative changes will be achieved by building the missing grid elements mentioned in the table below. New 400 kV rings around major agglomerations will be built; certain single circuit 400 kV transmission lines will be converted to double circuit lines; new 400 kV transmission lines and new 400/110 kV substations will be build, including new power supply connections.

Security of power supply to major cities (Warsaw, cities of Northern Poland, Poznań and Wrocław) will be ensured by building new 400 kV transmission lines (e.g. Bełchatów – Poznań, Poznań – Słupsk, Ostrołęka – Gdańsk), as well as launching new baseload power plants (including nuclear ones) in Northern Poland. In order to ensure secure operation of the NEG in northern and north-eastern parts of Poland – in the context of grid underdevelopment in those regions – it is planned to build emergency backup power sources. The planned installation of emergency power sources[128] will enable the reduction of results of

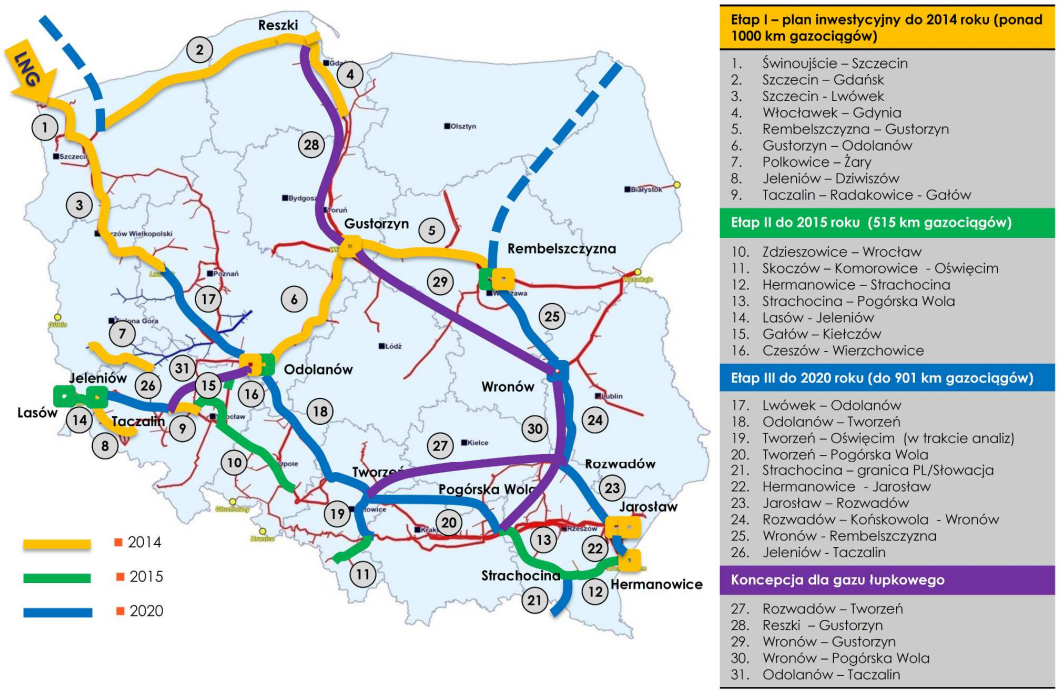
[127] Measure in line with the "Poland's Energy Policy by 2030".

[128] Emergency power sources are power sources eliminating temporary power shortages due to current transmission grid setup, its working conditions and unpredictable working cycle of wind farms.

identified threats caused by grid underdevelopment and emergency shutdowns of important grid facilities[129].

Further development of electrical grids will involve the development and implementation of smart grid technologies, including information technologies. Electricity producers and distributors will start using grid control and safety devices to increase reliability and quality of power supply and to decrease environmental impact of electricity-related processes. Smart electricity meters with remote data transmission capability will be commonly used by consumers.

Fig. 33. Extension of the transmission grid by 2020



Etap I - plan inwestycyjny do 2014 roku (ponad 1000 km gazociągów)	Stage I – investment plan by 2014 (over 1000 km of gas pipelines)
Etap II do 2015 roku (515 km gazociggów)	Stage II – by 2015 (515 km of gas pipelines)
Etap III do 2020 roku (do 901 km gazociągów)	Stage III – by 2020 (up to 901 km of gas pipelines)
Koncepcja dla gazu łupkowego	Shale gas concept

Source: GAZ-SYSTEM S.A., Gas Transmission Grid Operator

Table 3. Extension of the national natural gas transmission grid by 2020

Infrastructure	2014		2015		2020	
Gas pipelines in km	1. Szczecin-Świnoujście	80	1. Lasów-Jeleniów	19	1. Lwówek-Odolanów	162
	2. Szczecin-Gdańsk	265	2. Czeszów-Wierzchowice	13	2. Jeleniów-Taczalin	90
	3. Włocławek-Gdynia	63	3. Gałów-Kiełczów	54	3. Hermanowice-Jarosław	39
	4. Szczecin-Lwówek	186	4. Zdzieszowice-Wrocław	178	4. Jarosław-Rozwadów	60
	5. Rembelszczyzna-Gustorzyn	176	5. Hermanowice-Strachocina	80	5. Rozwadów-Końskawola-Wronów	65
	6. Gustorzyn-Odolanów	168	6. Strachocina-Pogórska Wola	120	6. Wronów-Rembelszczyzna	135

[129] Those power sources are mainly used as a reserve.

	7. Jeleniów-Dziwiszów 65 8. Radakowice-Gałów 7 9. Taczalin-Radakowice 32 10. Polkowice-Żary 66 **Total 1108**	6. Skoczów-Komorowice-Oświęcim 51 **Total 515**	7. Pogórska Wola-Tworzeń 160 8. Odolanów-Tworzeń 190 **Total 901**
Pumping stations	Jarosław Goleniów	Jeleniów-II Rembelszczyzna	Odolanów
Nodes			Wronów Node Lasów Node

The main objective of the first stage of investments (period 2008-2014) is to enable gas absorption from the terminal and interconnectors, and distribution of the gas in Poland. New gas pipelines and pumping stations will significantly strengthen the national transmission grid and enable full and effective exploitation of modernised and new gas storage facilities. Next grid extension stages will allow for the expected increase in national gas extraction resulting from launching new non-conventional natural gas mines (Fig. 35.). Modernisation of the transmission and distribution infrastructure is required to place shale gas on the market.

5.1.3. Construction and pro-ecological modernisation of baseload power plants

Construction and modernisation of power plants is very important for national energy security and for ensuring deliveries to each region. Facilities in good technical condition will be modernised or equipped with pro-ecological installations. Older and worn out ones will be replaced with new power units with better performance and higher power. Main electricity sector investments in 400-1000 MW power units will be completed in the period 2014-2018. By building new power units, gas emissions will drop by ca. 30%. Modernised and new pro-ecological installations will reduce, first of all, other air pollutants.

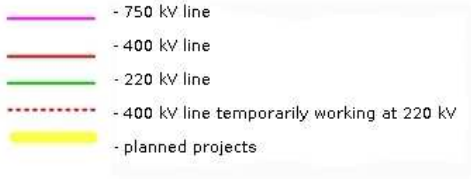
The need to diversify electricity sources may entail the construction of two or three nuclear plants by 2030.
Investments in nuclear power generation, apart from ensuring increased energy security, diversified energy sources and positive environmental impact, will be also a significant factor in regional development. Since the Act of Parliament on preparation and implementation of nuclear power facilities and accompanying investments envisages also a number of accompanying projects, industrialisation of the region should improve. Nuclear power plants and other nuclear facilities will have a beneficial impact on the economy and infrastructural development of the region both at the preparation and construction phase, and at the operational phase. Those projects will generate tax revenues, produce new jobs, increase local people's income and ensure dynamic development of transport and energy infrastructure.

Even though nuclear power plants are planned (the first one will be launched after 2020), the role of power plants using coal and lignite will still be significant over the next twenty years. To ensure further operation of those power plants, in particular ones using lignite, it will be necessary to exploit new fuel deposits. Therefore, it will be necessary to analyse in each case economic and ecological costs in the long-term perspective of at least thirty years, in particular in the context of growing attractiveness of natural gas power plants. Combined cycle power plants achieve the highest electricity efficiency in the conventional energy sources group, therefore their CO_2 emissions are fifty percent lower than those of coal-fuelled power plants. This advantage will be particularly important in the context of the need to buy CO_2 emissions rights after 2012.

New investments in the energy sector mean that monitoring services ensuring proper operation of the infrastructure will also have to be strengthened, in particular in coastal areas

and at sea. Also, it will be necessary to prepare emergency services to handle possible failures and catastrophes related to gas transport via subsea pipelines and LNG carriers.

Fig. 34. Transmission grid development in stages in the period 2015-2030



Transmission grid development in Poland; highlight on investments in the period: 2010-2015

2016-2020

2020-2030

Source: Development plan to safeguard current and future electricity needs in the period 2010 - 2025, PSE Operator SA, August 2009.

Table 4. Electrical grid investment projects in stages

FACILITIES	2015	2020	2030
400 kV	1. Dobrzeń – Wrocław Line 2. Ełk – State Border Line (towards Lithuania) 3. Ełk – Łomża Line 4. Gdańsk Przyjaźń – Pelplin Line 5. Gdańsk Przyjaźń – Żydowo Line 6. Grudziądz – Pelplin Line 7. Kozienice – Ołtarzew Line 8. Kozienice – Siedlce Ujrzanów Line 9. Kromolice – Pątnów Line 10. Miłosna – Siedlce Ujrzanów Line 11. Narew – Ostrołęka Line 12. Ostrołęka – Olsztyn Mątki Line 13. Pątnów – Jasiniec – Grudziądz Line 14. Piła Krzewina – Bydgoszcz West Line 15. Plewiska – State Border Line, towards Eisenhuettenstadt 16. Plock – Olsztyn Mątki Line 17. Słupsk – Żydowo Line 18. Czarna – Polkowice Line 19. Construction of 400 +110 kV Line between Pasikurowice and Wrocław 20. Construction of 400 +110 kV Line between Świebodzice and Wrocław 21. Extension of the Polkowice station 22. Extension of the Świebodzice station 23. Extension of the Skawina station 24. Construction of a 400 kV station, Łomża 25. Construction of a station, Dargoleza 26. Construction of a station, Gdańsk Przyjaźń 27. Construction of a station, Pelplin 28. Construction of a station, Siedlce Ujrzanów 29. Construction of a station, Kromolice 30. Construction of a station,	1. 400 kV Dunowo – Żydowo Line 2. Lublin East – Chełm Line 3. Lublin East – Lublin Systemowa Line 4. Lublin East – Siedlce Ujrzanów Line 5. Ostrołęka – Stanisławów Line 6. Krajnik – Baczyna Line 7. Mikułowa – Świebodzice Line 8. Plewiska – Piła Krzewina – Żydowo Line 9. Polkowice – Zielona Góra Line 10. Zielona Góra – Baczyna Line 11. Byczyna – Czeczott – Podborze 3-circuit Line 12. Extension of the Blachownia station 13. Extension of the Chełm station 14. Extension of the Janów station 15. Extension of the Ostrołęka station, stage II 16. Extension of the Piła Krzewina station 17. Extension of the Puławy station 18. Construction of a station, Stanisławów 19. Construction of a station, Baczyna 20. Construction of a station, Lublin East 21. Construction of a station, Wyszków 22. Construction of a station Zielona Góra 23. Extension of the Olsztyn Mątki station 24. Extension of the Gdańsk Błonia station	1. Klempicz (EA 2) – Baczyna 3-Line 2. Rogowiec – Pabianice Bis – Pątnów Line 3. "Plewiska Bis" – Pasikurowice Line 4. Klempicz (EA 2) – Plewiska Bis Line 5. Ostrów – Kalisz Line 6. Żarnowiec – Gdańsk Przyjaźń Line 7. Two lines Klempicz (EA 2) to the line Plewiska – Piła Krzewina 8. Baczyna – Gubin Line 9. Chełm – Mokre – Jarosław Line 10. Czeczott – State Border Line (towards Slovakia) 11. Kielce – Rogowiec Line 12. Jarosław – Rzeszów Line 13. Narew – State Border Line (towards Belarus) 14. Siedlce Ujrzanów Line to the line Narew – Stanisławów 15. Ostrołęka – Ełk Line 16. Podborze – State Border Line (towards Slovakia) 17. Skawina – State Border Line (towards Slovakia) 18. Świebodzice – Ząbkowice – Dobrzeń Line 19. Extension of the Aniołów station 20. Extension of the Bydgoszcz West station 21. Construction of a station, Gubin 22. Construction of a station, Klempicz 23. Construction of a station, Plewiska Bis 24. Construction of a station, Boguchwała Bis 25. Construction of a station, Jarosław 26. Construction of a station, Kalisz 27. Construction of a station, Pabianice Bis 28. Rogowiec – Pabianice Bis – Pątnów Line 29. Extension of the Ząbkowice station 30. Extension of the Groszowice station

FACILITIES	2015	2020	2030
	Żydowo 31. Construction of a station, Ołtarzew 32. Installation of phase shifters in the Krajnik station 33. Extension of the Kozienice station 34. Extension of the Narew station 35. Extension of the Ostrołęka station 36. Extension of the Płock station 37. Extension of the Ełk station 38. Installation of phase shifters in the Mikułowa station 39. Construction of a station, Podborze 40. Construction of a station, Elbląg 41. Construction of an emergency backup supply in the Grudziądz station 42. Construction of an emergency backup supply in the Gdańsk Błonia station 43. Construction of an emergency backup supply in the Narew station 44. Extension of the Lublin Systemowa station 45. Extension of the Dobrzeń station 46. Extension of the Czarna station 47. Extension of the Słupsk station 48. Extension of the Grudziądz station		31. Extension of the Siersza station
220 kV	1. Siekierki Plant – Piaseczno Line 2. Glinki – Recław Line 3. Extension of the Recław station 4. Lublin Systemowa – Abramowice Line 5. Radkowice – Kielce Piaski Line 6. Extension of the Pomorzany station and construction of a 220 kV line Krajnik – Pomorzany 7. Extension of the Siekierki Plant station 8. Extension of the Warszawa Praga station	1. Morzyczyn – Pomorzany Line 2. Construction of a 220 kV cable Miłosna – Siekierki Plant	1. Siekierki Plant – Warszawa Towarowa Line 2. Pomorzany Line to the Morzyczyn – Glinki Line

FACILITIES	2015	2020	2030
	9. Extension of the Stalowa Wola station Extension of the Abramowice station		

5.1.4. Ensuring alternative natural gas and oil supply routes to Poland and significant capacity increase in gas storage facilities

In order to increase Poland's resistance to risks related to fuel supply interruptions, e.g. gas and oil that Poland imports at present, it is necessary to implement large-scale strategic investment projects. List of investments related to foreign gas supplies will comprise: construction of the LNG re-gasification terminal in Świnoujście; and construction of the following connectors: Poland – Germany (extension of the connection in Lasów, or a new connection in another location), and Poland – Czech Republic (in the vicinity of Cieszyn); depending on economic analyses results, the following connections will be built: Poland – Denmark (Baltic Pipe; connection with Scandinavian gas fields), Poland – Slovakia (enabling a connection with the Nabucco pipeline), and Poland – Lithuania. The abovementioned projects will also entail an extension of the national transmission grid. Additionally, the capacity of Underground Gas Storage Facilities (UGSF) will gradually increase in the following locations: Husów (Podkarpackie Voivodeship), Brzeźnica (Podkarpackie Voivodeship), Wierzchowice (Dolnośląskie Voivodeship), Strachocina (Podkarpackie Voivodeship) and a cavern gas storage in Mogilno (Kujawsko-Pomorskie Voivodeship). A new cavern gas storage is being built in Kosakowo (Pomorskie Voivodeship).

The need to diversify supplies of oil to ensure deliveries from different regions of the world means that transmission infrastructure will have to be extended. One of the considered projects is to extend the Odessa-Brody pipeline to Adamów and Płock. At the moment, the project is at the pre-investment analysis stage. The analyses are primarily intended to investigate the supply and demand for oil from the Caspian Sea region. Oil supply diversification may require a second line of the Northern Pipeline to be built (Płock – Gdańsk). However, it will depend on volumes and origin of supplies to refineries, and on the construction of the Odessa – Brody – Płock pipeline. Extension of certain ready-product pipelines is also being considered, e.g. of the petrol pipeline from Boronowo to Trzebinia.

In Poland, in spite of the dynamically growing demand for fuel and the need to constantly improve energy security, there are no large sea terminals dedicated to international trade in fuel, apart from transhipment stations in Naftoport in Gdańsk. At present, terminals in Świnoujście and Dębogórze are not capable of servicing large tankers. It is recommended to build a storage and transhipment base in the Gdańsk Port that, apart from having a positive impact on Poland's energy security, will also provide opportunities to achieve good economic effect. The ninety days fuel reserve is being maintained in line with statutory requirements.

5.1.5. Enhancing natural gas extraction opportunities in Poland, including extraction from non-conventional sources (e.g. shale gas)

Increasing energy security is also related to searching for alternative energy sources. One of such alternatives is to use shale gas. So far, shale gas was not extracted due to technological constraints. Over the next few years large portions of Poland will be subjected to intensive geological studies in search of natural gas using state-of-the-art prospecting and exploration technologies. Discoveries of economically viable gas deposits will entail priority investments in managing non-conventional natural gas deposits. Industrial extraction in individual concession areas may be launched in the period 2014-2015, depending on prospecting results. Not only does it have a potential to completely change Poland's energy balance, but also will influence

development prospects of areas and regions. Development prospects will change in particular in connection with infrastructure projects accompanying shale gas extraction – roads, water supply network, waste water network, gas and electrical grids, waste water treatment plants, supply and logistics centres, transport centres etc. Shale gas exploitation will also contribute to the development of local labour markets. It will also be necessary to include new extraction areas (probably scattered across Poland), and restrictions related to those areas, in national, regional and local spatial development plans.

5.1.6. Increasing energy production from renewable sources

A measure that will support diversification of energy sources, as well as contribute to the reduction of CO_2 emissions, is the increase in energy production from renewable sources. In Poland, renewable energy sources with the biggest economical potential are: wind, biomass, biogas and geothermal sources. The hydropower sector also has certain potential. Considering Poland's climate and present technical possibilities, generating electricity from solar power will not be feasible. On the other hand, solar power will play an important role in heat generation. By 2020 at least 15% of gross energy end-use will originate from renewable sources.[130] It will be achieved through public investments (co-funded by the EU; this kind of projects is an important priority of the EU Europe 2020 strategy) and private investments, in particular in areas where appropriate legal and fiscal incentives were introduced, where appropriate resources and optimal geographical conditions exist.

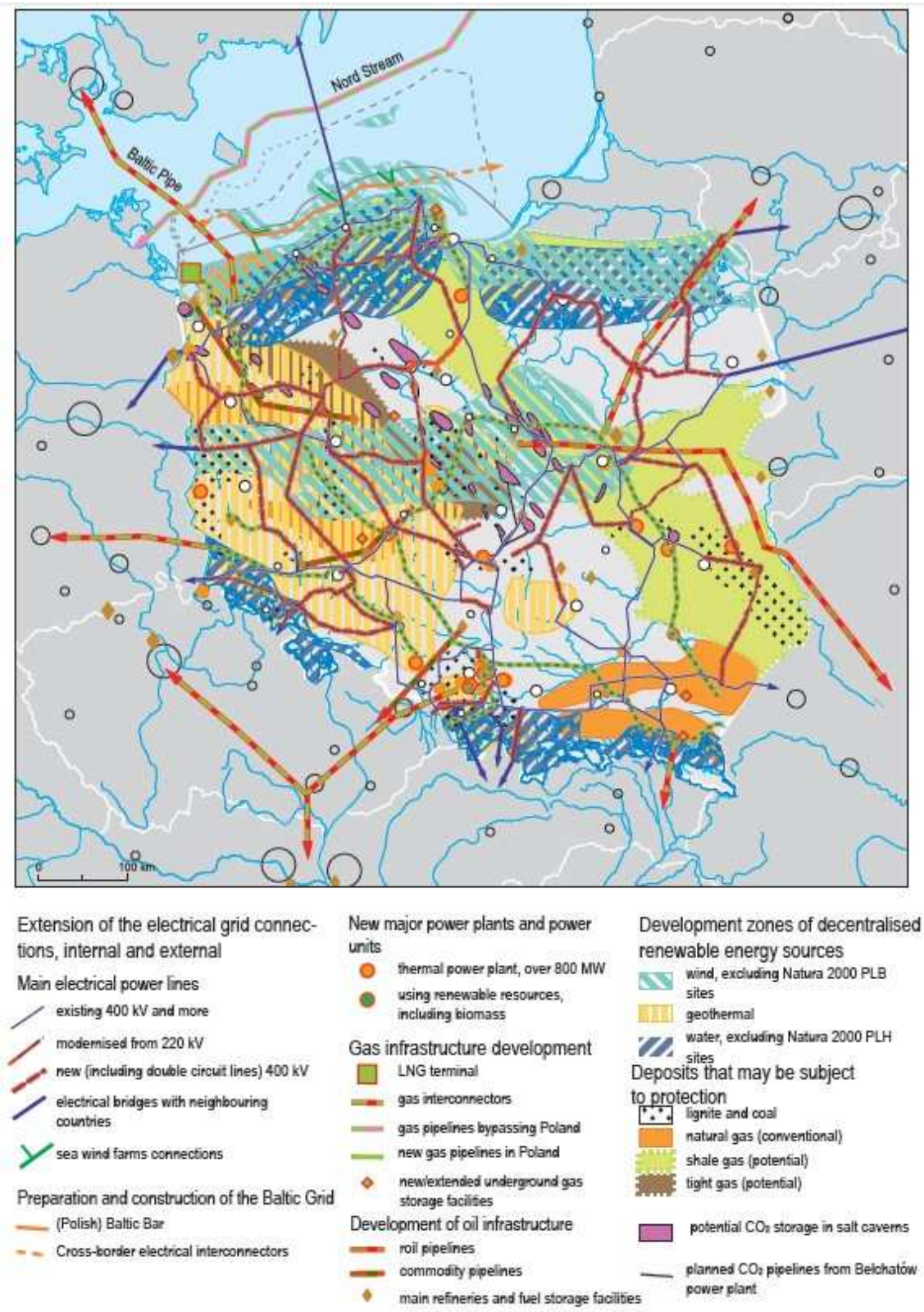
Since renewable energy sources are scattered, the national transmission and distribution grids will have to be adjusted to receive energy from such sources. High voltage transmission grid will be extended to enable receiving of power from planned land and sea wind farms, and large biomass and biogas power plants. Distribution grid will be extended and modernised to ensure optimal balancing of new sources with lower power rating. The task for spatial planning will be to demarcate development zones for generation of electricity from wind (on the national and voivodeship levels) and other renewable sources[131]; to use existing and planned hydraulic structures for hydropower production; to determine geothermal energy sources; and to designate locations for energy crops (delimited at the VSDP level), while restricting energy crops from other areas, in particular from high nature value areas. VSDP will designate zones with prohibitions or restrictions on the development of different renewable energy sources (including type and scope of restrictions). Cummulated impacts of many sources, in particular on Natura 2000 protected species and habitats, may prevent investment projects also outside of Natura 2000 sites.

Minister responsible for economy, in communication with scientific units, ecological organisations and sectoral organisations will prepare guidelines for the development of different kinds of renewable energy production in differenty types of areas.

[130] *National Action Plan on renewable energy sources adopted by the Council of Ministers on 8.10.2010.*

[131] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

Fig. 35. Outline of actions to ensure energy security



Due to ongoing analytical works on the selection of locations for first nuclear power plants in Poland, the figure does not include any locations for those power plants.

Source: MRD.

5.1.7. Protection of fossil fuel deposits

Deposits of lignite, coal, natural gas and oil are strategic energy resources for the baseload power system. One should assume that the development of emissions reduction technologies will make it possible for those resources to be used without infringing requirements of the energy and climate policies of the EU. Even if for economic, social or other reasons certain known fossil fuel deposits will remain unused, they should be treated as a permanent special strategic resource that must be protected by special legal measures against different types of human activity, in particular investments (housing, transport infrastructure)[132]. This kind of protection should be applied to coal deposits (in Śląskie and Lubelskie Voivodeships) and lignite (e.g. in the area of Legnica and Gubin). In order to ensure appropriate protection of fossil fuels it is necessary to draw up a list of national strategic deposits, determine their territorial scope, and then to determine the intensity and types of protection measures in the designated areas. Potential exploitation of new fossil fuel deposits, in particular lignite, will be preceded by detailed multi-criteria economic viability analysis taking into the account all social and ecological aspects.

Re 5.2. Improving protection against extreme natural and man-made calamities

In order to reduce impact of natural threats, the National Spatial Development Policy will set out various planning and investment activities. Many of those activities, with the exception of measures to reduce impacts of natural calamities, will be development-focussed and intended to exploit territorial potentials. Therefore, those measures should not be treated exclusively as protection against negative impacts of natural disasters. Having regard to natural threats occurring in Poland, investments related to water management will be the most significant for national spatial development. Those projects will be also the most expensive ones.

Planned investments in hydraulic structures and bridges will be burdened with significant risk of ecological conflicts with Natura 2000 conservation objectives. It will also be mandatory to ensure migration possibilities for aquatic organisms and open ecological corridors in river valleys. To indicate and solve those problems is an essential prerequisite to ensure socio-economic development in high flood risk areas.

Spatial policy will be aimed:

- to improve protection against extreme natural disasters by means of technical and non-technical measures and investments,
- to integrate activities in flood risk areas,
- to integrate spatial plans for administrative units with state-of-the-art water management planning documents for hydrographic units and water regions, i.e. flood hazard maps, flood risk maps, and flood risk management plans,
- to enhance retention capacity of environmental structures,
- to enhance adaptability of space to climate change effects.

5.2.1. Necessary regulatory measures

Efficient flood prevention and drought prevention policies must be grounded in regulatory and integrating functions of spatial planning. It will enable, apart from implementation of infrastructure projects, the use of non-technical methods of reducing outflow of surge water and precipitation water from river basins, such as buffering features of certain ecosystems and spatial structures. To this end, spatial planning will make use of water management planning documents, primarily flood hazard mpas and flood risk maps, and after 2015 flood risk management plans, as well as other documents stipulated in the Water Law. Flood risk

[132] Restrictions to land use in the area of a deposit will differ and depend on the type of deposit.

management plans will define risk levels that will trigger measures to minimise flood risk taking into account costs and benefits of such measures. The level of protection against flood threats assumed in planning documents is based on state's economic resources and does provide protection against catastrophic floods.

Spatial development plans at all levels will include: zones designated on flood hazard maps and flood risk maps; all technical and non-technical measures reducing flood damage risks; and requirements laid down in flood risk management plans.

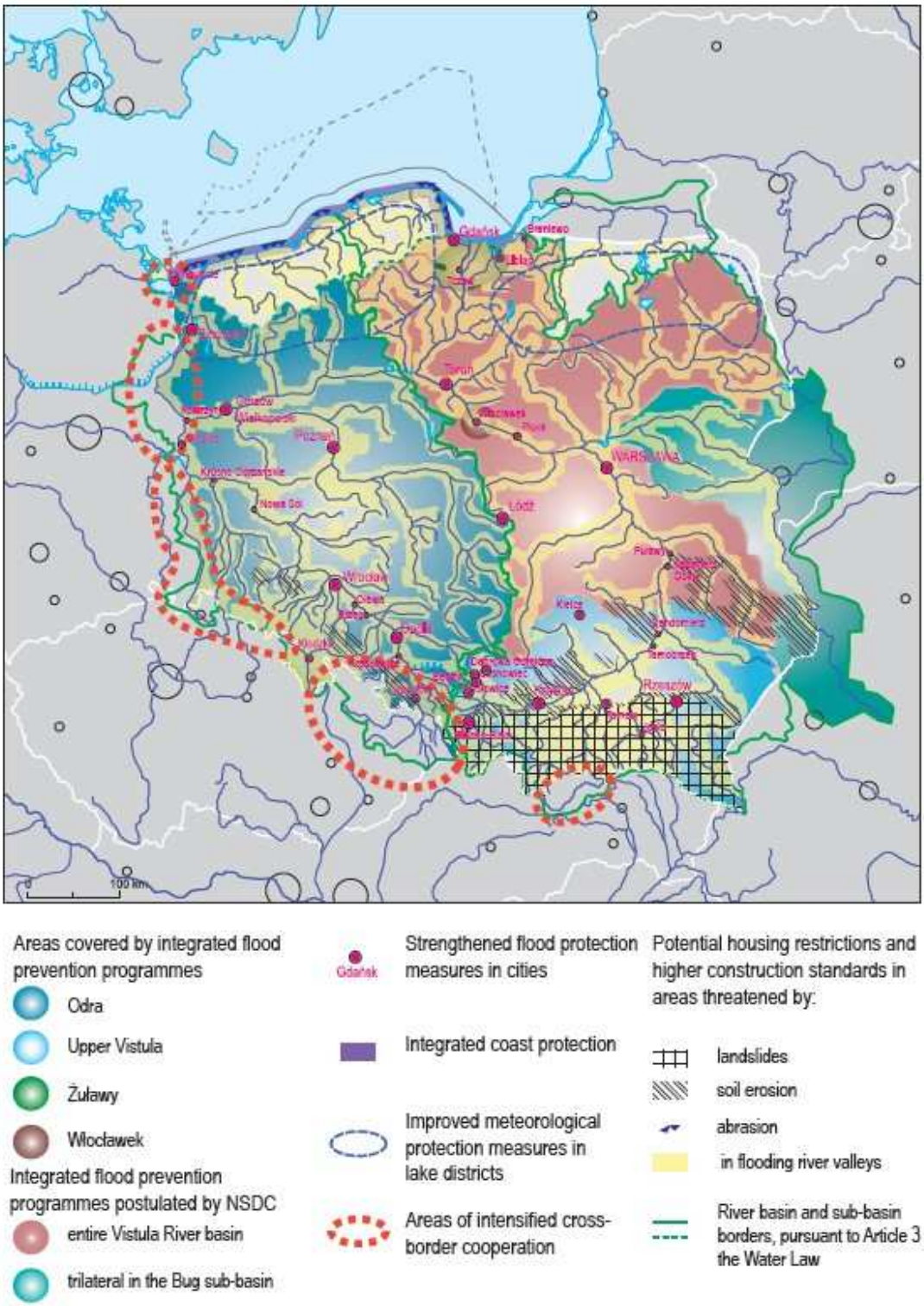
Planning rules in river valleys, defined by the preliminary flood threat assessment required by the Water Law, will include all conclusions and recommendations from flood risk management plans, such as:

- prohibitions or restrictions on development in river valleys threatened by floods, inundations, or similar man-made events, including prohibitions and restrictions on permanent structures in high flood risk areas and areas with confirmed retention capabilities,
- restrictions on agricultural use, and guidelines for spatial management in the area between levees.

Technical parameters of infrastructural and hydraulic investments, including levees, will be modified to meet real needs. Existing and new retention reservoirs are expected to generate synergies once the flood retention capacity is analysed and significantly increased in order to enable real control of high water levels in sub-basins and river basins.

Prevention and adjustment measures will include an inventory of landslide areas and other areas threatened by mass earth movements. The inventory will also include earth surface transformations and deformations caused by extraction of fossil fuels and minerals (rocks, aggregate, sand, peat, etc.) that determine protection needs against natural disasters, as well as needs and aims of post-mining regeneration.

Fig. 36. Integrated flood prevention measures



Source: MRD.

Absolute prohibitions on construction in landslide areas will be introduced. A review will be carried out of construction laws and regulations concerning, e.g.: construction of stormwater drainage infrastructure, construction of light or tall structures, construction standards on changing wind force and frequency, as well as organisational provisions regulating movement in risk zones. In areas threatened by flooding, heavy rainfall and strong winds standards will be introduced to promote: structures' resistance to natural hazards, increased use of precipitation water within urbanised areas, and decreased runoff to the drainage system. Technical

parameters of infrastructural and hydraulic investments, including levees, will be modified to meet real needs. The scope of projects intended to improve hydraulic structures' protection will be increased. Special attention will be paid to the continuation and completion of the Włocławek dam protection project intended to impound water below the dam.

Multi-sectoral Programme for Odra 2006 will be updated. Its status will be changed to an independent macro-regional sustainable development strategy. Similar strategies will be developed for: the entire Vistula river basin and the Żuławy functional area. Work will start with solving urgent problems in upper Vistula sub-basin for which a draft flood prevention programme was prepared. Both strategies will contain a study of the inland navigation development potential in existing and planned waterways, including: a comprehensive economic analysis of external costs compared with costs of other cargo transport modes, and impact on protected ecosystems. The study should also investigate possibilities of introducing modern and innovative hydropower generation solutions with significantly smaller environmental impact than the traditional ones.

Additionally, the spatial policy will be supported by a mandatory property insurance scheme.

5.2.2. Increasing flood security

This objective will be achieved by flood prevention investments in hydraulic infrastructure based on water management needs verified by water region authorities. Those projects will be accompanied by watercourse maintenance projects and surge water movement management intended to minimise flood risk. Projects will be implemented to increase security of large agglomerations, industial plants, transmission and municipal infrastructures, as well as especially valuable cultural heritage objects located in flood hazard areas.

Meteorological and hydrological warning systems will be developed and modernised. Self-operating measurements and automatic data transmission will be ensured by extending fast and reliable remote transmission systems, updating forecast models and public information systems.

In high nature and landscape value areas priority should be given to flood risk reduction solutions with the least environmental impact.

Municipal infrastructure will be modified in response to potential extreme hazards: floods, high or low temperatures, and heavy rainfall. The development of transport and energy infrastructure will allow for potential natural hazards and disasters through planning, construction of alternative access roads and energy supply facilities. Existing infrastructure in river valleys (road and railway embankments, bridges, culverts, power lines, pipelines, etc.) will be prepared to withstand potential damage caused by disasters. It will be obligatory to build at least two alternative power lines and access roads leading to settlements in hazard areas. Priority will be given to building linear infrastructures along river valleys and sea coast. In this context, the construction and modernisation of flood prevention infrastructure in the Baltic Sea coastal zone and in Żuławy[133] is particularly important. Moreover, in order to facilitate potential emergency recovery operations, dense network of well-equipped general-purpose airports and hospital helicopter landing pads will be used.

5.2.3. Increasing available water resources and preventing droughts

River basin retention needs, as well as measures to achieve a retention rate equivalent to 12-15% of the annual average outflow (7-9 billion m^3) will be defined. Those needs and measures will be consistently implemented into spatial management plans. Retention potential of environmental structures and micro-retention, as well as predefined water supply standards for

[133] More on measures to prepare technical infrastructure for climate change, see Objective 3. (Chapter V.).

farming and food processing industry will be taken into the account. A rule will be introduced, by which in the closest vicinity of arable fields and other places that require water supplies different kinds of retention reservoirs will be built to store rainwater used for irrigation of crops and environmental structures in the post-drought period. Planned locations of different types of reservoirs will be based on a verification of previously defined needs, region's water needs compliant with its future development trends, and water needs of the environment in the sub-basin determined by the water administration. Also, existing drainage systems will be adapted.

A compulsory retention of water from precipitation in agglomerations will be introduced to reduce flood surges in densely built-up areas, to encourage the water to be used for maintenance of urban green infrastructure, and, in the context of growing water prices, other purposes.

Re 5.3. Developing spatial structures supporting national defence capabilities

The overall strategic objective of Poland is to ensure favourable conditions to secure national interests, including independence and territorial integrity, by eliminating external and internal threats.

The key aim of strengthening Poland's space is to enhance effectiveness of defence preparations and to create conditions ensuring high efficiency and continuity of the state at the time of emergencies, conflict and war. This aim is realised by shaping Poland's spatial structure. It must be realised not only due to military threats, but also due to natural, technological and – more broadly – civilisation-related hazards. Therefore, it is necessary to:

- enhance the resistance, in spatial terms, of the national economy's key spatial structure systems (support development of small and medium cities; limit excessive growth of cities, whose destruction would cause an excessive gap in the national economic potential; build highly self-reliant and complementary open-structure socio-economic subsystems),
- ensure conditions for armed forces to do their tasks, i.e. ensure equal treatment of socio-economic development and broadly understood national defence; keep track of changing locations of military facilities and take that into the account when formulating spatial development plans. Those changes depend on the strategic defence situation,
- ensure favourable conditions for emergency rescue operations, such as planted grasslands, dispersed and low houses; build a network of storage facilities (for food, fuel and equipment); build healthcare facilities on city outskirts and in places intended for people relocated from hazardous areas.

Defence requirements should be respected during the development of the settlement network, dislocation of industries significant for national defence, and development of technical infrastructure (pipelines and main transmission lines should be distributed evenly and decentralised, as far as possible). In the transport sector it is recommended to build city bypass systems, place marshalling yards and container terminals away from urban centres, build emergency bridges, and avoid placing transmission lines with important economic functions under major bridges. In communication and energy sectors it is important to build star-shaped telecommunication networks and power lines, create independent regional power systems with multiple connections to the national system, and ensure backup power supply to important recipients.

Spatial policy should enable inclusion of national defence and security requirements into all spatial development planning documents. Having regard to the needs of armed forces and requirements of the national defence system in the context of national spatial development

planning, the problem of fulfilling defence requirements should be perceived on two main levels:

- defining defence requirements that will be used to prepare national infrastructure,
- ensure collision-free operation of armed forces and internal security institutions and services.

National spatial development policies that enable appropriate national defence capabilities include:

- to provide new spatial structures with appropriate defence features and improving defence conditions in other areas,
- to create favourable conditions for defence tasks,
- to create conditions for defence projects under NATO Security Investment Programme (NSIP)
- to improve location selection procedures for planned NSIP investment projects and other defence projects based on international agreements,
- to reserve land for strategic purposes to enable construction or extension of military facilities and bases.

Objective 6. To restore and consolidate spatial order

Spatial order is the main objective of spatial development at all planning levels: national, regional, local and functional. According to the Act on spatial planning and development, "spatial order" should be construed as such space organisation that forms a harmonious whole, and that ensures structured relations between all functional, socio-economic, environmental, cultural and aesthetic conditions and requirements. In spatial planning, spatial order means structured arrangement and harmony of different space components and spatial structure functions. It is a criterion by which one judges the quality of spatial development changes in terms of efficiency of socio-economic processes and the quality of living.

The importance of spatial order as an indispensible attribute of sustainable development, in the broad, integrated meaning of the term, for people's living conditions, operation of the economy and development opportunities makes streamlining of spatial processes one of the most important tasks of public authorities at present. Also in Poland, it is the State and its public – governmental and local – authorities that are responsible for streamlining spatial processes, and spatial order decisive for the quality and identity of space in Poland. Due to civilisation lag and transformation period difficulties, spatial development in Poland is inconsistent with modern functions and their placement which entails all known disadvantages of such situation. Consequently, streamlining of the spatial policy, reinstatement and enhancement of spatial order are becoming a strategic component of the modern, integrated development policy in Poland.

The new approach to development policy means that public authorities must recognise the need to efficiently manage dynamically changing – in time and space – spatial systems. External effects of socio-economic activities (including housing expansion effects) are a growing sphere of development policy intervention. That is why spatial development is currently one of the most important instruments of building territorial cohesion, and the sphere of spatial management, manifesting itself by spatial, social, economic and ecological order, is one of the major socio-economic and ecological cohesion factors.

In the face of new quality of systemic conditions, in the constant process of forecasting, future planning and conflict-solving, in the endless game to determine the space, the process of achieving sustainable development, regulated by formulating rules and outlines of **integrated order policy**, will combine[134]:

- **social order** defining strategic objectives, measures and projects intended to improve living quality of the public,
- **economic order** defining strategic objectives and measures generating effective socio-economic development,
- **ecological order** defining conditions and strategic objectives of nature conservation and efficient environment management intended to establish ecologically sustainable development (eco-development),
- **spatial order** defining strategic objectives and criteria of organising and harmonising spatial structures that are an expression of geographic space management rules and outlines.

Depending on the cohesion rate achieved by iterative (two-way impact) and negotiation procedures, the entire development regulation system will be an implementation of,

[134] National Spatial Development Policy Concept. Attachment to the announcement of the Prime Minister of 26 July 2001 (M. P. No. 26, item 432).

territorially different, integrated order. It will be a manifestation of the fullest implementation of the sustainable development strategy, however it may not be achievable everywhere.

The notion of spatial order in this system, related to spatial development, means an aspiration to achieve harmonious, structured, proportional and sustainabile development of human environment in line with the "universal design" principle.

Spatial order is growing in importance in the hierarchy of social values, because it increasingly becomes an essential element of the quality of living, quality of natural environment, and effective management.

In the spatial policy, spatial order means functional, logical, clear and simple spatial structures. It also means that spatial structures are harmonised with each other and with nature, highly useful and effective on all levels: from local to national. It is a structured whole whose parts are subject to the same rules, and its operational logic, functionality of structure and spatial clarity are responsible for, also in every territorial dimension, high aesthetic and human environment values.

Sustainable development principles, as well as existing internal and external conditions, should be adopted as the methodological basis for the entire design and implementation system of the national spatial policy.

(1) Description of the problem

Causes and effects of unstructured spatial management in Poland

Unstructured spatial management system has tangible social and economic effects. The effects include, primarily, social pathologies, alienation, frustration and conflicts caused by social segregation which occurs in suburban housing model usually featuring closed housing estates without people-friendly public spaces, green areas, easy access to good quality services of general interest; as well as degraded city centres, high-rise residential districts and multi-family house estates built for employees of obsolete state-owned farms. In the long period such spatial organisation entails economic consequences, namely costs of social effects and demolition of suburban high-rise housing estates (which is the case in many countries). Another serious effect is the risk to safety of people living or running business in floodplains. Only financial effects of the flood in 2010 were estimated at ca. PLN 12 billion. Safety risks are also present in the transport sector. In Poland every tenth person injured in a road accident dies, while the EU average is three times lower[135]. Another effect of the lack of consistent spatial policy is the unrestricted urbanisation generating additional cost of economically non-viable infrastructure and longer travel time to city centres (jobs, education and services).

Social and economic effects of the current spatial management system

Due to lack of adequate spatial management system regulations (lack of obligatory land mergers), it is the ownership and spatial structure of farmland that determines the new housing model. Consequently, housing is extensive and chaotic, also certain areas are permanently excluded from use. It is estimated that as much as 20% of each hectare intended for housing is lost.

In Poland social costs of scattered development are not recorded. American studies demonstrate numerous negative social effects of the excessive use of cars, including decreasing pedestrian traffic, time lost in traffic jams, higher accident rate and treatment costs. Return on investment period for infrastructure in scattered housing areas is estimated at 50 to 300 years. This means that the money is practically blocked. With this development model repayable

[135] In 2010 3,907 people were killed in road accidents in Poland. In spite of the significant improvement in the last years, the number of road accident casualties in 2009 was the highest in Poland among all EU Member States (higher than in Italy, France and Germany), Local Data Bank, CSO, CARE database.

financing mechanisms are not justified, and costs of loans taken out for building municipal infrastructure must be incurred by all taxpayers, rather than its users. This development model contravenes the sustainable development and social justice principles. Promoting cheap housing on "cheap land" in fact generates for the entire society costs that are at least twice as high than housing in zones with appropriate housing intensity and corresponding utilities.

Maladjustment of SGI offer, including basic SGIs, in particular to changing demographical needs. On the one hand, social groups are scattered, on the other, the demand for SGIs is decreasing excessively in rapidly ageing city centres. It is confirmed by the falling number of forms in urban primary schools. In the period 2001-2009 the number decreased by 25% in urban areas and 18% in rural areas, while the 14% decrease of the number of schools was similar in rural and urban areas[136].

The current spatial management system results in a very low effectiveness – in economic and social terms – of expenditure on infrastructure, and lack of economic viability of public transport development and maintenance. Additional losses incurred by the economy include faster decapitalisation of public transport systems. In Poland the excessive movement rate due to chaotic and extensive development, as compared to sprawling but relatively compact and organised development, is estimated at 1.5. Increasing affluence of the Polish society will be accompanied by the growing number of cars per family encouraged by the scattered housing model. It will additionally enhance the greenhouse effect that will be a growing financial burden for the budget, economy and individual energy users.

On the basis of studies by international authors and scarce national studies, it is estimated that external social costs of spatial chaos related to urban sprawl in Poland are 30% higher than costs of urban sprawl in Western Europe. In Poland it leads to growing public finance deficit.

Spatial restructuring of social infrastructure to match it to new needs will be a permanent and growing cost of billions of PLN per annum. Satisfying basic public demand for such local infrastructures will limit public authorities' opportunities to invest in higher order services and other forms of economic development support for cities and regions necessitated by competitive pressures.

Without a fundamental change of spatial management economic conditions and a reform of the planning system in Poland, economic effectiveness of areas with scattered development will continue to be very low. Land revenue will continue to be scattered, and gminas, nor the national financial system will not be able to finance, irrational in spatial terms, infrastructure requirements. Significant social groups will be increasingly threatened by infrastructural exclusion, public finance system may collapse, and mortgage markets may undergo structural and long lasting breakdown.

Lack of spatial order and low quality of spatial management make Polish cities unattractive for foreign investors and qualified personnel making decisions about contemporary development. Rural areas are loosing an opportunity to diversify their economic functions. Social problems in cities are getting worse. One of the most important social problems is social segregation and disintegration which manifests itself by the growing number of closed supervised housing estates accompanied by progressing degradation of existing housing estates, urbanised post-industrial, post-railway and post-military areas, or new unplanned development of such areas. Therefore, lack of spatial order in the micro scale is translated into lower productivity of the entire economy in the macro scale.

Symptoms of the lack of spatial order in Poland include:

[136] Poland Statistical Yearbook 2010.

- on the national level – frequent mismatch of land use and the nature, culture or landscape value of an area, and the consequent progressing fragmentation of environmental systems and degradation of culture landscapes,
- on regional and sub-regional levels – suburbanisation, in particular spreading of rural housing and uncoordinated development of areas along main roads, destroying space value and wasteful in economic and social terms,
- on the local level – low public space quality, housing and architectural chaos, incompleteness of developments and pressure on open spaces, destruction of urban ecological systems, gaps in technical and social infrastructure in urban and rural areas, infrastructure lagging behind housing development.

Abandonment of control over spatial processes – the reason of management system inefficiency

Public authorities are responsible for efficient spatial management. Without public land development control, efficient space management, that would enable space users to benefit from its features and ensure that conflicts are eliminated, is impossible. Lack of public land use control based on formal (statutory) definition of national spatial and urbanisation policy (of gminas, regions and the country) caused a disintegration of the planning system and an instability of planning processes.

Moreover, disregard for state's responsibility for spatial processes blurred the division of planning responsibilities: the division of competences in establishing local law is defective; and there are no mechanisms that would enable assessment and balancing out of different interests, and eliminating inherent spatial development conflicts.

Consistent development policy is still impossible due to the unclear spatial planning and socio-economic planning competences. This lack of clarity makes traditional spatial planning instruments play only a protective, rather than pro-development (creative or stimulating) role. Spatial development plans do not have characteristics of pro-development documents and their provisions are not reflected in socio-economic strategic and operational documents. Local spatial policies (municipal studies) often ignore local development strategies and other local policies (provided gminas even have such strategies and policies).

Strong position of gminas and inadequate competences of other public administration units make it difficult for supra-local guidelines to be transferred to the local level. In consequence, the Government, nor voivodeship authorities, are not competent to protect supra-local public interest. Therefore, spatial management is often defined by the peculiar understanding of local interests and group interests non-compliant with the public interest. Moreover, gminas were not equipped with implementation instruments, hence tasks transferred to gminas based on the subsidiarity principle are not fully implemented.

Institutional disintegration of the spatial planning system

Other weaknesses of the spatial planning system are as follows: spatial planning institutions are scattered and do not form a hierarchical system[137]; fluctuation of personnel causing fragmentation of knowledge; lack of a uniform spatial development change monitoring system that would enable international comparisons at different development management levels and observation of public policy spatial impacts. There are no nationwide systems to monitor spatial development changes. In Poland there is no research system directed towards solving basic spatial problems. Studies have insufficient scope, are fragmented and non-systematic. The topic of spatial management is absent from the research paper qualification and assessment system of the National Science Centre. Gminas usually do not gather, nor analyse

[137] Scattering and lack of links between institutions of the hierarchical system occurs not only in the spatial planning system. Reorganisation of the spatial planning sphere will not be possible without enforcing changes in the public administration system.

the basic data, such as the number and structure of construction permits issued by starost offices.

Weakness of public institutions in enforcing the law, and lack of (construction, conservation) project coordination instruments financed from diverse sources (EU budget, Government, local authorities, private entrepreneurs) under various programmes (operational, local, territorial cooperation) unnecessarily hinder the development process. Breaking laws related to spatial development is usual, common and goes unpunished, as frequently laws do not envisage a supervisory role for voivodes.

Also, the cooperation between local authorities and public sector units on the one hand, and private investors on the other is sporadic and does not facilitate solving conflicts, as it makes property owners feel more insecure.

Lack of good practices and culture to follow – from strategic programming to local planning – leads to an ineffective use of land and deterioration of the spatial disorder.

Gaps in the planning laws and regulations system

Since documents adopted at different governance levels are not consistent with each other in legal and systemic sense, the coordination (neither vertical, nor horizontal) of development measures is impossible. Neither spatial development plans, nor other planning documents are correlated with development strategies and programmes. There are also no hierarchical, nor iterative relations between planning documents prepared at different development management levels.

The extensive and convoluted system is powerless in the face of problem of usual spatial conflicts between users representing different – frequently opposing – interests. Lack of consistent supra-local planning in the form of a regional and national spatial policies is perceived as a problem. Moreover, supra-local planning documents do not formulate any requirements for gmina level planning, and their binding provisions only concern public purpose investments.

The existing law is not being enforced, instead it is being interpreted freely and "improved" by way of special acts of Parliament that operate in parallel to the legal system. Those acts lay down special rules for preparation and implementation of investment projects (so-called "spec-acts"[138]).

Voivodeship Spatial Development Plan is not an adequate tool to ensure full coordination of spatial development processes in a voivodeship. VSDP does not provide any binding land use requirements and parameters for gminas.

In the absence of a local plan, the municipal study of conditions and directions of spatial development (the study) which is not a local law act, does not ensure that spatial development guidelines it defines will be followed. It does not ensure spatial coordination, nor does it provide protection against land being developed in a way that is inconsistent with its provisions.

[138] In 2011 there were ten special Acts of Parliament in force in Poland: Act of 28 March 2003 on rail transport (Dz.U. of 2007 No 16, item 94 (railway special Act); act of 10 April 2003 on special preparation and implementation rules for public road projects (Dz.U. of 2008 No. 193, item 1194) (road special Act); act of 7 September 2007 on the preparations to the Final Tournament of the UEFA EURO 2012 Football Championships (Dz.U. of 2010 No. 26, item 133) (EURO 2012); Act of 12 February 2009 on special preparation and implementation rules for public airfield projects (Dz.U. No. 42, item 340) (airfield special Act); Act of 24 April 2009 on the liquefied natural gas gasification terminal projects in Świnoujście (Dz.U. No. 84, item 70) (gas terminal special Act); Act of 7 May 2010 on supporting telecommunications services and networks (Dz.U. No. 106, item 106675) (telecommunications mega-Act); Act of 24 June 2010 on special measures to remove effects of floods that occurred in May and June of 2010 (Dz.U. No. 123, item 835) (flood prevention special Act); Act of 8 July 2010 on special preparation and implementation rules for flood prevention projects (Dz.U. No. 143, item 963); Act of 29 June 2011 on special preparation and implementation rules for nuclear energy facility and accompanying projects (Dz.U. No. 135, item 789); Act of 16 September 2011 on special measures to remove effects of floods (Dz.U. No. 234, item 1385).

The study does not coordinate other planning documents that must be prepared and implemented by gminas (for instance, it does not ensure temporal and spatial coordination of investment projects, nor does it define the order in which investment areas in a gmina will be used). Not being a municipal regulation, the study is an ineffective instrument as it fails to ensure sufficient coordination of local plans. Additionally, during the study process no reliable development forecasts are prepared. In consequence, authors of the study designate development areas larger than the current needs of the gmina, and in the present planning system it is easy to justify even the most irrational development needs.

A serious barrier to coherent spatial management is the insufficient coverage of spatial development plans in urban areas, e.g. in Łódź spatial development plans cover only 4.5% of intensively built-up urban areas, in Cracow – 14.1%, in Warsaw – 19.2%, and in Poznań – 19.6%[139]. On the other hand, in non-urban gminas adjacent to major cities the plan coverage rate estimated at nearly 100% is unproportional to their actual needs. Areas designated for housing and investments are many times larger than real needs of municipalities (e.g. in Mszczonów – for 300 years). It is one of the main reasons of scattered development. It also contravenes the idea behind statutory regulations that areas designated for development should correspond with present needs. The basic error originates from the complete submission of the real estate market to free market rules. The state withdrew from real estate market control which is being used for speculation purposes.

Another misused and overused instrument are the two types of decisions on development conditions and land management, in particular the decision on development conditions (Polish: *decyzja o warunkach zabudowy*). It is one of the reasons of lack of spatial order. Decisions on development conditions are the basis for over a half of all construction permits, instead of being a tool used in unique cases. Another key disadvantage of decisions on development conditions – apart from promoting scattered development – is that they enable development of cheaper land that is not covered by the local plan. This mechanism is understandable as a part of free market economy, however the overall economic cost of this investment method is much higher (decisions on development conditions promote placement of investments in areas not covered by plans).

Current laws and regulations do not solve key spatial management problems. On the contrary, negative trends are being strengthened blocking development opportunities, primarily, in urban areas, promoting scattered development and extensive land use, causing loss of high nature value areas in cities and their vicinity, creating barriers to public and private investments, hindering modernisation of cities, development of public spaces and comprehensive, large-scale city planning operations.

Another problem is the lack of planning in functional areas, in particular urbanised ones. It disables coordination of urban development with the development of their functional surroundings. Lack of a basis for an integrated development policy in various types of functional areas is an obstacle to the development of metropolitan and cross-border areas that are not covered by management plans that would form a foundation for development measures.

An effective development instrument (lower social and environmental costs) is urban area planning with appropriately designated agricultural zone and an attractive open rural landscape resources. Unchecked spatial development is stimulated by private profit from acquisition of non-developed land within the impact zone of major agglomerations. It stimulates urban sprawl and landscape degradation in disconnected areas. Morphological criteria are an insufficient basis for delimitation of the so-called metropolised space areas. It is not sufficient

[139] Data from the "Report on progress in, and conditions of planning work in gminas at the end of 2008", Warsaw, May 2010.

to designate functional and spatial areas on the basis of the so-called objective criteria and setting of borders by legal measures.

Planning deficits along state borders are particularly significant. There is shortage of plans not only for linear infrastructure, but also of development plans for cities divided by state border, cities located in the vicinity of the border, and for maritime and coastal areas (even though in the latter case respective regulations are in place). It results in a lack of access to fundamental services for local people. So far, implementation of integrated approach into coastal area planning has not been satisfactory. Lack of integrated maritime planning means, that the area constituting equivalent to 10% of Poland's territory will not be used for economic purposes. Current spatial development planning in maritime areas is not integrated. The plans are being developed only for certain sectors: navigation, fisheries and national defence, while the use of maritime areas concerns a wider range of issues. Spatial development planning in maritime areas should cover not only navigation, national defence, environment protection or fisheries, but also, in accordance with the Act on maritime areas of the Republic of Poland and maritime administration, artificial islands, structures and equipment, undersea cables and pipelines, scientific research and mineral resources exploration. 62% of Poland's territorial waters is intended for environmental protection which will make it one of the major types of maritime area management.

Another strategic topic that requires regulatory measures to be taken to minimise spatial conflicts is areas adjacent to military areas and facilities[140]. Spatial conflicts in those areas are caused by the military use which is a burden to local communities and regional economic development (in particular around airfields and maritime training areas).

Building knowledge, awareness and social participation

Low public awareness manifests itself by a lack of interest in spatial management. It is the cause of low importance of spatial management. It has a negative impact on spatial lawmaking process. Legal solutions concerning public participation in planning procedures are inadequate to the needs, in particular at the local level. It makes public participation a feigned procedure that does not prevent occurring conflicts. Absence of culture of public involvement from the onset of the project cycle disables public purpose investments. It is necessary to take steps to promote the importance of good quality space and spatial order. Creating and disseminating planning and implementation models is crucial for raising public awareness in this field. It is necessary to guarantee, by institutional and legal measures, conscious public participation already at the stage of formulating local policies and premises for local plans. Local authorities should be balancing conflicting interests of individuals and social groups that accompany planning and construction using tools for fair conflict solving.

(2) Outline of future actions

In accordance with statutory requirements[141] spatial order and sustainable development are the foundation for rules of spatial policy design and implementation.

2.1. Public interest protection, including: counteracting appropriation of public space and taking care of public space; adapting architecture and urban planning to needs of the disabled (important for building social bonds and identity); protecting quality and identity of natural and urbanised landscape – an important component of people's surroundings determining the

[140] Military infrastructure areas at the moment are concentrated in Western and Northern Poland, where the largest training grounds are located: Żagań-Świętoszów (34,00 ha) on the border between Dolnośląskie and Lubuskie Voivodeships, Drawsko Pomorskie (34,000 ha) and Nadarzyce in Zachodniopomorskie Voivodeship, and Bemowo Piskie in Warmińsko-Mazurskie Voivodeship; military airbases in Wielkopolska: Powidz, Krzesiny; airbases in Pomorze: Świdwin, Mirosławiec and Malbork; airbase in Łódzkie Voivodeship: Łask; naval bases in Gdynia and Świnoujście. At present, MoD manages 24 airfields. Training grounds are usually located in land owned by the State Forests Holding. The army has 14 land and 5 sea training grounds.

[141] Article 1, paragraph 1 of the Act of of 27th March 2003 on spatial planning and management.

quality of living, as well as environmental and cultural identity of regions; protecting the environment and ensuring appropriate living conditions to rural and urban populations, which means clean environment, harmonious landscape, well-operating transport and good accessibility of services. The public interest includes also eliminating macro-economic losses, in particular the risk of unjustified waste of space and inefficient use of environmental resources. It should be achieved by respecting broadly understood spatial order as an attribute of constitutionally guaranteed sustainable development.

2.2. Building an efficient spatial planning system at all levels will be a basic spatial policy tool for public authorities. It will be used for national planning covering the entire country, regional planning covering voivodeships and their functional areas, and local planning covering gminas or their parts, in line with hierarchy, subsidiarity and coordination principles. Spatial planning, as a responsibility of public authorities – Government and local authorities, should be a component of the integrated national development planning system. It is necessary to: extend planning obligations; adopt the principle of state's monopoly for planning (government and local authorities); separate the right to develop a parcel of land from ownership rights; establish a hierarchy of plans, in line with the hierarchy of socio-economic development objectives, set by national, regional and local authorities, in particular (but not only) where a project is planned in a public space. It is necessary to introduce obligatory functional design (in urban and rural areas) that will enable taking sound decisions about the space.

2.3. Ensuring lawfulness of spatial development planning and implementation, effective protection of rights of citizens, owners and entrepreneurs, transparent spatial policy of the state. In order to fully implement the constitutional rule of lawfulness of planning procedures, administrative decisions must be removed from legal acts regulating spatial development; administrative decisions should be replaced by local law acts of high quality and accepted by the public; those acts would be adopted by respective bodies, in accordance with the division of planning responsibilities. Lawfulness, transparency, and respect for the public interest in course of spatial management should be guaranteed by wide and active public participation. It is vital to ensure public participation in particular when formulating local strategies, policies and laws.

2.4. Implementing basic, territorially varied and consistent with the development policy economic instruments into the spatial management system. In practice, many countries use several dozens of different types of instruments. One should analyse available options and choose instruments acceptable by the public. Those instruments will be applied to unused urban areas, areas with development status, and other areas essential for coherent spatial policy.

2.5. Creating favourable conditions for economic activity to ensure proper operation of market mechanisms, as well as encourage investors and entrepreneurs to be more active. This objective will be achieved by the spatial policy of the public sector, Government and local authorities, as well as by ensuring that the policy is stable and consistent. Legal instruments are necessary to align and respect interests of citizens, entrepreneurs, investors and owners, i.e. to achieve equilibrium between public and private interests, to build social consensus on spatial policy and to effectively reduce conflicts between space users. Implementation of the said economic instruments will increase the supply of investment areas and will allow the "planning revenue" to go to local budgets and to be used for urban development. It is necessary to introduce preferences for public-private partnership and non-profit organisations, as modernisation of Poland's cities and solving the housing problem is not possible without public-private partnerships. Important new planning and economic instruments should include: obligatory land mergers in newly urbanised areas; preparation of investment areas by gmina authorities, including land for major city-planning projects, with special attention being

given to public-private partnership; and the execution of pre-emptive rights by local authorities.

An important economic task is to create tools to effectively combat speculation and grey area of urban management. It is essential to ensure full openness of planning and urban decision-making processes, as well as to remove from the spatial management law administrative decisions and phrases that enable free interpretation of the law.

(3) Actions

Actions to reinstate and consolidate the spatial order in Poland may be grouped as follows:

6.1. Introduce an integrated (coherent and hierarchical) socio-economic and spatial planning system capable of effective coordination of public bodies actions and public policies of the greatest significance for spatial development at different governance levels,
6.2. Reorganise regulations ensuring efficiency and universality of the spatial planning system,
6.3. Strengthen institutions and improve quality of spatial planning.

Re 6.1. Introduce an integrated (coherent and hierarchical) socio-economic and spatial planning system capable of effective coordination of public bodies actions and public policies of the greatest significance for spatial development at different governance levels

Integrated (hierarchical and coordinated) system

Integrated planning system, on the one hand, provides conditions for socio-economic development, protects cultural and nature values, enables coordination of development plans and measures at all planning levels, and protects the public interest. On the other, the system is intended to ensure full openness of the public sector and to radically reduce administration's discretionary planning and decision making. A hierarchical system consists of complementary components (Fig. 37.):

- at the national level, supreme components of the National Spatial Development Policy are: Spatial Development Concept and Long-term National Development Strategy comprising socio-economic components, as well as spatial ones. The Long-term Strategy will be implemented through nine integrated strategies defining fundamental development conditions, objectives and outline of actions in defined areas (in territorial terms, including national and macro-regional functional areas[142]) in the Mid-term National Development Strategy,
- at the voivodeship level, VSDP[143] and the strategy will be integral components of the voivodeship development planning system. At the same time, it will play a coordinating role for all actions taken in the voivodeship[144]. Both documents will allow for plans and strategies for national, macro-regional and regional functional areas,
- at the local level, the local spatial development plan, consistent with the municipal study of conditions and directions of spatial development, will continue to be the fundamental planning document. The study should also act as a link for other documents and any decisions issued in a gmina in respect of spatial management and change of land-use. It should also take into the account tasks laid down in national and regional socio-economic and spatial development documents, as well as in documents implementing long-term local development objectives, provided those documents are not in conflict.

Cohesion between socio-economic and spatial planning at the regional level will be expressed by the requirement to harmonise the preparation procedure and contents of documents concerning socio-economic development (voivodeship development strategy) and spatial

[142] Description of functional areas, see Chapter VI.

[143] The foremost task of Voivodeship Spatial Development Plans is to coordinate various activities (not only construction projects, but also e.g. designation of new protected areas) expected in the voivodeship. Those activities may be funded from various sources (EU budget, governmental and local budgets, private budgets), through various programmes (integrated, regional or sectoral). They will not be limited to public purpose investments of super-local importance, but will encompass all measures, also those funded by non-public sources, that have significant impact on the spatial structure and territorial differences in development processes.

[144] At present, the procedure and scope of VSDP is regulated by the Act on spatial planning and management, while the procedure and scope of Voivodeship Development Strategy is regulated by the Act on voivodeship authorities.

development (Voivodeship Spatial Development Plan). In this way, integrated regional development planning components will also comprise binding (statutory) guidelines for gminas. In order to achieve it, changes in the preparation process of VSDPs must be introduced to enable synchronisation of all projects (not only public purpose projects) in a given region, and coordination of those projects with projects envisaged in national integrated and sectoral policies, as well as strategic and structural projects implemented by local authorities and other public and private bodies.

At the local level, certain municipal development areas will be selected for implementation of tasks laid down in national and regional socio-economic development documents. In order to achieve it, gminas must prepare strategic socio-economic development documents (municipal/local development strategies) based on a realistic land demand and land use forecast taking into the account specialised, in particular demographic, forecasts and studies. It is linked with the introduction of obligatory analyses and forecasts that must be prepared as the basis for municipal development policy. Local plans will be the basis of administrative decisions and will designate investment sites. Public and non-public bodies will be held financially responsible for results of spatial planning decisions. On the other hand, local plans and other types of spatial policy implementation measures at the local level (including location decisions, land divisions, trade in real estate) that will not follow higher level guidelines, or otherwise fail to comply with VSDP, will be repealed, as legally flawed, in whole or in part by way of voivode's decision. In order to achieve this, legal status of VSDPs would have to be changed.

Introduction functional area planning

Functional area planning , a key feature of modern development policy, will be present at each of the abovementioned levels of the hierarchical system. It will involve, depending on needs, preparing analyses, studies and concepts for functional spatial models that will be translated into planning and programme documents. Development policy based on functional areas cutting across administrative borders counteracts development inequalities that occur, e.g. in border zones between regions and states (it may involve, e.g. developing cooperation principles that will be followed in course of designing local, regional and interregional planning documents for borderlands, including primarily cities divided by state borders). Functional planning in areas demarcated by geographical features based on socio-economic conditions, thanks to a comprehensive approach, will enable a more precise definition of the specific development potential and a comprehensive problem-solving in the area.

Functional planning will be introduced as a component of the development policy and sectoral policies at each planning level within the framework of national and regional development programmes. An exception to this rule will be development plans addressed directly to certain functional areas that require a comprehensive approach (according to the functional area typology presented in Chapter VI.).

Delimitation of functional areas, as well as establishment of standards and planning procedures to provide guidance for local planning, will be carried out with the participation of national, regional and local bodies to find optimal and universal solutions. Functional areas have a chance to develop more uniformly (metropolitan areas), better use their potentials (protection areas), protect resources against misuse (water shortage areas), build foundation for future potentials (coastal zone), or adjust measures to the results of development condition and functional connection analysis (areas with poor temporal accessibility, rural areas). Responsibility for preparing spatial development plans for functional areas should be a derivative of the governance rule and subsidiarity rule.

One of the specific types of functional areas is land on the border of land and sea. The coastal zone, due to lack of physical barriers to mutual infiltration of man-made and natural stimuli, is

a specific type of area that requires coordination. In those areas it is necessary to solve spatial conflicts and to profit from socio-economic and environmental benefits. Introduction of national level planning for the coastal zone area will ensure an appropriate rate of integration between the national maritime policy and development measures laid down in national and regional plans. It will enable the design of structured and coherent spatial plans for maritime areas coordinated with spatial development plans for land areas aligned with the hierarchical national spatial planning system. Maritime plans operationalising the objectives and premises of the maritime policy, respective national programmes and sectoral strategies (e.g. concerning occurrence of: oil, natural gas, natural aggregates and amber, as well as existing mining and geological activities, transport and fisheries), as well as spatial programmes and strategies (development of port regions), will be used to define conditions for sustainable use of maritime areas. In this way, mechanisms for harmonising national and regional policies and strategies will be ensured to facilitate the use of new opportunities: renewable energy generation in maritime areas, maritime tourism, mariculture (e.g. development of transmission grid infrastructure, or pro-ecological transport in the coastal zone).

Those measures will reinstate the full national administration control of spatial management in the coastal zone, as well as of drafting laws and fiscal regulations increasing the efficiency of maritime space use in all its dimensions.

Those proposals will aim to ensure efficient maritime space management, in symmetry with land space management, by means of spatial planning in the exclusive economic zone. It will enable regulation of spatial management in the zone, including siting of linear infrastructure projects, creating transport corridors, building platforms, protecting and developing living sea resources and cultural heritage, without infringing liberties guaranteed by the international law.

Ensuring coordination

An important premise of the new integrated development policy planning system in Poland is to harmonise the territorial dimension at all management levels with measures in the socio-economic sphere. In order to ensure full coordination of place-based objectives and measures with sectoral measures, the state management system and the public finance system must be reorganised. Also, strategic programming skills must be acquired at all management levels involving participants of the "space game". Enhancing the ability to achieve development objectives requires appropriate coordination mechanisms to be applied, and costs of the sector-organised state must be reduced.

The most important planning instrument for ensuring implementation of public policies with territorial impact (including regional policy) to take into account their specific geographic and socio-economic conditions, is the territorial contract. Territorial contract will define objectives for territories, identify stakeholders, define their responsibilities and indicate necessary funding.

Re 6.2. Reorganise regulations ensuring efficiency and universality of the spatial planning system

The right to develop land is a privilege – it should be restricted

The basic rule in urban development will be that brownfields will have to be used to the maximum extent, while greenfield development will be permitted only when brownfields are depleted. National international and local compensation will be available. The rule will be used to solve problems caused both by unchecked suburbanisation, and by quite conscious expansion of cities to new areas instead of using brownfields for socio-economic purposes. Consequently, it will be necessary to:

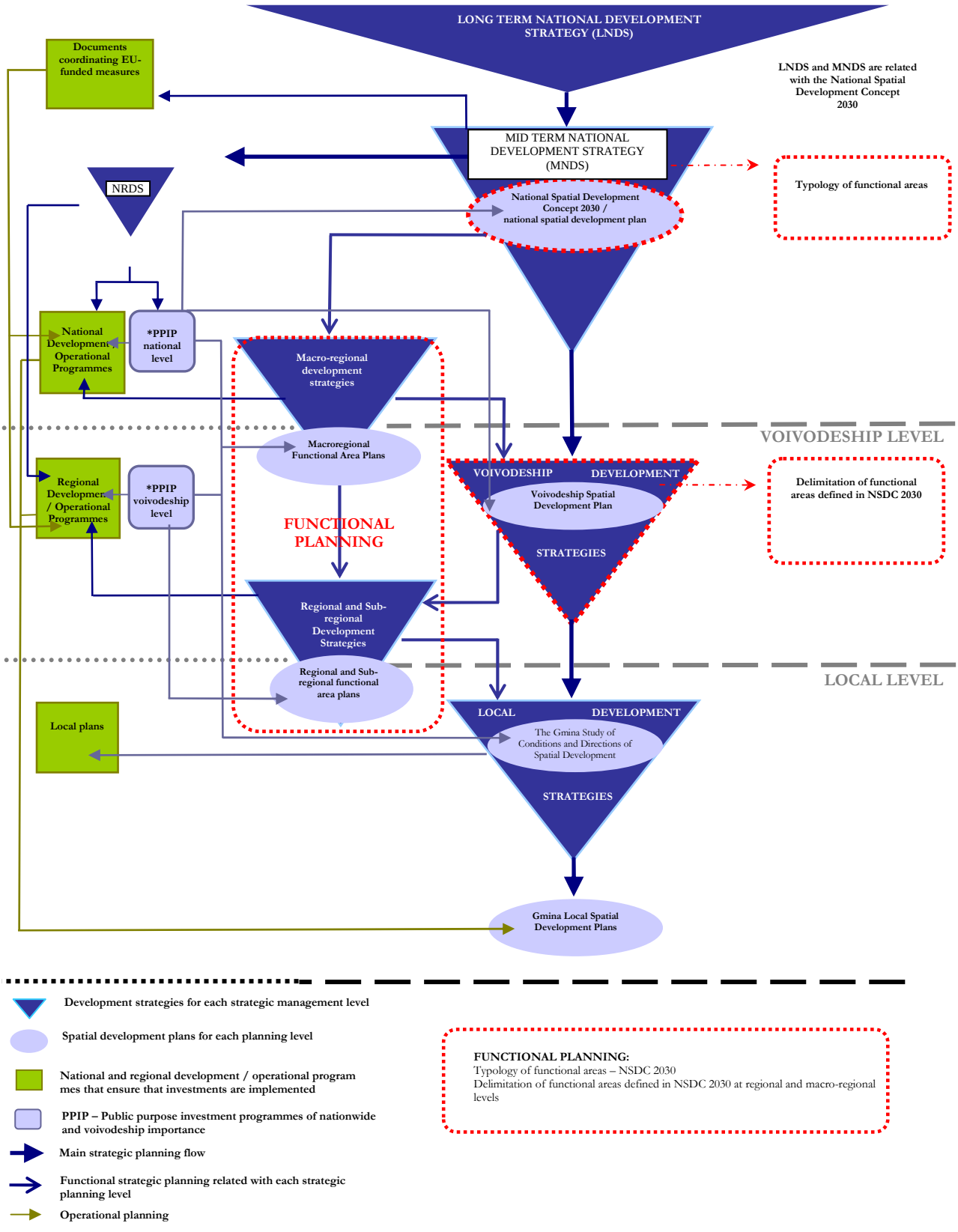
- introduce a statutory restriction on land development, or land division, outside of areas covered by spatial development plans to allow only infills. The restriction would include a set of detailed conditions. Local spatial development plans will be the basic spatial management document, in particular in areas experiencing the heaviest investment pressure,
- introduce a statutory planning obligation in development areas designated in municipal studies of conditions and directions of spatial development, and the obligation of land merger and reorganisation[145] based on local plan provisions,
- separate, by way of an act of Parliament, real estate ownership rights from the right to manage and develop[146] the land, introduce obligatory local plans for public space with provisions regulating public purpose investments (buildings) in those spaces; presence of a local plan will be a prerequisite to apply for EU co-funding,
- define and introduce severe restrictions on preparing and adopting local plans for sites with very small surface area.

Systemic solutions must be introduced to address semi-urbanisation in rural areas. The regulatory system should facilitate positive aspects of this process, i.e. improve living conditions. At the same time, the system must address the problem of disappearance of typical rural functions.

[145] Land reorganisation construed as a changed division of a group of land parcels in line with a new logic and needs, based on a new logic of division, compensations and acquisition of benefits linked with the new asset. "Secondary division" deteriorates division structure as it reduces spatial development potentials. Land reorganisation is a comprehensive reform of planning units division in order to optimise land use potentials, rather than a secondary division (construed as adjusting land division to current needs).

[146] Assumming, that land use is the current status of the real property, while management refers to future actions.

Fig. 37. The target hierarchic planning system in Poland



Source: MRD.

Gmina studies of land development conditions and directions will contain provisions binding not only for the local plan but also for every administrative decision specifying development conditions and every construction permit in respect of statutorily regulated matters, in particular, land designation and use (division into primary development and protection zones); the studies will be integrated socio-economic development documents laying down conditions and directions of spatial development whose planning scope will encompass larger functional areas. In situations specified in the law, municipal studies and urban planning regulations associated with specific areas will constitute the basis for issuing construction permits.

There will be a statutory obligation to prepare land development plans for areas designated for development in municipal studies of conditions and directions of spatial development under intense development, e.g. suburban zones of larger cities that are included in a metropolitan area. Areas covered by local plans will form continuous expanses of land, encompassing significant portions of municipalities, including intensively developing suburban zones of larger cities.

The system of supervision over the execution of tasks related to spatial management and the enforcement of spatial planning will be strengthened by the introduction of legal and economic sanctions for non-performance of mandatory actions.

Minimum standards for: provision of utilities and spatial development in urban areas; extensive development and access to technical infrastructure; as well as access to basic social services, including the protection of public interest, will be introduced by statutory means. In areas where achieving the latter will be impossible, regional plans will feature proposals of alternative e-access solutions.

Laws will be introduced to prevent scattered development, development alongside national and regional roads, development in areas without water and sewage infrastructure and in flood-risk areas. Division of agricultural estates into building plots will be prohibited, unless the land is designated for development in the local plan; there will be regulations to limit the share of land intended for development, the height of buildings and to ensure sufficient number of parking spaces.

There will be support for creating municipal real estate reserve, i.e. for purchase, expropriation and exchange of land, land mergers, secondary divisions of land, and for taking over certain resultant parcels by municipalities for the purpose of common areas (streets, parking lots, infrastructure and green areas).

Economic incentives should be introduced – like it is the case in countries with established planning culture – as an effective tool to encourage redevelopment of urban areas and intensification of the use of land with installed utilities. Land administrators will be taking action to manage land prepared for this purpose with public support, and economic instruments will compensate municipalities for the money they spent and will encourage them to draft local plans. The changes will encourage municipalities to cooperate in urban functional areas, primarily in cities with population over 100,000, and in developing functional areas designated in regional spatial development plans.

Definitions, or more precise definitions of the following notions need to be introduced into the regulatory system: "public interest", "integrated urban planning measures area", "social exclusion", "economic degradation area", "scattered development", "spatial order", "good neighbourhood", etc. that are at the base of space-related documents. Efficient regulatory system will enable the reduction – primarily, by means of education (professional and general civic education) and participation mechanisms – of spatial and social conflicts (Fig. 38.) whose effects are perceived in the socio-economic sphere. Spatial conflicts resulting from problems related to unchecked suburbanisation and scattered development in rural areas cause, first of

all, delays in, or suspension of investment projects, and additional costs of removing effects of land development contradicting the intended land use.

Re 6.3. Strengthen institutions and improve quality of spatial planning

Strengthening spatial planning requires institutional changes at all administrative levels and the introduction of a spatial development monitoring and on-going assessment system. Cooperation between planning offices and regional policy departments will be intensified. Strategic planning units will be strengthened in cooperation with the Government by, *inter alia*, the governmental integrated spatial planning training programme for local authorities. The programme will provide spatial planners with a career development path and a competence improvement opportunity – including certification of acquired skills. Public administration staff involved in development process planning, including spatial planning, and in implementation of measures laid down in those plans, will take part in continuous learning, and constant improvement of knowledge of, and competences in space quality and spatial policy issues. It will enable, *inter alia*, determination of the appropriate position of the planner in the organisational structure of governmental and self-governmental administration.

Quality of planning will be improved also thanks to support provided at the national level to professional services, on the one hand, dealing with strategic planning, and on the other, providing advice to regional and local planners. Standards will be defined for higher education programme in spatial management treated as an interdisciplinary subject and offered by a wide array of higher education facilities (technical universities, universities and economic universities). Scope of the programme will be extended and the number of students increased. It will be possible for public administration units to entrust spatial management to educated professionals. Post-graduate study programmes in planning will be introduced. Local authorities' staff dealing with spatial and regional planning will be required to take such course. Scientific studies on Poland's space will be taking an extensive look at issues of spatial values, heritage and spatial order.

Spatial culture promotion will include civic education and publicity of urbanised environment issues, in particular of active public participation in planning processes. Enhancing interest of the public in the quality of their surroundings, planning and design will lead to effective moderation of conflicts in planning processes. Civic education will build a common belief, that Poland's space, construed as a natural asset and cultural heritage, is developing in line with the sustainability principle, and that spatial order is a public asset. Space-related subjects will occupy an appropriate place in the general education programme.

6.3.1. Building spatial processes monitoring and assessment system

Spatial processes monitoring system will be built. It will use spatial data infrastructure to evaluate actions taken by all stakeholders at all levels – from local, through regional and national to European. Thanks to a link to the monitoring system for socio-economic situation and development policy effects, it will serve as a cooperation platform to set objectives and determine spatial impact measures. In order to achieve it, premises for a uniform national monitoring system will be developed. The system will combine existing systems/regional observatories to enable integrated development policy. With the monitoring system, the spatial policy will be able to coordinate sectoral policies that have impact on space. Spatial development monitoring system will be based on a monitoring system using national an European infrastructure comprising, *inter alia*:

- interconnected and interoperable spatial data systems and databases containing data and metadata with appropriate contents and quality,
- spatial analyses, including not only e.g. spatial development atlas, but also thematic analyses, such as ESPON papers.

The system will be based on reformed and professional spatial policy services at the national and regional level. It will provide information necessary to take managerial decisions at all levels of the spatial policy system. Integration of the system with the European spatial processes monitoring system[147], will ensure that Poland's space will be treated as one of the components of macro-regional and pan-European structures.

Also, an interactive web-based national atlas of changing spatial structures available to all users will be developed.

One of the components of the monitoring system will be the spatial policy progress assessment carried out every three years as part of the socio-economic, regional and spatial development report[148]. It will be prepared by the minister responsible for regional development. The report will contain, *inter alia*: spatial development trend analysis; assessment of objectives set out in the spatial development vision and in the Action Plan; recommendations for policies with significant influence on spatial structure changes (e.g. promoting Territorial Impact Assessment methodology and national spatial policy implementation instruments).

6.3.2. Territorial partnership for development process planning and management

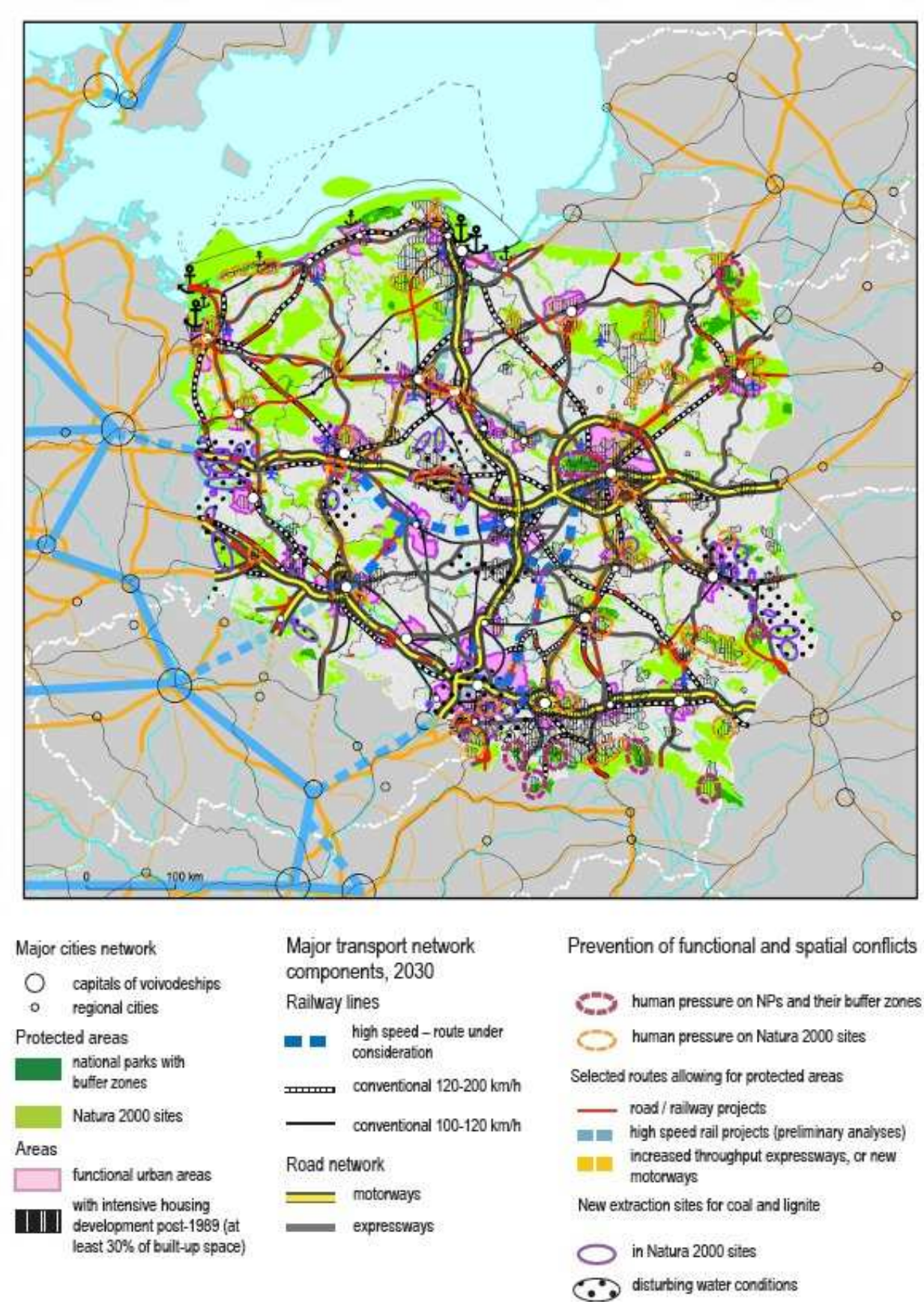
Achieving full and real openness of planning and enabling active public participation at all planning stages is decisive for the quality of modern spatial management. Actions intended to include partners into the planning system will consist of, *inter alia*, introducing a requirement to publish resolutions concerning planning documents with graphical and other attachments that constitute the planning documentation in the municipal Public Information Bulletin; at the stage of presentation for public consultation of draft municipal studies of conditions and directions of spatial development it will be obligatory to publish the draft on the gmina's website and in BIP, in accordance with the Act on spatial information infrastructure. The form of planning documents, text, drawings and attachments, as well as enhanced clarity of the law, including spatial development plans and relationships between different types of plans, will enable public participation thanks to accessible form and full information about conditions, problems and benefits that may result from the proposed spatial policy set out in the municipal study and its implementation by way of local plans. Date, time and general availability of information about consulting planning documents should allow all stakeholders to submit their motions and remarks in advance. It also concerns early planning stages to make sure that public participation has impact on new planning concepts.

Government information policy will be developed to publicise best integrated spatial policy practices. In order to achieve it, systemic and long-term legal and financial solutions will be needed. Educational programmes promoting active economic and social stakeholders' participation in spatial development and management planning will be prepared and implemented.

[147] According to the Act of 4 March 2010 on infrastructure for spatial information implementing the Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007.

[148] Article 35b of the Act on development policy principles.

Fig. 38. Potential functional and spatial conflicts



Source: MRD.

VI. Typology of Functional Areas

One of the processes affecting public policies across the world and particularly in Europe (not necessarily in the EU Member States), is the transition from the sectoral approach to the integrated territorial approach. It is characterised by its orientation towards the use of endogenous potentials of functionally defined territories, integration of public measures in the spatial dimension and multi-level governance. This approach has already been applied in Poland as well. In July 2010, the Government adopted the National Strategy of Regional Development 2020: Regions, Cities, Rural Areas which constitutes an attempt at applying the new paradigm of place-based policy to the regional policy. Understandably, NSDC 2030, as the main strategic document in the sphere of national spatial development also employs the new territorial approach. The assumption behind the document is that a similar set of integrated measures should be addressed to areas that share geographic (socio-economic and spatial) characteristics and which are referred to as functional areas. From this perspective, the subject of the national spatial development policy is the entire territory of the country and its objectives and tools are diversified depending on the specificity of individual functional areas and oriented towards the utilisation of their specific geographic potentials for the achievement of development objectives of the country (in compliance with the objective of NSDC 2030). Only some of the functional areas defined in NSDC can be counted among the traditionally understood "problem areas", i.e. areas where spatial conflicts and development disturbances occur and where a national level public intervention is needed. Part of the functional areas identified in NSDC have been established within the meaning of the regional policy (pursuant to the provisions of NSRD 2020).

The Act on spatial planning and development imposes an obligation to identify "problem areas" and "metropolitan areas" which – in the typology adopted for the purpose of preparing NSDC 2030 – constitute one of the types of functional areas. The sole identification of problem and metropolitan areas in NSDC is not sufficient to conduct an up-to-date spatial development policy which would ensure the achievement of development policy objectives across the entire territory.

After relevant amendments are introduced in the law, the functional areas specified in NSDC 2030 should be taken into account as an element of spatial and socio-economic planning on the national, regional and local levels and, wherever it is justified, they should constitute a separate category of spatial planning (Fig. 37.).

Working on the statutory definition of a problem area – i.e. "an area where a particular spatial management phenomenon or spatial conflicts occur" as indicated in a voivodeship spatial development plan or specified in a gmina study of conditions and directions of spatial development[149] – NSDC 2030 expands it by adding the following provision "a compact spatial system consisting of functionally linked territories, characterised by shared conditions and anticipated uniform development objectives".

The proposed definition of a functional area covers the following areas whose delimitation results, among others, from applicable laws:

- metropolitan area – defined as "the area of a large city and its directly linked surroundings, established in the national spatial development concept",
- restricted areas – established pursuant to the rules laid down in the Geodesy and Cartography Law of 17 May 1989[150] – areas reserved due to national security and defence considerations,
- protected zone of a restricted area – "the territory in which limitations to land development or use are introduced due to reasons of national defence or security",

[149] Act on spatial planning and development, Dziennik Ustaw [Journal of Laws] of 2003, No. 80, item 717, Art. 2 (7) .

[150] Dziennik Ustaw of 2010, No. 193, item 1287.

- area of protected space – "an area planned to be protected against building development unrelated to defence purposes and to allowing access to protected land, including buffer zones and ecological corridors, protected zones of water intakes and inland water reservoirs, areas covered by historic monuments protection and maintenance as well as green areas, groups of trees, forests and arable crops".

The set of functional areas is open – the number and geographic range of such areas depends on the purpose that their delimitation is to serve. In order to achieve the objectives of NSDC 2030, functional areas have been designated with delimitation on different levels of management (national, regional, functional). They can be divided into four basic types:

- defined in relation to the entire settlement system, delimited on the basis of the degree of urbanisation, covering urban areas – core cities and their functional zones – and functional rural areas,
- delimited on the basis of the type of development potential related to the presence of a particular spatial management phenomenon and conditions for development policy on the macro-regional scale,
- delimited on the basis of the possibility of spatial conflicts related to the way in which their environmental and cultural potential is utilised,
- requiring restructurisation and development of new functions with the use of regional policy instruments. Those are the areas where socio-economic problems accumulate raising a barrier to the achievement of spatial cohesion of the country.

The last two of the above categories contain only problem areas (pursuant to the applicable Act on spatial planning and development) of the spatial and regional policies, while functional areas of other types may, but do not have to, be considered as problem areas on an appropriate level of spatial planning.

For a certain group of areas, especially rural areas, the typology of NSDC 2030 has a didactic value as it introduces expert knowledge to the otherwise strategic document. In this way it overcomes the uniform and devoid of functional differentiation approach to rural areas perceived in purely administrative perspective which is so common in strategic and operational documents.

As regards individual problem areas, NSDC 2030 does not determine their detailed delimitation in the field, leaving this task to competent bodies of the state (including local governments of voivodeships)[151].

Delimitation of those areas shall take place (with the exception of areas extending over more than one voivodeship or of strategic significance to the operation of the country) primarily on the regional or local levels.

In order to guarantee partnership and cooperation, consultation methods will be worked out in reference to the scope of functional areas and formulation of provisions in their development plans. It is assumed that development plans for overlapping functional areas will be prepared simultaneously by 2015 and will subsequently be subject to verification as part of the monitoring of voivodeship spatial management plans.

The manner of developing each of the functional areas will be subject to the complete procedure of strategic environmental assessment, pursuant to the Directive 2001/42/EC as transposed to the Act on provision of information about the environment and protection thereof, public participation in environmental protection and environmental impact assessments [152].

[151] Upon adoption of NSDC 2030 by the Council of Ministers, detailed criteria for delimitation of functional areas will be worked out by teams representing the Government and local-governments as part of the implementation plan of NSDC 2030 (according to Table 5).

[152] Act of 3 October 2008 on provision of information about the environment and protection thereof, public participation in environmental protection and environmental impact assessments (Dziennik Ustaw of 2008, No. 199, item 1227, as amended).

The following table presents the division of functional areas with a description of individual types.

Table 5. Types, entities and NSDC recommendations for functional areas

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
FUNCTIONAL URBAN AREAS	**Voivodeship centres, including metropolitan (metropolitan areas)**	**NSDC** A Team composed of representatives of ministers responsible for regional development, transport, construction, spatial management and housing, communication; local governments	vsdp[1]	Appointment of the Team by the minister responsible for regional development, preparation of delimitation criteria	**Requirement*** Preparation of a strategy and plan for the develpment of a metropolitan area	Voivodeship development strategy, NSRD, urban policy Regional and sectoral programmes
	Regional centres	**NSDC** Teams on the voivodeship level	vsdp	Appointment of the Team by the voivodeship board as part of the work on vsdp	**Recommendation**** Preparation of a strategy and plan for the development of a functional area of a regional centre	Voivodeship development strategy, NSRD, urban policy Regional and sectoral programmes
	Sub-regional centres (>50,000)[153]	**NSDC** Teams on the voivodeship level	vsdp	Appointment of the Team by the voivodeship board as part of the work on vsdp	Possibility of developing a strategy and plan for the development of a functional area of a Sub-regional centre	Voivodeship development strategy, NSRD, urban policy Regional and sectoral programmes
	Local centres	**NSDC** Teams on the voivodeship level	Functional zone is limited to the local centre only	Appointment of the Team by the voivodeship board as part of the work on vsdp	No need to determine functional areas of local centres	Voivodeship development strategy, NSRD, urban policy Regional and sectoral programmes
RURAL FUNCTIONAL AREAS	**Areas participating in development processes**	**NSDC/ NSRD** A team composed of representatives of ministers responsible for regional development, rural development, fishery; local governments	Voivodeship Development Strategy, vsdp for solving problems indicated in the description	Appointment of the Team by the minister responsible for regional development	**Recommendation** to the Voivodeship Development Strategy – indication of areas of diffusion of development processes	Strategy for Sustainable Development of Rural Areas and Agriculture, other integrated strategies
	Areas requiring support of development processes	**NSDC / NSRD** A team composed of representatives of ministers responsible for regional development, rural development, agricultural markets, fishery; local governments	Voivodeship Development Strategy, vsdp for solving problems indicated in the description	Appointment of the Team by the minister responsible for regional development	**Requirement** Voivodeship development strategy, vsdp	Strategy for Sustainable Development of Rural Areas and Agriculture, other integrated strategies

[153] Kolobrzeg, Kutno and Pulawy were also included in this category on account of their functions as described in subsection 6.1.3.

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
FUNCTIONAL AREAS WITH A DOMINANT SPATIAL PHENOMENON ON THE MACROREGIONAL SCALE	**Coastal zone**	**NSDC** A team composed of representatives of ministers responsible for regional development, transport, construction, spatial management and housing, marine economy, fishery, environment, water management, economy; local governments	Voivodeship development strategies, vsdp (on land) Territorial sea development plan (on sea)	Appointment of the Team by the minister responsible for regional development	**Requirement** A study of spatial development for the coastal zone	MRD guidelines for development of the area Marine policy Sectoral strategies Voivodeship development strategies ICZM Act on maritime areas of the Republic of Poland and maritime administration (Dz. U. of 2003, No. 153, item 1502)
	Polish exclusive maritime economic zone	Act on maritime areas of the Republic of Poland and maritime administration (Dz. U. of 2003, No. 153, item 1502)			**Coordination with NSDC** Development plan for the exclusive maritime economic zone	Marine policy Voivodeship development strategies VASAB Baltic Sea Strategy
	Mountainous areas	**NSDC** A team composed of representatives of ministers responsible for regional development, rural areas development, construction, spatial management and housing, environment, water management; local governments	Minister responsible for regional development in communication with local government units	Appointment of the Team by the minister responsible for regional development	**Requirement** Preparation of a plan and strategy for the development of mountainous areas	MRD guidelines for development of the area Sectoral strategies Voivodeship development strategies
	Żuławy	**NSDC**	Minister responsible for regional development in communication with local government units		**Requirement** Preparation of a development plan and strategy for Żuławy	MRD guidelines for development of the area Sectoral strategies National water policy until 2030 including the 2016 milestone, Voivodeship development strategies and programmes Programme for Comprehensive Flood Protection in Żuławy until 2030, including the 2015 milestone, the so-called Żuławy Programme

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
	Areas of soil protection for agricultural production	**NSDC** Act on the protection of agricultural and forest land	vsdp A team composed of representatives of ministers responsible for rural development, agriculture, fishery, environment, water management; GDEP (General Directorate for Environmental Protection; Polish: *GDOŚ*), IUNG (Institute of Soil Science and Plant Cultivation)	Appointment of the Team by the minister responsible for regional development	**Recommendation** for voivodeship spatial development plans	Voivodeship development strategy Strategy for Sustainable Development of Rural Areas and Agriculture
	Restricted areas	**NSDC** Geodesy and Cartography Law of 17 May 1989	Minister responsible for national defence	Appointment of the Team by the minister responsible for national defence in communication with ministers responsible for construction, spatial management and housing, water management and environment	**Coordination with NSDC**	National Security Strategy
	Areas exposed to the threat of flooding on the scale of river basins	**NSDC** Water Law Act of 18 July 2001	NWMA in communication with RWMB (Polish: *RZGW*), Maritime Offices	Preparation of documents listed in the Water Law Act: 1. flood hazard maps, 2. flood risk maps, 3. river basin management plans by the President of NWMA	**Coordination with NSDC** Plans and programmes for the Odra and Vistula River basins as well as for other rivers if necessary Flood risk management plans	National water policy until 2030 including the 2016 milestone Strategy for Sustainable Development of Rural Areas and Agriculture Investment Programmes of RWMB and Polish State Forests Preliminary flood risk assessment (PFRA) Flood hazard maps (FHM) Flood risk management plans (FRMP)

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
AREAS WHOSE DEVELOPMENT POTENTIAL IS SUBJECT TO MODELLING	**Environmentally valuable areas**	**NSDC** **Minister responsible for environment (Chief Nature Conservator – CNC)** **GDEP / RDEP (Regional Directorate for Environmental Protection; Polish: *RDOŚ*)** in cooperation with local government units Nature Conservation Act Strategy for the Protection and Sustainable Use of Biodiversity in Poland	vsdp CNC, GDEP / RDEP in cooperation with relevant local government units Natura 2000 sites are approved by the European Commission		**Requirement** in respect of delimitation and shaping of nature conservation corridors and networks Protection plans and protective actions plans	**Voivodeship development strategy** Strategy for the Protection and Sustainable Use of Biodiversity in Poland
					Coordination with NSDC regarding a joint system for the protection of cultural landscapes and areas of high nature value	
	Areas of protected cultural landscapes	**NSDC** Act on the protection and maintenance of historic monuments (Dz. U. of 1968, No. 03, item 162) the minister responsible for culture and national heritage (National Heritage Board of Poland; Polish: *NID*)	vsdp	Appointment of the Team consisting of: minister responsible for regional development, CNC, General Director for Environmental Protection, National Heritage Board of Poland, NGO	**Requirement** regarding delimitation and shaping of the cultural landscape protection network rules of cultural landscapes valorisation	Voivodeship development strategy Programme for the protection of objects and areas of cultural heritage (World Heritage Site, historic monuments, other) Programme for the protection of cultural landscapes (involving CNC) Convention Concerning the Protection of the Cultural and Natural Heritage (Dz. U. of 1976, No. 76, item 32)
					Coordination with NSDC regarding a joint system for the protection of cultural landscapes and high nature value areas	
	Areas of protected and modelled water resources	**NSDC** Water Law Act of 18 July 2001 the minister responsible for environment, the minister responsible for water management, the minister responsible for agriculture and rural areas, the minister responsible for construction, spatial management	vsdp	Coordination of programmes	**Requirement** regarding indication of water protection areas Plan for the prevention of water deficits for the entire country and for regions Plan for the prevention of the effects of drought for the entire country and for regions	National water policy until 2030 River basin management plans Small retention programmes National Urban Waste Water Treatment Plan (NUWWTP; Polish *KPOŚK*) and accompanying programmes

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
		and housing			**Coordination with NSDC** **Coordination with NUWWTP**	
	Areas of strategic deposits of minerals	**NSDC** Team Guidelines for the protection of strategic deposits of minerals the minister responsible for economy in cooperation with the ministers responsible for environment, water management, construction, spatial management and housing, transport	vsdp	A list of mineral deposits Appointment of the Team by ministers responsible for economy, environment, water management, construction, spatial management and housing	**Requirement**	Voivodeship development strategy Energy policy
FUNCTIONAL AREAS THAT REQUIRE DEVELOPMENT OF NEW FUNCTIONS WITH THE USE OF REGIONAL POLICY INSTRUMENTS	**Areas with the lowest degree of development and deteriorating development prospects**	**NSDC** **NSRD**	The minister responsible for regional development in cooperation with local government units and a territorially competent Team (e.g. for Western Poland)		**Coordination with NSDC** Voivodeship development strategy, macro-regional development strategies, other integrated strategies coordinated under the territorial contract	Voivodeship development strategies, integrated strategies
	Cities and other areas losing their current socio-economic functions	**NSDC** **NSRD** Team	vsdp	Appointment of the Team consisting of: Local Government Units, Town Halls, Marshal Office, Voivodeship Spatial Planning Units, private partners, NGO	**Requirement** to define actions related to: the development strategy of functional urban areas, other integrated strategies coordinated under the territorial contract	Voivodeship development strategy Urban policy
	Areas with the lowest level of access to goods and services on which development possibilities depend	**NSDC** **NSRD** Team	vsdp	Appointment of the Team by the minister responsible for regional development for determining the standard of access to services by ministers representing individual sectors	**Requirement** to define actions related to: the voivodeship development strategy, other integrated strategies coordinated under the territorial contract	Integrated strategies
	Borderland	**NSDC** **NSRD**	NSRD Areas of regional significance in vsdp		**Requirement** Preparation of a strategy and development plans for areas situated on both sides of the border (Applying to the foreign party for the preparation of joint strategies for borderland development with spatial planning components)	Land development strategy for areas on both sides of the border Land development strategy for areas along the border

Area type		Place and entity determining criteria	Entity or place of area delimitation (boundary mapping)	Actions conditioning designation	Indication resulting from NSDC	Related documents
1.	2.	3.	4.	5.	6.	7.
	Areas with the worst transport accessibility to voivodeship centres	**NSDC NSRD**	Areas of regional significance in vsdp		**Recommendation** actions related to: the voivodeship development strategy, development strategy of functional urban areas, other integrated strategies coordinated under the territorial contract	Transport development strategy

***Requirement (to vsdp)** – a provision in NSDC that is binding for voivodeship spatial development plans and is related to the scope defined in Article 47 (2) of the Act on spatial planning and development of 2003. It signifies an obligation to introduce the indicated area into a voivodeship spatial development plan and to program measures related to that area or to introduce provisions contained in the Action Plan into a vsdp. It is a condition for reconciling voivodeship plans with the Concept by the minister responsible for construction, spatial management and housing as well as for compliance of lower-level spatial planning documents with vsdp. By way of a resolution, the Council of Ministers shall adopt guidelines for the preparation of vsdp and for approving their compliance with NSDC 2030.

****Recommendation (to vsdp)** – a general hint resulting from the objectives of the national spatial policy (NSDC) aimed at defining the spatial policy of voivodeships (vsdp), indicating the rules and directions to follow when formulating provisions of vsdp.

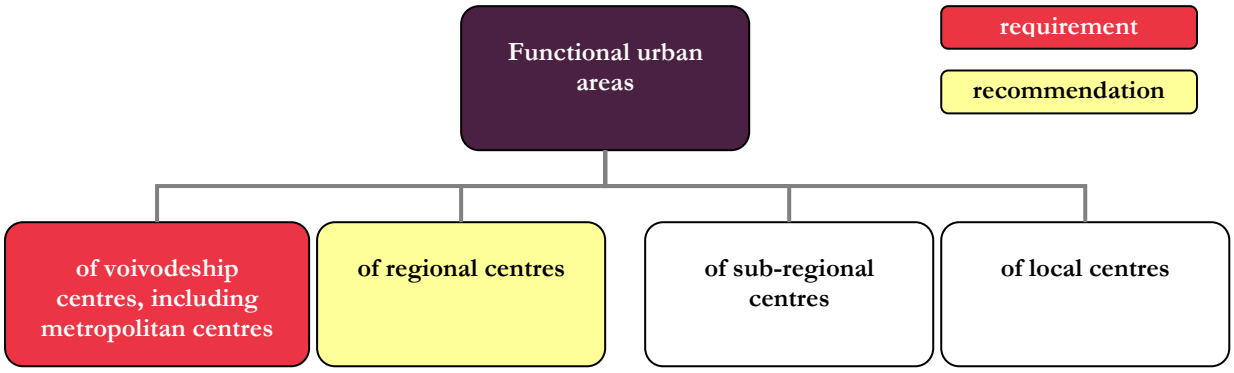
Abbreviations used:
[1]vsdp – voivodeship spatial development plan

6.1. Functional urban areas

A functional urban area is a spatially continuous settlement system consisting of administratively separate units. It covers a compact urban area with a functionally linked urbanised zone. Those administrative areas may include urban gminas, rural gminas and urban-rural gminas[154]. Functional urban areas can be divided into four sub-types: voivodeship (including metropolitan), regional, sub-regional and local centres. This typology refers to the functions of urban centres in the settlement system of the country and is primarily based on their size. NSDC 2030, pursuant to the Act on spatial planning and development (Art. 2) determines (establishes) a list of functional areas of metropolitan centres – metropolitan areas (i.e. playing the most important role in the development processes of the country) where special planning solutions should be applied (requirement to demarcate and subsequently prepare development strategies and plans for the entire functional area) due to the degree of complexity of socio-economic and spatial issues as well as the need to increase coordination and efficiency of public measures in those areas. However, considering the Polish administrative system and the provisions of NSRD 2020 regarding the regional development policy, the obligation to demarcate functional areas and to prepare development strategies and plans for the entire functional area of a given urban centre shall be extended to cover all capitals of voivodeships. It will allow for the reinforcement of spatial integrity and concentration of metropolitan functions in all voivodeship centres which will be advantageous for the development of all Polish regions.

[154] Studies performed in the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (Polish: *IGiPZ PAN*) under the supervision of Przemysław Śleszyński Ph.D. indicate that, in total, 70% of the Polish population inhabit urban centres or functional areas of cities. This percentage could be considered as an approximate value of the urbanisation index which is larger by about 9-10 pp than the one quoted by the Central Statistical Office which is based on the population inhabiting administrative units with city status.

Fig. 39. Classification of functional urban areas



Delimitation of functional areas of voivodeship centres will be performed on the voivodeship level (in voivodeship spatial development plans) with the use of uniform criteria worked out jointly by the state government and local government with the participation of social and economic partners.

Delimitation of functional areas of urban centres – regional, sub-regional and local – is not obligatory; however, it may be carried out on the regional level as part of the work on vsdp with the use of the methodology worked out in the above mentioned process.

6.1.1. Functional areas of voivodeship centres, including metropolitan centres

Functional areas of voivodeship centres are established around all capitals of voivodeships. Some of the voivodeship centres, due to their role in the settlement system of the country and socio-economic significance in the development processes of the entire country, gain the status of metropolitan centres. NSDC 2030 applies the term 'metropolitan area' consisting of a core city and an external zone to denote a variety of units: urban and rural gminas that comprise an area, monocentric (e.g. Poznań) and polycentric spatial units (e.g. Tricity, Upper Silesian Agglomeration, Toruń-Bydgoszcz bipolar area). The requirement to demarcate metropolitan centres in NSDC 2030 transpires form the provisions of the Act on spatial planning and management.

On the basis of experiences from other countries and upon analysis of ESPON studies, it was concluded that the term 'metropolis' could be applied to those centres (including their functional areas) which constitute economic management centres on at least national level, have a large economic potential (supra-national investment attractiveness), offer a range of higher order services, play symbolic functions, are characterised by high external touristic attractiveness, extensive educational and innovation capacities (well-developed higher education, presence of scientific as well as research and development establishments), are capable of maintaining commercial, scientific, educational and cultural relations with international metropolises and are distinguished by a high internal and external transport accessibility. It is worth noticing that – according to comparative studies (e.g. ESPON) – Polish cities, except Warsaw and some other cities (Cracow, Upper Silesian Agglomeration, Tricity, Poznań, Wrocław) in respect of certain individual aspects, have poorly developed metropolitan functions in comparison to Western European cities of similar size. Due to the above, the delimitation of metropolitan centres for the purposes of NSDC 2030 was carried out on the basis of criteria that are primarily related to the functions within the settlement system of the country. Otherwise, the number of metropolitan areas in Poland would drop to just one. The following criteria were adopted (according to data for 2009) for the purpose of demarcating metropolitan centres (and surrounding functional areas: in a metropolitan centre, the population exceeds 300 thousand inhabitants, employment in the sector of market services

(financial intermediaries, services for companies and real estate) exceeds 40 thousand, the number of students at universities of a given city exceeded 60 thousand in the academic year 2007/2008, involvement of scientific and research institutions in the EU 5th and 6th Framework Programmes, presence of a passenger airport, presence of four and five-star hotels, international exhibitions held at exhibition facilities in the period 2006-2008.

The above criteria are satisfied by the following cities: Warsaw, Upper Silesian Agglomeration (with Katowice as its main centre), Cracow, Łódź, Tricity, Poznań, Wrocław, bipolar area of Bydgoszcz and Toruń as well as Szczecin. Lublin satisfies the above indicated metropolitan characteristics but it lacks a passenger airport. However, owing to its significance for development – e.g. in respect of its academic potential (a large scientific centre), concentration of economic activity, operating as a place of contacts with countries situated to the east from Poland – it has also been included among metropolitan centres.

Other capitals of voivodeships which fail to satisfy the above criteria constitute centres of national significance. Still, they all have a need for strengthening metropolitan functions in order to ensure a more uniform development of the country on the basis of a polycentric network of major Polish cities (i.e. metropolises, cities of national and regional significance). For this reason, the requirement to demarcate functional areas and prepare a development plan and strategy for an entire functional area has been extended to all capitals of voivodeships, regardless of their role in the national settlement network. The basis for a spatial development plan and development strategy of a metropolitan area is the rule of the primacy of regeneration (revival) of development over claiming new land for development purposes. It involves intensification of urbanisation processes in the already developed areas so as to minimise expansion onto new territories. Moreover, the plan and strategy shall also provide for the deglomeration of services across the entire metropolitan area. It is part of the aspiration to rationally saturate the entire area with a variety of metropolitan functions and higher order services.

The above-mentioned documents shall contain systemic solutions regarding the following key issues: integrated public transport system, energy-efficient spatial structures (compact city, efficient systems of technical infrastructure and municipal services), revitalisation of degraded urban tissue across the entire metropolitan area, a coherent investment system – especially in respect of road infrastructure and utilities – integrated and consistent management of environmental and water resources (including rainwater), increased consistency of spatial development plans on the interfaces of administrative units, cooperation with other metropolitan areas and keeping a spatial data monitoring system combined with the monitoring system of regional development, creation of spatial and environmental databases (ecophysiography), management of cultural assets connected with an inventory of cultural heritage resources.

6.1.2. Functional areas of regional centres

Functional areas of regional centres are created around cities that do not fulfil the functions of voivodeship centres but have a large potential and considerable significance for the development of the country from the perspective of the objectives of the national spatial development and, in principle, have between 100 and 300 thousand inhabitants (Częstochowa, Radom, Bielsko-Biała, Rybnik, Płock, Elbląg, Wałbrzych, Włocławek, Tarnów, Kalisz with Ostrów Wielkopolski, Koszalin, Legnica, Grudziądz, Słupsk). Those are the cities which play important administrative, economic and social roles as well as accumulate certain metropolitan functions but on a far smaller impact scale (mostly regional) than metropolitan centres or other voivodeship centres. They play a fundamental role in the economic, social and administrative life of individual regions and some of them, owing to their specialisation, have a direct influence on the development of the country.

Rules for delimiting functional areas of regional centres are the same as the rules for mapping out metropolitan areas. However, their demarcation does not entail a necessity to prepare separate land development plans or development strategies.

Delimitation of functional areas of regional centres serves the purpose of increasing the demographic potential, enhancing metropolitan functions, utilising the inherent potential and extending appropriate functional links. Such centres can be included among the nodes of a networked metropolis and, owing to their advantageous location (even distribution across the country), ensure coherent and polycentric development, consolidate the spatial and functional balance of the settlement system, counteract the emergence of areas devoid of population. The process of suburbanisation and transferring of economic functions to external zones is observed around regional cities with populations ranging from 100 to 300 thousand inhabitants. In order to ensure proper utilisation of the economic potential of the entire functional area (the centre with surrounding urbanised gminas of urban and rural types) and to facilitate cooperation between public authorities regarding the provision of public services of fundamental significance to development, there may emerge a need to prepare a strategy and a joint vision of spatial development for the areas of indicated regional cities. It will entail a necessity to demarcate (in voivodeship spatial development plans) the limits of functional urban areas of regional centres with the aid of the criteria used for delimiting metropolitan areas.

6.1.3. Functional areas of sub-regional centres

They are demarcated by the local government of voivodeships around cities with the population of between 50 and 100 thousand inhabitants. Due to their economic significance, smaller cities may also fall into this category, for example Kołobrzeg, Kutno (important transport hub) and Puławy (industrial and scientific centre). Some of the cities grouped in this category used to have the status of voivodeship capitals in the past. Potential sub-regional centres indicated in vsdp by voivodeship local governments are shown in Fig. 39.

This group consists of cities that play a significant role as places where economic and social functions are concentrated and where services of general interest are provided – supplementing the offer of capitals of voivodeships – which is important not only to their inhabitants but also to the inhabitants of surrounding rural areas. Some of the urban centres, owing to their specialisation in industrial production or other functions, e.g. touristic, are exposed to shifts in market trends and hence the need for competent voivodeship boards to identify their problems.

Demarcation of the functional areas of sub-regional centres will serve the purpose of establishing functional links with metropolitan functional areas and areas surrounding regional centres. This will allow the areas of sub-regional centres to increase the flexibility of their labour markets in response to current economic trends and to improve their attractiveness as a place for living and obtaining services.

Functional areas of sub-regional centres cover rural gminas situated in the direct vicinity of such centres. In order to solve economic, social and spatial problems or issues related to the integrated management of such areas, discretionary land development plans may be provided for such areas in vsdp.

6.1.4. Local centres

Local centres do not have their own base in the form of an established functional area but they stand a chance of accumulating economic functions and offer services to rural areas. They include cities with development capacities and with a population of up to 50 thousand inhabitants, in principle. Certain capitals of poviats play a prominent role among them. Local centres have a special significance for the development of rural areas, mainly as centres where

non-agricultural functions can develop and as incubators of activities mobilising adjacent areas. They also offer low and medium order services of general interest. In this manner, local centres play a supplementary role in relation to sub-regional centres. A well-operating settlement system of the country constitutes the basis for diffusion of development from highest level to lowest level centres which are often characterised by lower indicators of socio-economic development.

Development problems of local centres are a frequent reason of depopulation of those areas and the loss of their economic functions. A large number of local centres, especially those acting in the capacity of poviat capitals, fail to properly fulfil their role in regional development processes and restructurisation of rural areas. It stems from the historically motivated economic weakness of those cities (situated mainly in Eastern Poland, Central Pomerania and Western Poland), deficiency of the state institutions, including public administration, and weakness of those centres as places where basic services are provided to the inhabitants of surrounding rural areas.

6.2. Rural functional areas

In the spatial planning practice and for the purpose of effecting measures under a variety of public policies, rural areas are defined as the territory situated outside city limits. This approach results, among others, from the accessibility of statistics published by the Central Statistical Office. The new regional policy, focusing on the creation of conditions for utilisation of unique territorial potentials in the development process, as well as the spatial development policy, which takes as its starting point the interactions of geographic areas defined by their functions, need to propose a new perspective on rural areas. It will allow for a more in-depth analysis of the potentials in those areas and for a better orientation of public intervention aimed at the achievement of objectives set out in strategic documents.

NSDC 2030, apart from functional urban areas (which may cover also administrative units counted among rural areas), distinguishes two types of rural functional areas: situated in the vicinity of a large city and requiring support for the processes of socio-economic development (Fig. 40.).

6.2.1. Functional rural areas participating in development processes

Rural areas that are involved in the development processes of the country are subject to a progressing functional integration with the most important urban centres. They are characterised by:

a. location in the zone of strong influence of the main urban centre or centres in the vicinity of major urban centres (outside of the urbanised suburban zone),

b. specialisation, resulting from the proximity of cities and/or employment in non-agricultural sectors of economy (industry, construction, tourism, recreation – second houses of city dwellers, forestry, supplementary administration and other public services),

c. access to employment in urban centres (pendular migration),

d. usually good or average access to fundamental services of general interest,

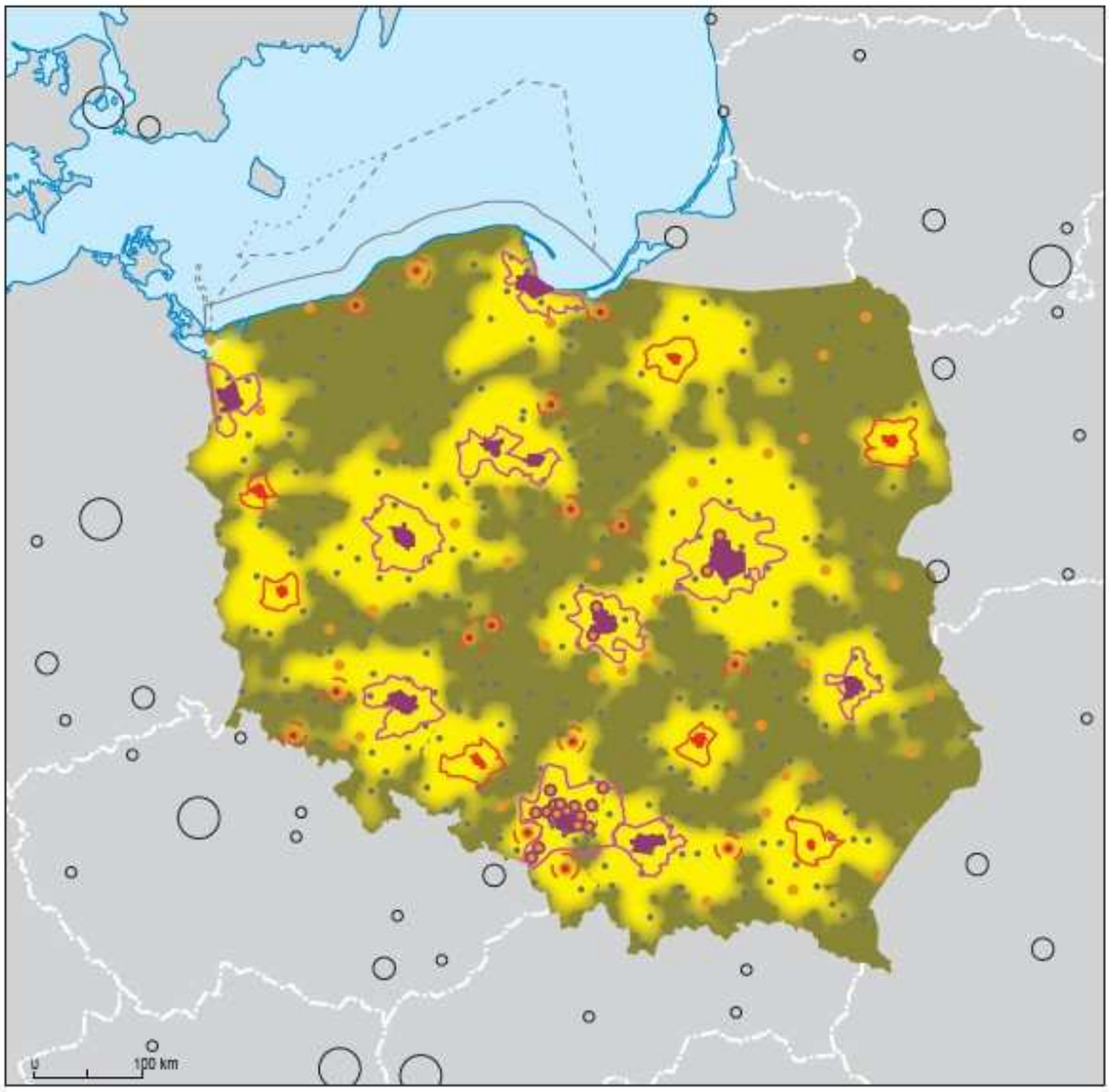
e. relatively good transport accessibility to higher order services situated in urban centres,

f. relatively good agricultural potential utilised for market purposes and jobs in services related to agriculture (which tends to strengthen commodity farming and efficiency).

The processes of ownership concentration and restructurisation of agriculture increase the investment attractiveness of rural areas. Moreover, an easy access to non-agricultural jobs, relatively good level of human capital and access to services of general interest – situated in those areas or in nearby cities – reduce the rate of unemployment and ensure good income to inhabitants of those areas.

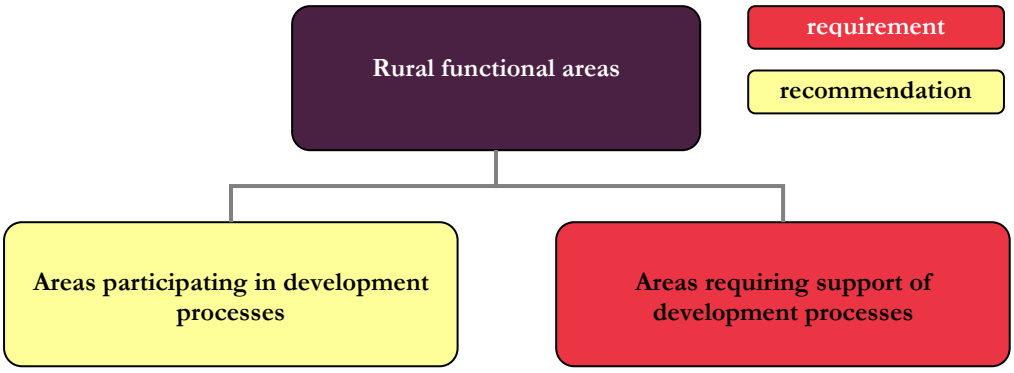
One of the objectives of the spatial development of the country in those areas is to maintain and develop the bonds of local communities and to preserve appropriate relations between the existing spatial structures because disintegration and incomplete urbanisation processes pose the main threat to those areas. Such areas should be demarcated as part of the voivodeship development strategy and vsdp as areas with favourable conditions for diffusion of development processes.

Fig. 40. Urban and rural functional areas



Source: Prepared by MRD

Fig. 41. Rural functional areas



Attention: Administrative rural areas situated in the direct neighbourhood of urban centres and subject to urbanisation are included in **functional urban areas**. They are discussed in section 6.1.

6.2.2. Rural areas requiring support of development processes

Rural areas requiring support of development processes are the areas where travel times exceed 90 minutes and the network of small and medium-sized cities is poorly developed (Eastern Poland) or where the existing urban centres have lost many of their formerly important economic functions (e.g. Central Pomerania, North Masuria, pockets in the central part of Poland). Those areas are hardly involved at all in the present-day development processes of the country. They offer low-income jobs primarily in agriculture or the public sector (basic services in administration, education, health, etc.) and supplementary jobs in other spheres of economy which are additionally exposed to seasonal fluctuations (tourism) or in danger of being wound up in a situation of adverse market trends. A large part of their population remains professionally inactive due to the distorted demographic structure (economic migration), resulting, among others, from absence of alternative sources of income (hidden structural unemployment in the countryside).

Important barriers to the development of some of rural areas include low access to fundamental services of general interest, depreciation of the settlement tissue, jeopardising of environmental assets in the process of intense search for alternative routes of development and a poor quality of infrastructure.

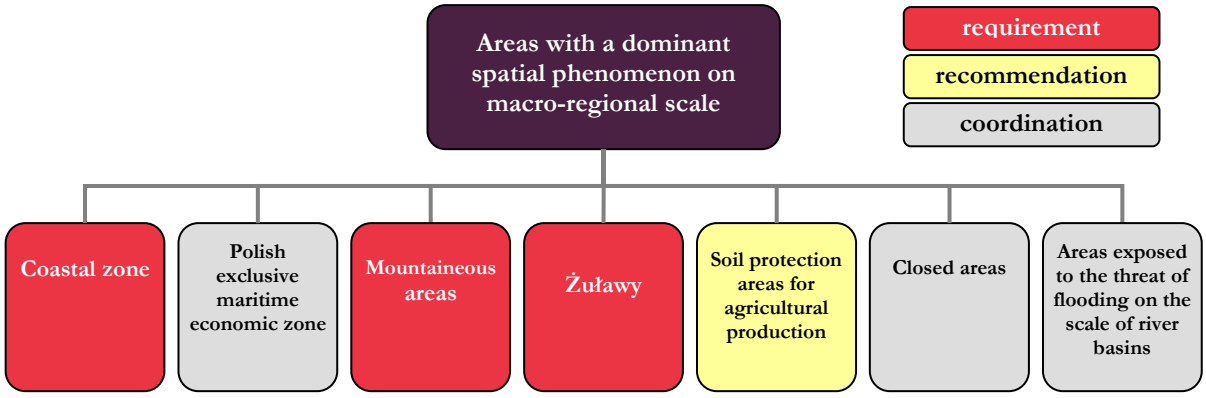
In the system of spatial planning and regional policy, those areas should be identified and delimited on the regional level. It will serve the purpose of implementing various spatial planning measures, e.g. for the benefit of efficient planning of public investments in the conditions of shrinking population and a threat of losing certain functions, coordination of activities conducted in those areas under various sectoral policies and restructuring actions undertaken as part of the regional development policy, including the rural areas policy. Such areas shall be obligatorily included in voivodeship development strategies as a binding requirement. They shall also be taken into consideration in vsdp in order to solve specific indicated problems.

6.3. Functional areas with a dominant spatial phenomenon on the macro-regional scale

Those areas have been singled out on the basis of a major spatial problem whose influence exceeds the local or regional scope and whose resolution requires that coordinated actions are taken on the macro-regional level. They require a special approach under the policy of national spatial development.

NSDC 2030 distinguishes seven functional areas of this type; however, their number may change depending on the measures of the national spatial development policy and socio-economic policy. This group includes: coastal zone, exclusive economic zone on sea, Żuławy, mountainous areas, areas with dominant agricultural functions, restricted areas and areas exposed to the threat of flooding on the scale of river basins .

Fig. 42. Functional areas with a dominant spatial phenomenon delimited on the macro-regional scale



Even pursuant to the currently applicable legislation, some of those areas should be demarcated on the national and voivodeship level due to their sensitive character and distortion of their major functions (Fig. 42.).

6.3.1. Coastal zone

In compliance with the principles of governance and subsidiarity, the co-responsibility for the spatial development of coastal zones rests with state administration bodies (central administration, including Maritime Offices) and local administration bodies of all levels, according to assigned competences. In order to increase the efficiency of the management and development processes, it is necessary to urgently implement the principles of the Integrated Coastal Zone Management[155].

A spatial development study of coastal zones (Fig. 43.) shall be prepared for the purpose of laying down foundations for the spatial integration and optimal utilisation of marine areas.The preparation of the study – regarded as an obligatory requirement of NSDC 2030 (Table 5.) – shall be the responsibility of a team appointed by the minister responsible for regional development and other relevant ministers in cooperation with local government authorities of coastal regions. The study shall contain requirements binding for maritime administration, voivodeship local governments and – via the voivodeship spatial development plan (whose role is to increase) – gminas of the coastal zone. The study shall cover issues pertaining to social and economic development, spatial management and spatial aspects of environmental protection. It is expected to stimulate the consolidation of sustainable development of this zone by means of:

- strengthening the basis of the Polish coast development in terms of national transport, communication and energy networks,
- economic utilisation of marine areas in compliance with environmental and natural conditions,
- systemic measures aimed at the development of the sea coast and its protection against erosion caused by the Baltic Sea and against the threat of sea storm floods,

[155] Recommendation 2002/413/EC of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe (Official Journal L 148 of 06.06.2002, p. 24).

- systemic measures aimed at improving the purity of coastal waters and rivers flowing into the Baltic Sea that result from international obligations imposed on Poland in respect of environmental protection, especially the protection of the Baltic Sea water.

The study shall be used by government and local-government administration bodies for the purpose of preparing relevant strategies, plans and programmes. On the national level, the minister responsible for maritime economy shall be obliged to prepare a development plan for marine areas of the Republic of Poland (sea basins) with a specification of procedures that would guarantee a correlation between spatial development plans for marine areas and for the land part of the "coastal zone". Preparation of development plans for marine areas and for land situated on the interface with the sea shall be subject to procedures of mutual consultations between bodies responsible for their preparation which shall be conducted in compliance with the principles of the Integrated Coastal Zone Management (ICZM). For the purpose of preparing marine areas development plans, it is necessary to define the expectations in relation to the coastal zone, resulting from the needs of areas situated on the land. The principles of ICZM should be used for this purpose.

6.3.2. Polish exclusive economic zone

The borders of this area are delimited pursuant to international regulations. The zone constitutes a compact spatial system comprising functionally linked sea basins characterised by common conditions and uniform anticipated development objectives. Those sea basins combine to form a coherent ecosystem (absence of physical barriers to the penetration of man-made stimuli or products of natural processes through the borders of the zone). The specificity of this zone as an object of spatial planning results from applicable laws (international common law has prevalence over the domestic law and requires multilateral international cooperation), ownership relations (absence of private property and yet a limited right to use the space by the administering entities), relatively narrow group of stakeholders and a considerable sensitivity to distortions of the existing balance which may lead to the emergence of irreversible accumulation processes of catastrophic nature (the significance of threshold quantities and a resultant high margin of uncertainty; limited usability of routine spatial planning techniques). Therefore, it is – according to the nomenclature used in NSDC 2030 – a functional area requiring a specific (different than on the land) spatial planning and management system. Its distinct treatment is additionally supported by the fast changes in the manner of its utilisation – in the recent years the space within the exclusive economic zone has ceased to be a relatively abundant good and has become a rare good which requires that proper choices are made (the alternative cost has appeared) in respect of its use. The scale and intensity of this process weigh in favour of separating the economic zone as a functional area that calls for a spatial policy intervention on the national level.

The functional area plan constitutes part of the marine areas development plan. That part is prepared for the purpose of coordinating specific needs of stakeholders as regards location of investment projects and their protected zones, sites where dangerous objects are present, zones of protected cultural heritage, flora and fauna with their use for navigation. It is correlated with the spatial development study of coastal zones. It contains requirements binding for local governments of voivodeships and – via the voivodeship plan – for selected gminas that are linked to the area covered by the voivodeship plan primarily in respect of technical infrastructure.

6.3.3. Mountainous areas

Mountainous areas (situated in the territories of five Polish voivodeships) are characterised by unfavourable physical, geographic, climatic and soil conditions which impede agriculture and development of transport due to higher cost of construction of infrastructure than in the plains. Simultaneously, changeability and variety of the lie of the land as well as cultural and

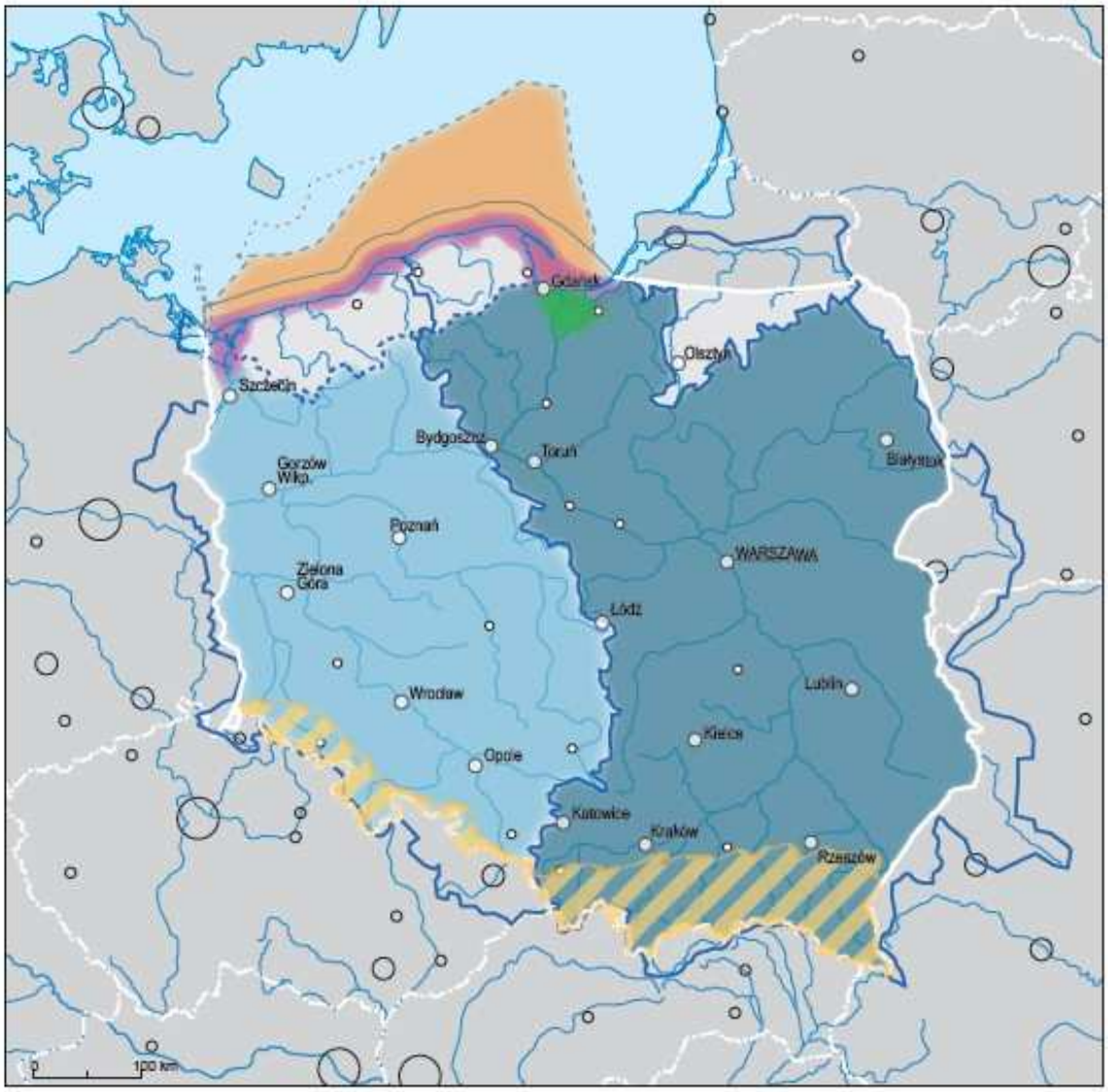
environmental landscapes makes those areas particularly attractive in all seasons, creating excellent opportunities for tourism. Extension of the transport system – which is related to the increased affluence of society and the growing interest in recreational, holiday-making and tourism-related assets of mountainous areas – leads to the intensification of human pressure onto those areas. This calls for a response in the form of a new, integrated and supra-regional perspective on the issues pertaining to mountainous areas which need to be perceived in a coherent manner to ensure optimal utilisation of spatial planning tools in combination with the system of regional policy and provision of appropriate (place-based) coordination of sectoral instruments.

The minister responsible for regional development in cooperation with other relevant ministers, including the minister responsible for environment, shall specify guidelines on ensuring sustainable development of mountainous areas. On the other hand, the impact area of those instruments should be defined on the macro-regional level according to nationally uniform criteria by means of preparing a development strategy (the minister responsible for regional development) and a spatial development plan for mountainous areas correlated with that strategy and drawn on the macro-regional level (cooperation of local government units). Those areas should be taken into account (obligatory requirement) in voivodeship spatial development plans and their development strategies.

6.3.4. Żuławy

Żuławy Wiślane is a unique region on the European scale with exceptional cultural, landscape and environmental assets, rich in fertile soils used mainly for farming and abundant in resources of surface water. The area of Żuławy constitutes part of an ecologically important area in northern Poland whose status is strengthened by the international ecological corridor of the Vistula River Valley. Żuławy are particularly exposed to the threat of floods, especially sea storm floods, and to sudden surging of the Vistula River whose waters break flood-banks. Settlement in the area was possible owing to the artificial drainage of land which made Żuławy dependent on an efficiently operating system of land reclamation which secures the inhabitants against floods. The plain of the Vistula River delta – extending between the Vistula Spit and the forking of the river into the Leniwka River and the Nogat River – is administratively divided between the Pomorskie Voivodeship (80%) and Warmińsko-Mazurskie Voivodeship (20%) and is situated in the hydrographic area which is entirely administered by the Regional Water Management Board in Gdańsk. Depression areas constitute about 28% of the total surface of the delta and the largest of them is situated in the vicinity of the Drużno Lake at 1.8 metres below seal level. Żuławy area is cut across by an important infrastructural and transport corridor connecting Tricity with its sea ports to the north-eastern part of the country and to Warsaw.

Fig. 43. Functional areas with a dominant spatial phenomenon on the macro-regional scale



Areas with a dominant spatial phenomenon on the macroregional scale requiring special approach in the national spatial development policy

coastal zone

introduction of: integrated management and systemic measures aimed at the protection of sea coast against abrasion, improvement of the purity of coastal waters and rivers flowing into the Baltic Sea, resulting from international obligations imposed on Poland, and preparation conflict-free strengthening of development basis in cooperation with neighbouring countries

Polish exclusive economic zone

area requiring diverse spatial planning and management for its optimal utilisation; coordination of actions of two regions and ministries in respect of environmental protection, defense, navigation, tourism, fishery and others

mountainous areas

measures preventing erosion aimed at enhancing flood security, development of tourism infrastructure, protection of spa qualities, sanitation of rural areas, preservation of cultural and landscape identity, maintenance of ecological balance and improvement of conditions for agriculture

Żuławy

introduction or maintenance of the protection of: cultural heritage assets, unique nature and landscape complex, areas of high nature value and ecological corridors, especally Natura 2000 sites, compact complexes of class I-III soils with the maintenance of the current form of use and preservation of their production qualities, flood protection including prohibitions and restrictions to permanent development and increasing the retention capacity of natural spatial structures

areas exposed to the threat of flooding on the scale of river basins

determination of measures and priority areas for flood risk management, integration of actions, increasing of the retention and surge holding capacity of river valleys, increasing the buffer capacities of natural structures, achievement of the good ecological status of waters

Note: The map presents approximate ranges while detailed delimitation shall take place in vsdp and the territorial sea development plan

Source: Prepared by MRD

The fundamental task of the national spatial management policy in this area is to counteract spatial conflicts resulting from natural conditions (depression, proximity of the sea, flood hazard, presence of very good soils and areas of high nature value on the national scale) and the economic activity (pressure of Tricity, agriculture, tourism , transport) as well as to ensure coordination of development-related measures implemented with the aid of sectoral instruments and investment activities undertaken as part of the regional policy in the territory of the two neighbouring voivodeships. The absence of coordination of actions conducted in Żuławy by a wide range of entities shall be prevented by special guidelines of the minister responsible for regional development in respect of the sustainable use of the territory of Żuławy as well as by the Żuławy area development strategy and spatial management plan prepared in agreement between the local governments of the two voivodeships. Those measures shall improve conditions for ensuring protection and development in that area. The basis for intensified cooperation and coordination will be provided by covering the entire area under protection aimed at the preservation of cultural heritage qualities and the unique complex of nature and landscape as well as by adoption of the fundamental principles articulated in the descriptions of Objectives 4. and 5.

6.3.5. Soil protection areas for agricultural production

The multitude of functions fulfilled by rural areas and the need to protect high quality soils in the time horizon covered by NSDC 2030, necessitate the determination of the space necessary to guarantee food security of the country. In the spatial development plans of voivodeships – as a recommendation – and in the studies of conditions and directions of spatial development of gminas, areas of agricultural crops production will be demarcated in order to prevent changes in the use of soils of the highest usability for agricultural cropping. Protection of areas of agricultural crops production may also stem from the requirement to protect functions accompanying food production such as, for example, preservation of natural assets or a traditional agricultural landscape which depend on extensive farming or the maintenance of green belts in the functional areas of capitals of voivodeships and regional centres or the maintenance of permanent grasslands to counteract the effects of climate changes.

6.3.6. Restricted areas

The spatial order requires that the space that is important for the defence of the country is integrated with its surroundings. At present, voivodeship spatial development plans already demarcate restricted areas with their protected zones which need to be taken into account in local spatial development plans. The restricted areas used by the Armed Forces of the Republic of Poland are of particular significance. The national spatial development policy should provide for the protection of the basic functions of restricted areas – i.e. national defence – with the simultaneous involvement of those areas in regional development.

In order to reduce the burden to natural environment in the territory of restricted areas, infrastructural networks should be subject to integration, especially water supply and sewer systems or other area sanitation systems in the event of absence of economic justification for connecting them to waste water agglomerations that are programmed in the National Programme for Municipal Waste Water Treatment. Regional architectonic and urban planning standards may be introduced in delimited buffer zones alongside measures aimed at the protection of cultural and natural heritage.

6.3.7. Areas exposed to the threat of flooding on the scale of river basins

In the legal sense, areas exposed to the threat of flooding are areas indicated in a preliminary assessment of flood risk. Flood hazard maps and flood risk maps are drawn for areas exposed to the threat of flooding in order to define the level of risk in combination with the probability of this phenomenon. The above-mentioned maps provide the basis for the preparation of

flood risk management plans whose provisions and maps must be taken into account in spatial development plans of all levels and in other spatial planning documents indicated in the Water Law Act of 18 July 2011 (Dziennik Ustaw [Journal of Laws] of 2005, No. 239, item. 2019 as amended). The boundaries of river basins are defined in the Ordinance of the Council of Ministers of 27 June 2006 (Dziennik Ustaw of 2006, No. 126, item 878). Pursuant to the above, determination of a functional area comprising areas exposed to the threat of flooding on the scale of river basins results from the need to integrate, among others, voivodeship spatial management strategies and plans with comprehensive, interdisciplinary measures aimed at limiting the risk of floods in river basins.

The preliminary flood risk assessment, flood hazard maps, flood risk maps and flood risk management plans in river basins prepared by the President of the National Water Management Authority are subject to review every 6 years and updated if necessary. At those times, it is possible to verify areas exposed to the threat of flooding and, among others, additionally indicate those areas where the flood hazard has increased. The main purpose of indicating the areas exposed to the threat of flooding on the scale of river basins is to increase the level of flood security in areas extending beyond the borders of a single voivodeship and to meet the need to manage flood water flowing out of the Polish territory down to the estuarial sections of the Vistula and Odra River.

On the basis of flood risk maps and flood hazard maps drawn in reference to the hydrographic system it is possible to define directions and limitations of the spatial development of the voivodeships covered by the plan, areas of joint measures and to indicate locations and land reserves for the programmed engineering and non-engineering measures that ensure mitigation of flood risk to cities and rural areas as well as monuments of material culture situated in flood plains, while diversifying levels of protection applied to areas and structures.

On the flood plains, it is necessary to define the range to which specific urban planning standards apply such as development restrictions or prohibitions, indication of areas or structures with none or low level protection or with above-standard protection requirements, e.g. the reservoir in Włocławek or the Przewóz dam on the Upper Vistula River. Those measures shall primarily be used for programming the necessary investment tasks and to anticipate land reserves for future multi-annual projects: increasing the retention and surge holding capacity of the valleys of flooding rivers, economic utilisation of newly created hydro-engineering structures and development of transport and communication infrastructure.

Plans for those areas take into account the need to increase the capacity of landscape structures (including cropland and environmental features of river valleys) to buffer the surging of rivers as well as other non-engineering measures. In areas for which the extremes of torrential rains are expected to grow, the plan indicates the necessary long-term measures that mitigate the risk of losses.

In the Odra River Valley, the implementation of the Programme for the Odra 2006 is in progress. That Programme, before transforming into an independent macro-regional strategy, needs to be updated and correlated with NSDC 2030, made more consistent with the water management plans for the International Odra River Basin District (IORBD)[156] and supplemented in other ways. The Programme – which can serve as a model - covers measures related to the creation of the passive and active flood protection systems, preservation of

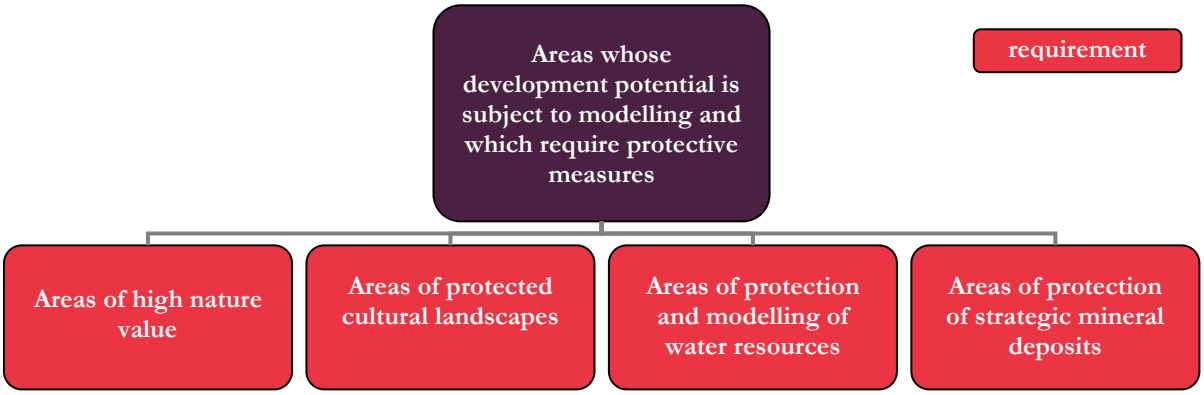
[156] International Odra River Basin District delimited pursuant to the Water Framework Directive (WFD) covers the area of 122,512 km^2, including transitional and coastal waters of the Szczecin Lagoon, eastern part of the Usedom Island, and western part of the Wolin Island. 87.6% of that area is situated in the territory of the Republic of Poland (including the sub-basins of the Świna River and the Gowienica River, and the Polish part of the Uecker River sub-basin). The remaining parts extend over the territory of the Czech Republic (5.9% including the source and the initial 90 km of the river with flood prevention reservoirs) and the Federal Republic of Germany (6.5%). The Odra and Lusatian Neisse (Nysa Łużycka) are border rivers. Coordination of the implementation of the WFD is conducted on the basis of the agreement of 8 May 2002 by the International Commission for the Protection of the Odra River against Pollution.

water-related ecosystems, increased afforestation of the river basin, achieving good ecological status of waters, repairing of flood damage, preventive spatial development of river valleys, maintenance and development of inland navigation and utilisation of rivers for energy generation. There is no similar programme for the Vistula River Valley. For the purposes on the implementation of NSDC, the functional area of Żuławy (described in the sub-section 6.3.4.) has been excluded from the Vistula River basin.A separate approach has to be assumed in relation to the cross-border sub-basin of the Bug River where a number of international research programmes are being carried out with a view to defining the needs and resources of that sub-basin. Mountainous areas constitute an important part of the Vistula River basin from the perspective of flood risk management. It is particularly urgent – owing to the potential to reduce floods and the high level of losses incurred in those areas – to determine a strategy for the area covering the sub-basin of the tributaries of the upper Vistula River, from its sources to the mouth of the San River, on the basis of the draft Flood Protection Programme in the Upper Vistula River Basin which provides for at least slowing down the outflow of waters, increasing the retention of dedicated structures and landscape features, management of protected qualities, energy generation, adapting the infrastructure to the needs of flood risk management and applying non-engineering measures that are possible in the special risk area.

6.4. Areas whose development potential is subject to modelling and which require protective measures

Those areas are delimited with a view to advancing their development and utilising their endogenous potentials associated with cultural or natural resources that they hold. These are functional areas in need of protective measures, restrictions and exclusions of certain functions and specific forms of use due to their environmental or cultural value or a particular significance for the protection of natural resources. The areas indicated need to be taken into account in voivodeship spatial management plans as well as in the studies and local plans of gminas. Moreover, proper measures have to be implemented in line with the designation of each of such areas (Fig. 44.).

Fig. 44. Areas whose development potential is subject to modelling



6.4.1. Environmentally valuable areas

Environmentally valuable areas constitute a potential for local and regional development. Delimitation of a functional area on the basis of environmental assets stems from the need to find a balance between the economic activity and protection objectives for which individual areas subject to legal protection have been established because a great majority[157] of the territory covered by them and by the system of connecting ecological corridors is used for economic purposes. Admissibility of the implementation of intended economic functions is defined by statutory limitations pertaining to various forms of nature conservation,

[157] National Parks cover 1% of the surface of the country in comparison to 30% covered by traditional forms of protection.

susceptibility to ecological conflicts related to violations of protection objectives and the intended management of environmental and landscape assets of an area provided for in the spatial planning and development documents. On Natura 2000 sites and other protected areas of high nature value as well as in ecological corridors the environmental and protective function is deemed as dominant. In areas demarcated for the protection of landscape (landscape parks, protected landscape areas), restrictions apply mainly to the location of wind turbines, plantations, large-area monocultures and buildings maladjusted to the surroundings.

Management of the functional space primarily involves the transferring of instructions resulting from the analysis of the adopted protection model, permitted or prohibited forms of economic activity in protection plans and action plans as well as the analysis of environmental structures onto the voivodeship level of spatial planning. The purposes of taking the above-mentioned instructions into account are the delimitation and modelling of the space, allowing for socio-economic development in compliance to the expectations of society, and the acceptance of imposed limitations. It also covers coordinated planning of afforested complexes and other planting activities that supplement the environmental structure of the voivodeship as well as development of symbolic and promotional functions grounded in the above-average environmental and landscape assets on the national and European scale. Moreover, the idea of management concerns identification of an area that should be subject to legal protection with various degrees of restrictiveness due to the need to preserve the consistency of the environmental space.

The target system of protected areas includes objects covered by the current statutory nature conservation and proposed for inclusion together with their buffer zones. Those areas protect habitats and species important for maintaining a favourable status of biodiversity in the country and on the continent, the functional space referred to as ecological or migration corridors that connect individual sites enclosed in their legally specified boundaries as well as areas of indispensable ecosystem-oriented activities within the functional areas of cities. Additionally, other areas that significantly contribute to the environmental system of voivodeships, including high nature value farmland and forests should also be specified.

Demarcation of entities comprising a hierarchical environmental network, including corridors connecting biocentres and areas contributing to the nature system, is based on the criteria for assessing the sufficiency of the current scope and manner of protection of nature resources and assets, including landscape qualities, and the progressing fragmentation of the space due to the changes of its functions in the socio-economic development. The legal basis for areas and functions defined in the law is provided by the Nature Conservation Act (Dziennik Ustaw [Journal of Laws] of 2009, No. 151, item 1220) and the Strategy for Protection and Sustainable Use of Biodiversity in Poland (a document adopted by the Government). Demarcation of areas and specification of protection requirements is the responsibility of relevant units of the local government in communication with the minister responsible for environment or the General or Regional Director of Environmental Protection – on the basis of the up-to-date environmental documents constituting part of the ecophysiographic study.

6.4.2. Areas of protected cultural landscapes

It is necessary to define the space that could fulfil symbolic and identifying functions on the national and European scale as well as to terminate the process of homogenisation of the landscape of functional urban areas. Moreover, it is required to determine the development potential related to the maintenance of valuable elements of spatial structures of post-industrial and degraded urban areas as well as less emphasized areas that are decisive for the quality of life of local communities and bear testimony of the past, the recent history included.

In order to create a system aimed at putting a halt to the progressing degradation of cultural environment, irreversible loss of historic landscapes responsible for the identity of places,

resolution of social conflicts associated with the degradation of nature, historic urban and rural complexes and architectonic monuments, it is necessary to introduce the precepts of integrated protection of cultural environment into spatial planning documents at all levels to make it possible for the management of landscape that could increase the competitiveness of regions. It calls for working out a methodology related to the identification of equivalent values of nature, landscape, intangible cultural heritage associated with a given geographic region and historic sites of material culture, including potential archaeological sites, and for their management aimed at creating conditions for conducting an active conservation and promotional policy in relation to those assets. This task involves determination of the space and objects subject to protection or recommended for protection (including the level of protection guaranteed on the basis of lists of objects and areas) and monitoring of the preservation of resources and material evidence for archaeological analysis to be carried out by future generations[158]. The methodology shall be worked out by a team comprising representatives of the minister responsible for regional development, General Directorate for Environmental Protection, minister responsible for culture and national heritage, National Heritage Board of Poland, and scientific circles. Those areas shall be distinguished in voivodeship spatial development plans as a binding requirement.

6.4.3. Areas of protection and modelling of water resources

Rational management of water resources used to supply water to people and for the purposes of economic development should ensure a balance between intake and restoration of resources, simultaneously guaranteeing a properly high level of the treatment of used water. The use of water should ensure a sustainable development of society as well as respect and provide for the satisfaction of the needs of future generations. Enhanced management of rain water within sub-basins, especially in agglomerations and other urbanised areas, should support the rational utilisation of water resources. The ranges of the areas of water deficits – specified in the Water and Environmental Programme of the Country (Polish: *PWŚK*) – and resulting from excessive distribution of water resources in the process of issuing water permits, requires that a close cooperation is initiated between the bodies issuing those permits, i.e. Starosts and relevant Regional Water Management Boards.

Voivodeship spatial development plans should identify areas where the following tasks should be performed:

a. protection and possible regeneration of landscape structures responsible for micro-retention, including wetlands and valleys of small watercourses,
b. adaptation and modernisation of the existing land drainage and irrigation systems and construction of small reservoirs for storing rain water used for irrigation of crops in the periods following droughts in order to ensure sufficient water supply to farms and commodity holdings,
c. construction of retention and multi-purpose reservoirs if such a task is defined for a given sub-basin,
d. proper consideration given to areas with limited water resources or poor quality water by means of excluding such areas from the range of possible locations for users that require large water consumption and waste discharge,
e. management of the flow of rain water,
f. introduction of ecological protection areas around lakes as well as buffer zones around water intakes and major underground water reservoirs,
g. consideration given to protection areas of the major underground water reservoirs and potable water intakes,

[158] European Convention on the Protection of the Archaeological Heritage (Revised) (Dziennik Ustaw of 1996, No. 120, item 564)

h. coordination of measures pertaining to area sanitation that are included in the National Urban Waste Water Treatment Plan (NUWWTP), related programmes and spatial planning documents of the lower level.

Voivodeship spatial development plans should contain a set of information about at least the consolidated bodies of surface and ground waters as well as all measures that are specified for them in NUWWTP and in river basin management plans. That information set comprises water management documents related to the division of bodies of surface and ground water whose borders do not fit within the administrative division.

6.4.4. Areas of protection of strategic mineral deposits

In order to preserve the usability of mineral deposits of strategic significance for the economy of the state, including the energy security until 2030 and beyond, it is necessary to demarcate areas where strategic deposits of minerals are present and to undertake measures to protect them against permanent building development or linear projects and to introduce restrictions pertaining to the manner of management in those areas. Identification of those areas is particularly important for the deposits whose extraction has not begun yet. Apart from the spatial determination of the location of deposits (i.e. delimitation), it is also necessary to define the types of measures possible for implementation in those areas before extraction of the deposits begins. For that reason, the Government (the minister responsible for economy in cooperation with the minister responsible for environment[159]) shall prepare a list of deposits of strategic significance for the state specifying their borders. Subsequently, the Voivode with the local government competent for the location of deposits, shall determine the type and temporal limits of activities and development permissible on such sites. Results of their findings should be introduced both into voivodeship strategies and spatial development plans of all categories.

6.5. Functional areas requiring restructurisation and development of new functions with the use of regional policy instruments

Certain parts of the country experience concentration of socio-economic problems which may be of national significance. Due to their impact on the national spatial development processes, including the improvement of internal cohesion, resolution of those problems requires special measures on the part of the spatial development policy with the support of regional policy instruments and coordinated territorial instruments of other public policies.

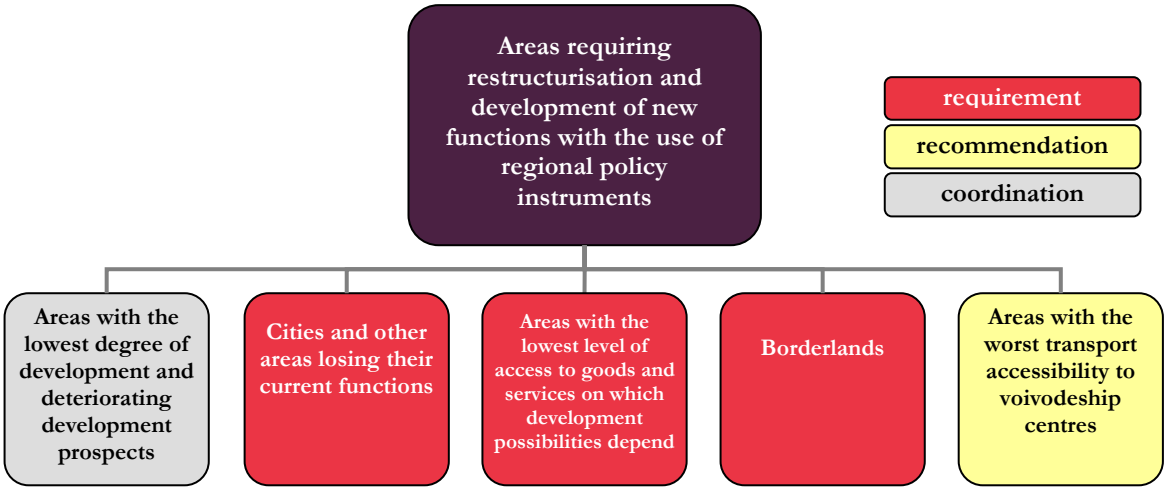
Due to the scope and scale of the problems that require actions to be taken not only in the sphere of the national spatial development but also in the sphere of regional policy, five types of areas have been distinguished (also listed in NSRD 2020) that require long-term public intervention from the national level in partnership with regional and local authorities. They include: cities and other areas losing their current socio-economic functions, areas with the worst access to goods and services on which development possibilities depend, borderlands, areas with the worst transport access to voivodeship centres, and areas with the lowest degree of development and deteriorating development prospects (Fig. 45.).

With a view to ensuring integration of the measures of the national spatial management policy and the regional policy for the support of those areas, it is anticipated that macro-regional development strategies will be prepared and mandatorily taken into account in voivodeship spatial management plans and regional strategies, according to the hierarchical planning system (Fig. 37.).Detailed measures shall be laid down in the development strategy for Central

[159] The minister responsible for environmental affairs plays the role of geological authority responsible for the management of mineral deposits.

Pomerania and Western Poland and in the updated Strategy for Socio-Economic Development of Eastern Poland.

Fig. 45. Functional areas requiring restructurisation and development of new functions with the support of regional policy instruments



6.5.1. Areas with the lowest degree of development and deteriorating development prospects

NSDC 2030, the national spatial planning document and vsdp mention two functional areas with the lowest degree of development and deteriorating development prospects on the national scale. The areas that fall into this category are present in at least eight voivodeships situated in Eastern Poland, Central Pomerania and Western Poland. The low level of GDP per capita, poor connectivity and quality of services of general interest, weak potential of urban centres, underdeveloped settlement network and distorted demographic structure caused by, among others, migration of young people to major cities in the country and abroad deteriorate the social, economic and spatial situation in those areas. Additionally, the development of Eastern Poland is strongly influenced by its location along the external EU border – constituting a significant social and cultural barrier – and by a low level of urbanisation on the national scale.

6.5.2. Cities and other areas losing their current socio-economic functions

Analyses performed for the purposes of NSRD 2020 and NSDC 2030 indicate that, as a result of structural economic changes and shifts on local labour markets, economic significance of certain areas – especially urban areas – is on the decrease which is combined with concentration of negative social phenomena and physical degradation of housing developments and urban space. Those phenomena apply most frequently to local and sub-regional centres where it is not possible to carry out a restructurisation of collapsing traditional industries on a short notice. Due to the highly dynamic nature of changes and natural flows of people in large urban centres and their functional areas, negative phenomena of this kind have a tendency to concentrate in certain districts. In Poland, it mostly refers to high-rise housing estates and old parts of cities where ownership relations have not been properly clarified. Apart from the socio-economic degradation, there are also pockets of environmental degradation of post-industrial or post-military areas.

Cities and other areas losing their current socio-economic functions are situated across the country (Łódź, Radom) and their highest concentration is observed in the Upper Silesian Agglomeration. Socially, economically and environmentally degraded areas need to be identified in voivodeship spatial development plans and in voivodeship development strategies

and require preparation of comprehensive regeneration plans that take into account social, economic and spatial aspects. Those plans shall provide the basis for comprehensive measures (on the national, regional and gmina levels) aimed at reversing the negative development trends. Regeneration measures on the national and regional levels shall be implemented as part of the work on urban policy performed by the team appointed by the minister responsible for regional development consisting of representatives of other departments, local government units and social partners.

6.5.3. Areas with the lowest level of access to goods and services on which development possibilities depend

In the course of work on NSRD 2020, the deficient provision of services of general economic interest that affect development was identified as one of the fundamental reasons of poor development prospects of rural areas and cities situated far away from major growth centres. Areas characterised by the worst indicators of access to education, health, municipal services and culture are distributed in a mosaic-like pattern across the country. Most often, those are the weakly developing areas with unfavourable demographic trends which are poorly prepared for the participation in the absorption of innovation that flows from the largest urban centres or for shaping their own specialisations. In consideration of the priority of internal cohesion of the country and the regions, individual ministers shall specify the national minimum standards of access to services (e.g. medical services). Regional standards, higher than the minimum national standards, shall be determined by local governments of voivodeships in partnership with other local governments and organisations. National standards shall be worked out by the team appointed by the minister responsible for regional development. Those areas – mandatorily determined – shall be delimited in voivodeship spatial management plans on the basis of national and regional standards. Corrective measures, on the other hand, shall be implemented on the basis of voivodeship development strategies and relevant national integrated strategies.

6.5.4. Borderlands

NSDC 2030 (following NSRD 2020) differentiates two types of borderlands. They include areas situated on the external EU border and areas situated along the internal EU border. The need to apply different analysis and disparate measures in those areas stems from political, legal and institutional conditions. The development of areas situated along the external EU border depends on the political situation in the countries neighbouring with Poland from the east. The potential of those areas is influenced by minor economic and social links with borderlands situated on the other side of the border. Factors that further hinder their development include the weakness of their urban centres, unfavourable socio-economic situation and poor access to regional growth centres. On the other hand, areas situated along the internal EU border remain under the influence of nearby Berlin and other cities on the other side of the border which results in drainage of resources to the benefit of German urban centres. Other reasons for underdevelopment of those areas include lower density of the settlement network and limited access to the central part of the country.

The specificity of problems affecting those areas requires that an integrated approach is assumed under the national spatial development policy and the regional policy on every level of planning and management. To meet this challenge, between six and eight macro-regional strategies of spatial and socio-economic development shall be prepared for areas situated on both sides of the border. Those strategies should cover the Baltic Sea area, the Vistula Lagoon, the Kaliningrad Oblast, Lithuania, Belarus, Ukraine, Slovakia, the Czech Republic and Germany. The documents shall be prepared with the participation of the local government and social entities from Poland as well as representatives of local governments and social partners from the country with which a given strategy will be developed.

6.5.5. Areas with the worst transport accessibility to voivodeship centres

Analyses performed for the purposes of NSDC 2030 and NSRD 2020 indicate that in order to ensure the internal cohesion of the country it is recommended to pay special attention – in the national spatial development policy and in the regional policy – to areas situated at the largest distance from major growth centres. Natural geographic obstacles (e.g. mountains), low population density and the physical distance from administrative and economic centres combined with low-grade quality of infrastructure pose a particularly strong barrier to development. Such areas do not have any opportunity to participate in the diffusion of development factors or to benefit from the supply of good jobs. They tend to lose population and, in a longer-time perspective, they hamper the internal cohesion of the country and its individual regions. Delimitation of areas with the lowest accessibility on the regional level shall be carried out as a recommendation for voivodeship spatial development plans. Voivodeship development strategies shall contain dedicated national measures related to the implementation of sectoral programmes aimed at extension of infrastructure and modernisation of the means of transport. Measures implemented under regional programmes shall supplement actions taken on the national level.

VII. Implementation System of the National Spatial Development Concept 2030

7.1. Assumptions for restructuring the delivery system of the national spatial policy

The fundamental role of the spatial policy delivery system is to ensure an effective and efficient realisation of priorities formulated in NSDC 2030 and spatial planning documents of various levels. The appropriate delivery of those tasks requires a stable and transparent legal system as well as a properly adjusted institutional system that can ensure cooperation and coordination of actions performed by a variety of entities and levels involved in the execution of the national spatial policy.

In compliance with the Foundations of the Polish Development Management System, the solutions proposed in NSDC 2030 should be characterised by: completeness in terms of all components of the spatial policy framework and integration of socio-economic and spatial planning in line with the modern European directions of integrated development policy.

The NSDC 2030 implementation system takes into account: the current legal framework applicable to spatial planning and development, principles of the development policy, proposed assumptions for the amendment of the act on spatial planning and development as well as related acts of law. NSDC 2030 contains a variety of postulates pertaining to the spatial planning system and broadly understood spatial management. The document proposes a fundamental reorganisation of the system, including introduction of new legal and institutional solutions. This shall offer conditions for the creation of a coherent, integrated and hierarchical spatial planning and management system in Poland. An integrated system will have a positive impact on the achievement of socio-economic objectives set in relation to space.

The changes postulated in NSDC 2030 are meant to increase the coordinating role of the spatial policy in relation to sectoral policies with the strongest impact on the spatial development status of the country and individual territories as well as on the changes of that status. Coordinating role of the spatial policy requires a delivery system based on effective coordination mechanisms of the horizontal (departmental) and vertical (individual entities) kind. The implementation of the national spatial policy is primarily the responsibility of the Government. The postulated changes concern not only coordination but also streamlining of functions, including in relation to institutions involved in the implementation of the spatial policy, regional policy and sectoral policies on the national and regional levels. The new system provides for a larger significance of dialogue and partnership in vertical relations in order to counterbalance the emergence of stronger hierarchical links between individual levels of planning.

An effective system must guarantee the achievement of supra-local public objectives. It involves the need to provide conditions for combining the objectives of spatial policy with measures on the regional level. To this end, the document proposes a stronger relation between spatial planning and socio-economic planning, i.e. development strategies and studies of conditions as well as implementation documents, namely operational programmes and spatial development plans.

Postulates addressed to the current system as well as the description of the new system were formulated in the form of an NSDC 2030 objective, equivalent to the other five objectives, entitled: To restore and consolidate spatial order.

7.2. Action Plan for the implementation of NSDC 2030

The Action Plan – containing proposals of issues, time limits and implementation entities responsible for the preparation of legal and institutional changes – constitutes an integral element of the process of achieving the visions and principles of the new system. The Plan specifies the tasks of entities involved in the delivery of objectives of the spatial planning policy, in particular in reference to competent ministers (primarily those responsible for policies with a strong impact on spatial structures) and local-government units.

The tasks proposed in the Action Plan need to be executed within a time horizon defined for each measure and with the aid of planning, legal, investment and institutional instruments. Execution of the Action Plan shall fulfil the coordinating function of the spatial policy that takes account of correlations between its spheres of influence, endowing it with the status of the principal platform for comparing departmental (sectoral) plans and projects that influence the space with the concept of orderly national spatial development.

7.3. Requirements and recommendations

Pursuant to the Act on spatial planning and development of March 2003, implementation of the National Spatial Development Concept takes place, among others, by transferring provisions of the Concept to the regional level by way of introducing the requirements laid down in the Concept into voivodeship spatial development plans. This procedure constitutes a condition for reconciling voivodeship plans with the Concept by the minister responsible for construction, spatial management and housing.

NSDC 2030 assumes an obligation to implement the requirements and recommendations specified in Table 5. (Chapter VI.), concerning measures aimed at functional areas indicated in the document and to implement spatial planning related measures by means of working out strategies, plans and studies of spatial development. Requirements (mandatory) and recommendations (facultative) involve institutions at every level of planning and delivery, i.e. from delimitation to the implementation of strategies. Provisions of NSDC formulated as mandatory requirements or facultative recommendations do not necessarily impose the manner in which a given issue is to be addressed.

NSDC 2030 does not formulate any requirements and recommendations related to the preparation and designation of public purpose investment programmes and instead, similarly to regional planning, indicates priorities and directions of changes, leaving the preparation of strategic and implementation documents to individual local government units.

Implementation of NSDC 2030 shall also involve all the institutions whose participation is indispensable for the success of a given project, including, first and foremost, the Ministry of Finance.

7.4. Financing system

NSD 2030 defines a vision of the national spatial development and indicates the actions to be taken in order to achieve it. Those actions are related to spatial planning, legislation and administration. Many of the undertakings defined in the Concept have infrastructural character – wherever possible and justified, stages of modernisation and completion of new projects were identified (e.g. in the sphere of road and railway transport, modernisation and extension of electrical power grid) or the approximate time horizon was indicated for the completion of individual undertakings.

Although the Concept points out the need to implement specific projects, it is not a document on the basis of which implementation decisions are taken. According to the hierarchical planning system, individual projects will be carried out on the basis of plans, programmes and other operational documents provided for in the national strategic management system and

adopted by relevant bodies (usually by the Council of Ministers). Those will be the documents informing decisions on the amount and manner of financing as well as timing. Subsequently, the provisions of those documents should become the basis for preparing multi-annual financial plans of the state (covering all expenditures in the public finance sector) and then for preparing budgets of local-governments and budget plans of other units of the public finance sector. Wherever EU funds are used for the implementation of a project, they shall be allocated under relevant operational programmes or other programming documents (e.g. in the case of the support instrument for the extension of cross-border connections within the TEN network). Financial resources of private entities will also play an important role in the implementation of NSDC 2030 provisions, for instance in respect of extension and modernisation of energy generation as well as telecommunications and power networks.

As can be inferred from the above information, the directions of investments resulting from NSDC 2030 have a framework character – they define desired projects but their execution is left to relevant institutions and depends on financial and administrative possibilities that change in time. As mentioned in Chapter VI, the course of implementation of projects carried out under various investment programmes and plans shall be subject to regular monitoring so that it is possible to formulate recommendations at the level of the Council of Ministers regarding the materialisation of the vision outlined in NSDC 2030.

Moreover, it shall also be possible to update NSDC 2030, in part or in whole, depending on the changing socio-economic and spatial conditions.

7.5. Level and sources of financing for development measures

It is not possible to indicate accurately the level of outlays that are necessary for the implementation of the investment programme defined in NSDC 2030 over the next 20 years. That is due to the fact that estimates for projects resulting from NSDC 2030 will only made at the moment of preparing multi-annual operational plans and programmes with a mid-term validity (5 to 10 years). Only a part of expenditures that need to be incurred in the period 2012 – 2015 (depending on the sector) has already been estimated in detail and specified in applicable governmental documents. It should also be remembered that in the case of large infrastructure projects, e.g. road building, a large part of expenditures may go for the purchase of land (projects along new routes) whose value may fluctuate significantly in time.

The scale of incomes and expenditures of the public finance budget by 2030 is hard to determine at present, especially due to the dynamic changes of the economic situation across the world and the shifts in the domestic potential, probable GDP growth rate and the possibilities for structural reforms. The volume of EU funds that may be available in the 2014 – 2020 financial perspective also remains unclear in the situation of economic disorders in the euro zone. However, it can be anticipated that funds post 2020 will be scarce.

Taking the above conditions into account, simulations have been performed to estimate the volume of available public financial resources (domestic and EU) for covering the expenditures for modernisation and development over the next 10 years (with an attempt at indicating prospects until 2030). Those expenditures – referred to as structural expenditures – in principle overlap the intervention categories of structural funds in four basic spheres: production sector (support to enterprises, tourism, research and technological development), human resources (labour market policy, prevention of exclusion, vocational education and training, adaptation potential of employees, measures for women), basic infrastructure (transport, telecommunications, power industry, environmental protection and water management, spatial planning, social infrastructure), technical assistance. In this context and owing to the specific nature of NSDC 2030, the funds intended for the financing of infrastructure projects are of key importance. It should be remembered, however, that spatially defined expenditures in the sphere of the production sector and human resources may, on one

hand, determine infrastructural needs and, on the other and, define the possible amount of resources to be spent.

Structural expenditures do not constitute a category that is identical with capital expenditures (gross fixed capital formation[160]). Structural expenditures also cover expenses related to human capital development. Moreover, not all expenditures for the support of the production sector are related to gross fixed capital formation. Therefore, structural expenditures constitute a much broader category than capital expenditures.

In 2010 (the last for which detailed statistics are available), about PLN 95.5 billion was spent in Poland from structural resources of which over PLN 61 billion from domestic resources and about PLN 34.5 billion from the EU funds. In 2010, a significant increase of expenditures from the EU structural instruments was observed. They amounted to about 36% of the value of all structural expenditures.

Results of simulations indicate that in the period 2014 – 2015, and especially in 2015, structural expenditures will reach the maximum level. At the same time, EU expenditures will accumulate due to the overlapping of two financial perspectives which means that expenditures from the EU funds intended for that period will reach their maximum level amounting to over 2.5% of GDP.

After 2020, the share of structural expenditures in GDP and in the expenditures of the public finance sector will gradually decrease due to smaller transfers from the EU and increased share of other expenditures, including related to the maintenance of the infrastructure networks.

The above simulations indicate that Poland may count (assuming that the annual economic growth rate will be 3.7% in 2011 - 2020[161]) on the possibility of covering from public resources (domestic and EU) the value of all modernisation and development expenditures in the period 2011 – 2020, amounting to:

- in the optimistic variant: about PLN 1.4 trillion, of which over PLN 1 trillion will come from domestic sources and over PLN 400 billion from the EU sources;
- in the moderate variant: about PLN 1,1 trillion, of which about PLN 750 billion will come from domestic sources and nearly PLN 400 billion from the EU sources.

It should be remembered that estimates related to the EU sources are preliminary and uncertain.

Comparison of the share that capital expenditures[162] have in GDP in other EU states justifies the supposition that the estimated volume of structural expenditures adequately corresponds to the possibilities of the Polish economy. Countries that were affected most acutely by the effects of economic slackening – and where a high level of structural expenditures was observed with the simultaneous high public finance deficit, e.g. Estonia, Ireland, Latvia – noted a drop in the GDP growth rate that was a lot more severe than in Poland in the crisis years 2008 – 2009. Therefore, the size of the Polish economy should also be taken into consideration.

Division into individual categories of expenditures should take into account the investment priorities defined in the mid-term national development strategy (update of the NDS 2020 is in preparation). The present structure of structural expenditures may serve as a starting point: in

[160] Gross fixed capital formation includes expenditures for buildings and other structures, machines, technical equipment and tools, means of transport and other expenditures, including specific land drainage, costs incurred for the purchase of land and fixed assets, livestock, and interest on investment loans.

[161] On the basis of the Guidelines on the application of uniform macro-economic indicators constituting the basis for estimating the financial effects of the drafted acts of law (i.e. impact assessment guidelines), updated in April 2011, Ministry of Finance, 19 May 2011.

[162] Capital expenditures data were used in the comparison due to the fact that structural expenditures data are not available in other countries.

2010, about PLN 67.8 billion was spent on the basic infrastructure (in total nearly 71% of all expenditures) and about PLN 36.8 billion on transport (39%). Considering the existing backwardness in this respect and the needs related to the implementation of already approved infrastructure development programmes (road building programme, railway infrastructure development programme), it can be expected that the share of expenditures for the basic infrastructure shall remain at a similar level throughout the second decade of the 21st century, reaching 70% of the total development expenditures. By the end of the 2nd decade, the share of infrastructure expenditures will gradually begin to decrease due to the increasing role of expenditures for research and development and human resources.

It is worth noticing that already in the coming years (post 2015) the structure of infrastructure expenditures will be subject to change: with a stable share of transport expenditures (about 40%), the part spent on railway infrastructure may increase which can be inferred from the projects related to the modernisation of railways and multi-modal transport in large cities and their functional areas. It is estimated that in total it will be possible by 2020 to spend from public sources about PLN 440-560 billion (PLN 44-56 billion per year on average) for the transport investment programme, about PLN 110-140 billion (PLN 11-14 billion per year on average) for environmental and water infrastructure projects, about PLN 170-220 billion for social infrastructure projects (education, culture, health, sport), and about PLN 70-90 billion for the regeneration of degraded areas. Assuming that the share of basic infrastructure expenditures in structural expenditures will remain at a stable level until 2020 (when it is expected to start decreasing), the possible increase of expenditures in individual spheres would have to entail a decrease in the share of expenditures in other areas.

Attention should be paid to the fact that the amounts quoted refer solely to projects financed from national public sources (the state budget, local-governments, other units in the public finance sector) and from foreign public sources (mainly the structural instruments of the cohesion policy). Private resources may supplement expenditures in the sphere of transport (e.g. in the implementation of the motorways construction programme) and constitute the primary source of investment in the spheres of energy industry, sea port infrastructure, airport infrastructure and telecommunications infrastructure (supplemented with the EU funds and accompanying national public resources intended for co-financing).

As regards new projects proposed in NSDC 2030, their implementation is anticipated after 2020 and their total value will be lower than that of projects planned (pursuant to governmental decisions) for implementation in the period 2011-2020. NSDC postulates construction of additional 750 km of motorways (compared to about 2000 km planned by 2020, of which 1100 km to be constructed in the period 2010-2020) and 800 km expressways (compared to 2800 km planned by 2020 and 5300 km by 2030). Considering that the largest investment effort in respect of roads and railways is planned by 2020, it can be presumed that it will not be until after that date that broader possibilities of financing other basic infrastructure elements – including further improvement of the standard and speed of railways, large hydro-engineering projects, water transport projects – from public resources should appear. As regards aviation infrastructure projects, especially the construction of the Central Poland Airport, the model of financing devised for its construction will include non-budgetary financing mechanisms.

VIII. Status of the National Spatial Development in 2011 – Diagnostic Maps

As explained in the *Introduction*, NSC 2030 does not contain a diagnosis in the form of a description of the distribution of spatial structures in the country due to their insignificant changeability as demonstrated in other documents. The diagnosis in the Concept comprises descriptions of problems that open each of the six objectives of the national spatial management policy with a supplementary set of diagnostic maps prepared for the purposes of the present document. The 23 maps prepared in the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN) present a broad spectrum of issues pertaining to the Polish space at the end of the first decade of the 21st century. The form of maps was selected for the presentation of the diagnosis as only maps offer a unique opportunity to demonstrate all studied phenomena – related to the spatial development of the entire country – down to the level of poviats and gminas as well as allow for an instantaneous comparison between local-government units. Moreover, many of the diagnostic maps are not just limited to the presentation of a given phenomenon, but also show trends from the previous years in a dynamic form.

It should be emphasized that the majority of diagnostic maps are based on unique information and studies – often ordered for this specific purpose – and present data otherwise not available or information generated in the course of conducted analyses. Therefore, it does happen that maps are not based on the latest data due to its inaccessibility or the necessity to rely on data from the national or agricultural census which ensure the required level of detail. However, it must be stressed that the majority of the trends are either continuous or constant and that they are not prone to change in time. Therefore, the use of several years old data does not decrease the value of the message.

Owing to the planned updates of the document, the comparison of maps presenting the same phenomena in consecutive periods will allow for a reliable and accurate analysis of changes and will provide grounds for evaluating trends and conducting monitoring on the basis of the Geographic Information System (GIS).

Maps were elaborated at the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN)

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Brief description of the current status and the key trends resulting from the diagnostic maps of NSDC 2030:

Map 1. Settlement structure[163]

Poland is characterised by an advantageous polycentric structure of cities evenly distributed across its territory. Nearly regular arrangement of large cities, usually playing the role of capitals of voivodeships, accelerates the diffusion of development processes throughout the entire country. Other positive characteristics include the several-tier structure of urban centres and an even distribution of smaller cities which ensure access to fundamental services of general interest across Poland.

Noticeable differences are observed in the rural settlement which in Warmia, Mazury, Pomerania, Lubusz Land and in the western part of the Wielkopolska Lowland is characterised by a lower density of less numerous villages. It is the effect, first and foremost, of natural conditions: the presence of lakes, high percentage of forests, and above-average area of legally protected sites. A similar situation is observed in poviats situated along the eastern border of the country where the external EU border constitutes an additional significant factor in the form of an important barrier.

Other significant circumstances are related to the directions of Poland's links with the neighbouring countries. The strongest relations, due to the membership in the EU, have formed with Germany, the Czech Republic, Hungary and Austria while slightly less intense links bind Poland with Slovakia, Scandinavian Countries, Ukraine, Belarus and Baltic States.

Map 2. Contemporary settlement processes[164]

In the first decade of the 20th century, the settlement processes were relatively highly dynamic in Poland. In compliance with global trends, population concentrates in the largest cities, especially in suburban zones, while the cores of cities lose their inhabitants. Warsaw, Cracow, Olsztyn and Białystok are exceptional in that their populations increase in the entire functional area of the city. On the other hand, Katowice, Opole and other cities situated in Silesia and the Sudetes experience loss of population both in their cores and suburban zones. The main destinations of permanent inter-regional migrations – originating especially from Silesia, the Sudetes, Kutno Plain (Równina Kutnowska), southern Mazovia (Mazowsze) and in the eastern voivodeship – include Warsaw, Poznań, Wrocław and Cracow. The highest degree of urbanisation is observed in Silesia as well as western, southern and northern voivodeships. The effects of urban sprawl are frequently omitted in the official statistics and the differences between the actual and formally acknowledged urbanisation rate may amount – in certain functional areas of the largest Polish cities – to as much as over 50% in Cracow and 25-50% in Poznań, Warsaw and Kielce.

Map 3. Internal functional links[165]

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[163] **Author: P. Śleszyński, consultation: P. Korcelli.** Strength and directions of potential gravitational forces according to: Śleszyński P., 2008, *Ocena powiązań gospodarczych i kapitałowych między miastami* [*Evaluation of economic and capital links between cities*] in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), Expert Opinions for the National Spatial Management Concept 2008-2033, vol. I, Ministry of Regional Development, Warsaw, pp. 335-391

[164] **Author: P. Śleszyński.** Assessment of the actual urbanisation rate on the basis of the population living in cities and suburban zones with the population density over 100-150 inhabitants/ km².

[165] **Author: P. Śleszyński.**

1) Theoretical socio-economic forces. On the basis of the methodology that utilises gravitational model described in the following article: Śleszyński P., 2008, *Ocena powiązań gospodarczych i kapitałowych między miastami* [*Evaluation of economic and capital links between cities*] in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert opinions for the National Spatial Management Concept 2008-2033*, vol. I, Ministry of Regional Development, Warsaw, pp. 335-391. The mass of centres adopted as in the following work: Komornicki T., Śleszyński P., Siłka P., Stępniak M., 2008, Wariantowa analiza dostępności w transporcie lądowym [Variant analysis of land transport accessibility], op. cit., vol. II, pp. 133-334.
2) Registered migrations. According to unpublished databases of CSO based on the continuous registration of population, including registration and deregistration of the permanent place of residence by poviats.
3) Organisational connections of enterprises. According to data collected by the Institute of Geography and Spatial Organisation (IGiPZ PAN) in the course of a research project of the Ministry of Science and Higher Education titled *Functional Links between Polish Metropolises* (project manager: T.Komornicki Ph.D.).
4) Proprietary connections of companies. According to data collected by the Institute of Geography and Spatial Organisation (IGiPZ PAN) in the course of a research project of the Ministry of Science and Higher Education titled *Development Directions of Control Functions in Poland*

In the age of globalisation, the strength of national economies depends not only on the characteristics of individual cities but also on the scale of their cooperation which generates added value and the effect of synergy. That is why both the strength and direction of functional links between major cities are so important. In Poland, this kind of cooperation, measured with a range of indicators – including migration, organisational connections of enterprises and proprietary relations of companies – has not yet formed to a satisfactory degree. The existing connections are still very "Warsaw-centric", meaning that the direct links between capitals of voivodeships and the capital of the country constitute the dominant type. Additionally, the interrelations between Olsztyn and Gdańsk; Cracow, Katowice and Wrocław; as well as Poznań and Łódź gain more strength. The present situation attests to the incomplete utilisation of the potential that is offered by the polycentric settlement structure and an even spatial distribution of urban centres. It is a product of underdeveloped transport infrastructure. However, owing to the work that is in progress in this field and prospects for overcoming the infrastructural obstacle, the intensity of functional links between capitals of voivodeships is expected to grow.

Map 4. Functional urban areas[166]

Similarly to Europe and the rest of the world, intensification of settlement in Poland is observed around large and medium-size cities which entails the development of non-agricultural functions. On the basis of such features as commuting to work, forms of settlement and functions of specific areas it is possible to delimit functional urban areas which comprise a core and an external zone. As the development of technical infrastructure progresses, including rail transport, the expansion of the range of functional urban areas and urban sprawl can be observed. Simultaneously, the traditional division into urban and rural areas ceases to be sufficient and the actual state of affairs is not reflected in the official status of administrative units. Functional urban areas differ between themselves, among others, in the share that the population inhabiting the external zone constitutes in the total population of the entire area. This ratio is significant because the scale of daily commuting to work from the suburban zone to the core generates the need to develop a mass transport system whose scale and quality greatly impacts the quality of life of inhabitants of a given area.

Map 5. Demographic structure[167]

At present, a large part of Poland has an advantageous demographic structure characterised by a substantial share of pre-working age population. This refers in particular to Pomorskie, Kujawsko-Pomorskie, Warmińsko-Mazurskie, Wielkopolskie and Małopolskie voivodeships. Population of working and post-working age prevails in the largest cities while their functional areas have a much greater share of pre-working age population. According to the forecast of the Central Statistical Office, the highest population growth is expected in Małopolska, the vicinity of Warsaw, Gdańsk, Poznań, Bydgoszcz, Toruń, Olsztyn, Lublin and Kielce.

Map 6. Commuting to paid employment[168]

(project manager: P. Śleszyński Ph.D., more on the subject by the same author in: *Gospodarcze funkcje kontrolne w przestrzeni Polski* [*Economic control functions in the Polish space*], Prace Geograficzne, 213, IGiPZ PAN, Warsaw).

[166] **Authors: P. Śleszyński, P. Korcelli, as modified by MRD.** Delimitation of core and suburban areas on the basis of the study prepared for ESPON Programme 1.4.3 *Study on Urban Functions* (P. Korcelli, P. Śleszyński, 2006) and a study prepared for the Ministry of Agriculture and Rural Development (*Analysis of diversification and development perspectives of rural areas in Poland until 2015 according to the criterion of links to the largest urban agglomerations and cities as well as their endogenous potential. Task 1. Typology of rural areas in respect of functional links and urban-rural relations*, authors: T. Komornicki i P. Śleszyński, under the supervision of Prof. J. Bański Ph.D.). Only 24 functional urban areas (FUAs) were distinguished out of 151 in the original delimitation by P. Korcelli and P. Śleszyński. Zones of commuting to the centres of 25 cities were established on the basis of the modified traffic speed model measured with traffic density and taking into account the rush-hour congestion (see on the subject: Śleszyński P., 2009, *Zaludnienie i zróżnicowanie rzeźby terenu w modelowaniu prędkości ruchu w transporcie drogowym* [*Population and diversified land relief in the modelling of traffic speed in road transport*], Przegląd Komunikacyjny, 5, pp. 26-32 and Rosik P., Śleszyński P., 2009, *Wpływ zaludnienia w otoczeniu drogi, ukształtowania powierzchni terenu oraz natężenia ruchu na średnią prędkość jazdy samochodem osobowym* [*Influence of the road side population, lay of the land and traffic density on the average travel speed of a passenger car*], Transport Miejski i Regionalny, 10, pp. 26-31).

[167] **Author: P. Śleszyński, consultation: P. Korcelli.** Predicted changes in the population and demographic structure until 2030 according to modified post-census forecast of the CSO (2004) as adjusted in relation to metropolitan and depopulating areas.

A considerable increase of the spatial mobility of population has been observed in Poland, especially as regards the daily pendular migration directed mainly towards capitals of voivodeships. It is the effect of the number and quality of jobs offered in the largest cities as well as of the development of mass transport. In numerous gminas – particularly in Wielkopolskie, Śląskie, Łódzkie and Dolnośląskie voivodeships – commuting to work involves even 20% of the population. Another positive phenomenon is that certain medium-size cities also become the target of commuting for even 20 thousand people (e.g. Bełchatów or Lublin).

Map 7. Economic structure[169]

Due to economic changes, decreasing significance of traditional industries and the integration of Poland with the European and global economy, the economic structure is subject to ongoing change, including in the spatial dimension.

At present, the highest increment of sold industrial output is observed in Płock, Tricity, Wałbrzych, Żywiec, Ostrowiec Świętokrzyski and several other small cities. However, it is in the large cities and in the western part of the country that the largest number of economic entities are situated. It is also reflected in the GDP level which reaches its highest value in sub-regions covering capitals of voivodeships and in their surroundings. The least diversified GDP per capita levels are observed in the Śląskie, Lubuskie, Wielkopolskie and Dolnośląskie voivodeships which attests to the lowest internal differences within regions.

Map 8. Commodity farming[170]

Rural areas have also been subject to intense transformation, contributing to the increased competitiveness of agriculture. In a large part of the country (the area of former Russian Partition, Pogórze Karpackie, and Kaszuby), fragmented subsistence farming continues to dominate. On the other hand, the size of farms keeps growing in some other areas – especially in Western Pomerania and north-eastern Mazowsze – which helps increase efficiency and lower production costs. Other noticeable trends include enhancement of commodity farming, territorial specialisation and production specialisation, including biomass production as a renewable energy source.

Map 9. Higher order social infrastructure[171]

Higher order social infrastructure concentrates in the largest cities, mainly capitals of voivodeships. The capital of the country if the key centre in this field as that is where

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[168] **Author: P. Śleszyński.** According to CSO data as at the end of 2006 (see: *Informacja o wynikach badania przepływów ludności związanych z zatrudnieniem w Polsce* [*Information on the results of the study of employment-related population flows in Poland*], 2009, Central Statistical Office, Department of Labour and Living Conditions, Statistical Office in Poznań, press conference material of 23 October 2009). Data does not include all actual cases of commuting due to the methodology of the study (lack of information about commuting of natural persons to places of work) and nondisclosure of the full matrix of flows between gminas by the CSO. The CSO's calculations were based on the information comprising part of the fiscal system of the Polish tax offices in 2006 as collected in the POLTAX (PIT-11/8B and PIT-40) database and supplied to the CSO by the Ministry of Finance.

[169] **Authors: P. Śleszyński, T. Komornicki.** The application of two-year comparative periods to industrial output stems from the high volatility of economic results of enterprises which affect the aggregated results in poviats.

[170] **Author: P. Śleszyński, consultation: P. Kulikowski.** The indicator of the agricultural production space according to the Institute of Soil Science and Plant Cultivation (IUNG) in Puławy. The indicator of the agricultural production space according to the Agricultural Census of 2002.

[171] **Author: P. Śleszyński, as modified by MRD.**

1) Higher education information according to the Ministry of Science and Higher Education for the academic year 2008/2009. Ranking list of universities: "Rzeczpospolita" daily paper, "Perspektywy" monthly magazine, http://www.perspektywy.pl/.

2) The number of permanent public high culture institutions of performative character according to own databases of IGiPZ PAN.

3) The number of independent units (clinics, outpatient clinics, wards) in clinical hospitals according to the information from websites of individual units. Health resorts according to the number of beds in hospitals and sanatoriums prepared on the basis of entries in the Register of Health Care Institutions (partly by estimating the number of beds in units registered under different types) on the basis of data of the Ministry of Health. Locations of planned trauma centres according to the Operational Programme Infrastructure and Environment. Cumulative graph of the access time of the Polish population to hospitals on the basis of the traffic speed models prepared by IGiPZ PAN (methodology described in: P. Śleszyński, 2009, *Zaludnienie i zróżnicowanie rzeźby terenu w modelowaniu prędkości ruchu w transporcie drogowym* [*Population and diversified land relief in the modelling of traffic speed in road transport*], Przegląd Komunikacyjny, 5, pp. 26-32).

Number of jobs in sports facilities of national and international significance according to information collected by IGiPZ PAN.

metropolitan functions concentrate, including control, governance, research and development and symbolic functions. Apart from Warsaw, the most thriving centres of higher education include Cracow, Poznań and Wrocław which shows in the number of colleges and academic staff. In addition, the Mazowieckie Voivodeship stands out in respect of the percentage of doctoral students. Those are very important factors for the development of knowledge-based economy and innovation.

In respect of the permanent culture institutions (theatres, concert halls) and the number of exhibitions, Warsaw, Cracow and Łódź are the brightest points on the cultural map of Poland. In the recent years, particularly in connection with EURO 2012, sport-related infrastructure has also been improving and many cities have opened new sports stadiums that can also be used for large culture events.

Map 10. Transport network[172]

During the last decade, the transport network has greatly improved owing to, first and foremost, the construction of numerous sections of motorways and expressways. Currently, intensified construction and modernisation works are in progress both on roads and railways which makes a systematic contribution to the improvement of transport accessibility of the Polish space. A large emphasis is also put on the multi-modality of the transport system as well as on correlation of the network of roads and railways with airports and sea ports. The best indicator of intermodal transport accessibility is noted in the central part of the country and in Silesia.

Map 11. Travel-time accessibility to the main administrative and settlement centres[173]

Each year, except for temporary obstacles caused by construction and modernisation works, the connectivity of Warsaw and other capitals of voivodeships improves both in respect of road and railway transport. It has a great bearing on the entire economy by facilitating the development of functional links and improving access to labour markets.

Map 12. Typology of travel-time accessibility to centres where services of various orders are accumulated[174]

Improved travel-time accessibility in Poland is also evident in the typology of travel-time accessibility to centres where services of various orders are accumulated. It should be pointed out that the centres providing higher-order services are not always identical with relevant capitals of voivodeships as they do not overlap with market areas. The least favourable situation in this respect affects gminas in certain parts of Warmińsko-Mazurskie, Zachodnio-Pomorskie and Pomorskie voivodeships as well as gminas along the southern border of the country. It stems primarily from the physical qualities of the territory, i.e. the presence of lake districts or mountains. This less favourable situation also affects areas situated on the borders between voivodeships (Mazowieckie and Podlaskie, Lubelskie and Podkarpackie, Opolskie and Łódzkie) and in the proximity of the eastern border of the country. However, this accessibility is also subject to improvement owing to numerous projects that are currently in progress.

[172] **Authors: T. Komornicki, P. Śleszyński; consultation: P. Rosik.** Technical speed of railways according to data of Polskie Sieci Kolejowe S.A. Classes of inland waterways according to the data of the National Water Management Authority. Number of passengers in railway stations according to the data of Polskie Sieci Kolejowe S.A.

[173] **Author: P. Śleszyński.** On the basis of: Komornicki T., Śleszyński P., Siłka P., Stępniak M., 2008, Wariantowa analiza dostępności w transporcie lądowym [Variant Analysis of Land Transport Accessibility], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), Expert Opinions for the National Spatial Management Concept 2008-2033, vol. II, Ministry of Regional Development, Warsaw, pp. 133-334.

[174] **Author: P. Śleszyński.** Travel time by a passenger car calculated on the basis of the speed model off peak-hours and in normal weather conditions (described in: P. Śleszyński, 2009, Zaludnienie i zróżnicowanie rzeźby terenu w modelowaniu prędkości ruchu w transporcie drogowym [Population and diversified land relief in the modelling of traffic speed in road transport], Przegląd Komunikacyjny, 5, pp. 26-32).

Map 13. Oil and natural gas management[175]

The oil and gas transmission infrastructure is not sufficiently developed in Poland and its density is highly varied in space. The key centres include the oil refinery in Płock – situated on the crossing of main oil pipelines – and Gdańsk. The situation in this field is also expected to change owing to oil and gas pipelines construction projects – both domestic and international – that are in preparation and which are to ensure Poland's energy security. That type of security is additionally improved by the extraction of natural gas – on land and in the exclusive economic zone – and, to a lesser degree, the extraction of oil (belts in the vicinity of Rzeszów, Głogów, Poznań, Gorzów Wielkopolski, Lublin, Koszalin and on sea in the areas covered by the concession for extraction). The highest density of the gas distribution network is observed in the Małopolskie, Śląskie and Podkarpackie voivodeships and in the proximity of the largest capitals of voivodeships.

Map 14. Electrical power industry[176]

The basis of the Polish electrical energy generation at large power plants above 300 MW is coal and lignite with water power plants constituting only a small fraction. Due to the development of new technologies, the share of wind power electricity and energy generated from other renewable sources is gradually increasing. Over the last decade, the highest growth of electrical power consumption has been observed in Podlaskie, Mazowieckie, parts of Łódzkie, Małopolskie and Lubelskie voivodeships.

Map 15. Water management[177]

Poland ranks among countries with moderate water resources and is characterised by a low degree of alteration of rivers. Therefore, inland waterways do not constitute a consistent network and – except for the Odra Waterway – have low navigability grades.

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[175] **Author: P. Śleszyński.** Oil and natural gas extraction according to the data of the Polish Geological Institute (MIDAS database of deposits of natural resources). Oil processing capacity in refineries and transmission networks according to the data of PKN Orlen.

1) Natural gas transmission networks according to the data of the Gas Transmission Operator GAZ-SYSTEM S.A.

2) Gasidło K., Popczyk J., 2008, *Obszary metropolitalne i wielkie miasta a problem rozwoju i wykorzystania odnawialnych źródeł energii (OZE)* [*Metropolitan areas and large cities and the problem of development and utilisation of renewable energy sources (RES)*], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert Opinions for the National Spatial Management Concept 2008-2033*, Vol. I, Ministry of Regional Development, Warsaw, pp. 67-150.

Malko J., Parczewski Z., 2008, *Przestrzenne uwarunkowania i potrzeby terytorialne związane z rozwojem systemów technicznej infrastruktury energetycznej. Rekomendacje dla KPZK* [*Spatial conditions and territorial needs related to the development of the technical infrastructure systems of the power industry. Recommendations for NSDC*], w: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert Opinions for the National Spatial Management Concept 2008-2033*, Vol. II, Ministry of Regional Development, Warsaw, pp. 75-510.

[176] **Author: P. Śleszyński.**

1) Transmission grid and electrical substations according to data of Polskie Sieci Elektroenergetyczne Operator S.A.

2) Power plants and combined heat and power plants according to various sources (including the websites of enterprises generating electrical power as well as institutions and associations promoting renewable energy sources).

3) Gasidło K., Popczyk J., 2008, *Obszary metropolitalne i wielkie miasta a problem rozwoju i wykorzystania odnawialnych źródeł energii (OZE)* [*Metropolitan areas and large cities vs. the problem of development and utilisation of renewable energy sources (RES)*], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert Opinions for the National Spatial Management Concept 2008-2033*, Vol. I, Ministry of Regional Development, Warsaw, pp. 67-150.

4) Malko J., Parczewski Z., 2008, Przestrzenne uwarunkowania i potrzeby terytorialne związane z rozwojem systemów technicznej infrastruktury energetycznej. Rekomendacje dla KPZK [Spatial conditions and territorial needs related to the development of the technical infrastructure systems of the power industry. Recommendations for NSDC], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), Expert Opinions for the National Spatial Management Concept 2008-2033, Vol. II, Ministry of Regional Development, Warsaw, pp. 375-510.

[177] **Author: P. Śleszyński.**

1) Inland waterways according to the data of the National Water Management Authority.

2) Artificial reservoirs according to various sources including the data of Regional Water Management Boards (RZGW).

3) Borders of partial sub-basins according to databases of the European Environment Agency (EUNIS database).

4) Nachlik E., 2008, Gospodarka wodna w kontekście przestrzeni kraju – rekomendacje dla KPZK [Water management in the context of the national territory. Recommendations for NSDC], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), Expert Opinions for the National Spatial Management Concept 2008-2033, Vol. IV, Ministry of Regional Development, Warsaw, pp. 95-152.

The highest density of water supply networks is noted around large cities and in the central part of Poland, while the highest share of population using waste water treatment plants is the feature of northern and western voivodeships. The situation in this field is subject to change, owing to the commissioning of new waste water treatment plants whose construction is often co-financed co-financed from the EU funds.

Map 16. Landscape diversity[178]

Poland has a multitude of landscape types from early post-glacial lowlands to loess uplands and up to alpine landscape. In effect of the prolonged economic influence, those structures have been subject to transformation, leading to the decrease of landscape diversity and disappearance of natural or near-natural forms mainly in the belt of plains situated in the central part of Poland and around cities. The highest forest coverage is noted in the northern, western and south-eastern parts of the country. Moreover, further afforestation is observed in many regions – especially in the east and north – which has a beneficial effect not only on environmental and landscape qualities but also on flood hazard.

Map 17. Environmental protection areas[179]

A large part of the country has been covered with various forms of environmental protection on account of the existing nature values. Those areas constitute a development opportunity to regions due to their large potential for generating jobs in sectors related to services and the conservation of natural and landscape assets. On the other hand, the analysis of the distribution of statutory forms of nature conservation and the saturation of gminas with statutory forms of nature conservation indicates that high value biodiversity is insufficiently protected in certain geographic and landscape regions (e.g. Mazury) and that it is necessary to promote activities that ensure sustainable use of space with a view to conservation of high nature and landscape values.

Map 18. Cultural landscape[180]

The term 'cultural landscape' refers to the space that has been historically shaped in effect of human activities. The settlement system offers a good example as its structure has been affected by the granting of city status, feudal fragmentation, periods of intensified urbanisation and the present day urban sprawl as indicated by the share of housing developments in gminas. The Register of Historic Monuments – updated by conservation services on an ongoing basis – constitutes the most common form of protection of historic buildings and sites. The largest number of immovable monuments are situated in Cracow, Warsaw, Wrocław, Poznań, Gdańsk

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[178] **Author: P. Śleszyński, consultation: J. Solon.**

1) Beds of valleys and depressions; carbonate, gypsum and loess uplands: Richling A., Dąbrowski A., 1995, *Typy krajobrazów naturalnych* [*Natural landscape types*], in: *Atlas Rzeczypospolitej Polskiej* [*Atlas of the Republic of Poland*], 1993-1995, Surveyor General of Poland, Institute of Geography and Spatial Organisation (IGiPZ PAN), Warsaw, Chart 53.1.

2) Marshlands: *System Informacji Przestrzennej o Mokradłach Polski* [*Polish Marshlands Spatial Information System*], 2006, Institute for Land Reclamation and Grassland Farming (IMUZ), Falenty, prepared by the team: H. Piórkowski, Z. Oświęcimska-Piasko, M. Rycharski, M. Szewczyk.

3) Areas with highly and very highly diversified land relief: on the basis of the SRTM satellite data (Śleszyński P., 2009, *Wykorzystanie danych georadarowych SRTM-3 w analizie zróżnicowania ukształtowania terenu Polski* [*Utilisation of SRTM-3 geo-radar data for the analysis of diversification in the Polish land relief*], "Polski Przegląd Kartograficzny", 41, 3, pp. 237-252).

[179] **Author: P. Śleszyński, consultation: M. Degórski.** Protected areas and their ranges according to the recent data provided by the Ministry of Environmental Protection, including the data of the National System of Protected Areas (KSOCh). Locations of Natura 2000 sites outside Poland come from databases of the European Environment Agency (EUNIS database). The base map utilises land use information originating from *Corine Land Cover 2000* (Institute of Geodesy and Cartography, Chief Inspectorate of Environmental Protection, European Environment Agency).

[180] **Author: P. Śleszyński, as modified by MRD.**

1) Vector land use map *Corine Land Cover 2006*, description at: http://clc.gios.gov.pl/.

2) The share of housing development after 1989 calculated on the basis of the CSO data from the period 1989-2008.

3) Dates of the first city rights charter after: Najgrakowski M., 2009, *Miasta Polski do początku XXI wieku* [*Polish cities until 21st century*], "Dokumentacja Geograficzna", 39, Institute of Geography and Spatial Organisation (IGiPZ PAN), Warsaw.

4) Borders of historic and culture areas according to M. Kowalski (Institute of Geography and Spatial Organisation – IGiPZ PAN), unpublished.

5) *Wykaz zabytków nieruchomych wpisanych do rejestru zabytków* [*List of immovable historic monuments entered in the register of monuments*], the status as in 2010, Krajowy Ośrodek Badań i Dokumentacji Zabytków (National Centre for Studies and Documentation of Monuments), Warsaw.

and Łódź. On the other hand, the saturation of gminas with registered immovable documents reaches the highest level in Opolskie, Dolnośląskie and Wielkopolskie voivodeships as well as in the area between Warsaw and Łódź. Protection of the symbolic space of exceptional value and a significant development potential shall be gradually increased by establishing new places for the promotion of cultural and natural heritage (UNESCO World Heritage Sites, historic monuments and culture parks).

Map 19. Presence of mineral resources and anticipated economic resources[181]

Poland is rich in mineral resources. The map presents their distribution and extraction sites of mineral deposits. From the perspective of ensuring the energy security of Poland, the deposits of energy minerals – including in particular coal and lignite – that are present in the country are of great importance. Another opportunity for Poland can be seen in the deposits of natural gas in shale rock whose extraction, involving the use of modern technologies, may significantly contribute to improving the energy security of the country.

Map 20. Renewable energy resources[182]

The development of renewable sources of energy offers an opportunity to diversify the sources of energy and reduce pollutant emissions in Poland. The spatial distribution of naturally available renewable sources of energy allows for the generation of energy from a range of sources in various parts of the country. The map does not take into account such renewable fuel types as biomass from plant crops or waste of various origin used in the production of biogas. The southern and northern parts of Poland offer the best conditions for water power production which are already partly utilised. As regards wind energy, the best conditions can be found in the northern part of the country and in the latitudinal belt of the central part of Poland. The western part of the country, on the other hand, offers the most advantageous conditions for geothermal energy generation, while the eastern and central parts are best for developing solar energy production. At present, the largest amount of renewable energy per inhabitant is generated in Zachodnio-Pomorskie, Pomorskie and Kujawsko-Pomorskie voivodeships and its main source are water power plants.

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[181] **Author: P. Śleszyński.** Distribution and anticipated economic resources according to the data of the Polish Geological Institute (MIDAS database of deposits of natural resources). Status as in 2007/2008. The base map utilises land use information originating from *Corine Land Cover 2000* (Institute of Geodesy and Cartography, Chief Inspectorate of Environmental Protection, European Environment Agency).

[182] **P. Śleszyński – compilation of materials by other authors; consultation: M. Degórski.**

1) **Water energy:** Stachý J., Biernat B., 1994, *Średni odpływ jednostkowy (1951-1970)* [*Average unit outflow (1951-1970)*], in: *Atlas Rzeczypospolitej Polskiej* [*Atlas of the Republic of Poland*], 1994, Surveyor General of Poland, Institute of Geography and Spatial Organisation (IGiPZ PAN), Warsaw, Chart 32.3, Map 2.

2) **Wind energy:** a) Lorenc H., 2001, *Strefy energetyczne wiatru* [*Wind energy zones*], Institute of Meteorology and Water Management (IMGW), Warsaw; b) Niedźwiedź T., Paszyński J., Czekierda D., 1994, *Średnia roczna częstość ciszy i słabego wiatru o prędkości poniżej 2 m/s* [*Average annual frequency of calms and weak wind of below 2 m/s*], in: *Atlas Rzeczypospolitej Polskiej* [*Atlas of the Republic of Poland*] (as above), Chart 31.6, Map 15.

3) **Solar energy:** *Atlas Rzeczypospolitej Polskiej* [*Atlas of the Republic of Poland*] (as above): a) Paszyński J., Miara K., 1994, *Średnie całkowite promieniowanie słoneczne w roku* [*Average total annual solar radiation*], Chart 31.2, Map 5; b) Kuczmarski M., 1994, *Sumy roczne usłonecznienia o prawdopodobieństwie wystąpienia 90%* [*Annual insolation totals with 90% probability*], Chart 31.1, Map 15.

4) **Geothermal energy:** Szewczyk J., Gientka D., 2009, *Terrestrial Heat Flow Density in Poland – A New Approach*, "Geological Quarterly", 53, 1, pp. 125-140 (modified original map presented in Fig. 13. of the above-mentioned article).

Map 21. Natural hazards[183]

Compared to other European states, Poland is characterised by a moderate susceptibility to climate change. Nevertheless, the main natural hazards include floods, droughts and land slides related to extreme weather conditions. Wind erosion can also be a local problem. In areas of mining activities or intense exploitation of ground waters, the presence of cones of depression may cause limits to development. A small number of gminas have unfavourable conditions for construction due to the presence of wetlands, primarily in the eastern part of the country, and to steep slopes with inclination exceeding 5% which concentrate in the south in the mountainous areas and in the foothills.

Map 22. Flood hazard and flood protection infrastructure[184]

[183] **P. Śleszyński – compilation of issues by various authors; consultation: M. Degórski.**

Maps on the scale 1:3 730 000 use data from *Atlas Rzeczypospolitej Polskiej* [*Atlas of the Republic of Poland*], 1993-1995, Surveyor General of Poland, Institute of Geography and Spatial Organisation (IGiPZ PAN), Warsaw; authors, issue dates, charts and maps:

1) Guterch B., Lewandowska-Marciniak H., 1995, *Aktywność sejsmiczna* [*Seismic activity*], Chart 22.1, Map 6.
2) Józefaciuk Cz., 1995, Spłukiwanie potencjalne gleby [Potential washing away of the soil], Chart 23.3, Map 3.
3) Ziętara T., 1995, *Rozmieszczenie osuwisk* [*Distribution of landslides*], Chart 23.3, Map 4.
4) Ziętara T., 1995, *Rozmieszczenie osuwisk w Karpatach* [*Distribution of landslides in the Carpathians*], Chart 23.3, Map 5.
5) Dynowska I., 1994, *Reżim odpływu rzecznego* [*River outflow system*], Chart 32.3, Map 1.
6) Niedźwiedź T., Ustrnul Z., 1994, *Liczba dni mroźnych w roku o prawdopodobieństwie wystąpienia 50% (dni z temperaturą maksymalną niższą od 0ºC)* [*Annual number of frosty days with 50% probability (days with maximum temperature below 0ºC)*], Chart 31.3, Map 5.
7) Niedźwiedź T., Ustrnul Z., 1994, *Liczba dni gorących w roku o prawdopodobieństwie wystąpienia 50% (dni z temperaturą maksymalną powyżej 25ºC)* [*Annual number of hot days with 50% probability (days with maximum temperature above 25 ºC)*], Chart 31.3, Map 10.
8) Niedźwiedź T., Limanówka D., Ustrnul Z., 1994, *Data ostatnich przymrozków wiosennych o prawdopodobieństwie wystąpienia 50%* [*Dates of recent spring frosts with 50% probability*], Chart 31.4, Map 4.
9) Niedźwiedź T., Cebulak E., 1994, *Liczba dni z opadem powyżej 10 mm o prawdopodobieństwie wystąpienia 90%* [*Number of days with precipitation above 10 mm and 90% probability*], Chart 31.4, Map 13.
10) Niedźwiedź T., Czekierda D., Limanówka D., 1994, *Liczba dni z pokrywą śnieżną o prawdopodobieństwie wystąpienia 50%* [*Number of days with snow cover with 50% probability*], Chart 31.4, Map 9.
11) Fal B., Punzet J., 1994, *Maksymalny odpływ jednostkowy* [*Maximum unit outflow*], Chart 32.3, Map 3.
12) Paczyński B., 1994, *Wody podziemne zwykłe (słodkie)* [*Underground fresh water*], Chart 32.5, Map 1.

and:

13) Górski D., 1994, *Bonitacja klimatyczna dla rolnictwa* [*Climatic soil evaluation for agriculture*], in: *Atlas Środowiska Geograficznego Polski* [Atlas of Polish Geographic Environment], Institute of Geography and Spatial Organisation (IGiPZ PAN), Warsaw, Table 10.
14) Kowalczak P., 2001, *Hierarchia potrzeb obszarowych małej retencji w dorzeczu Warty* [*Hierarchy of small retention needs in the Warta River basin*], Warsaw, published in: Kudlicki Ł., 2004, *Zagrożenie pustynnieniem w Polsce* [*Threat of desert formation in Poland*], Bezpieczeństwo Narodowe, 1, pp. 201-211.
15) *Typy wezbrań rzecznych* [*Types of river surges*], Regional Water Management Board (RZGW) in Cracow (data does not include surges on transit rivers in relation to a given partial sub-basin).
16) Nachlik E., 2008, *Gospodarka wodna w kontekście przestrzeni kraju – rekomendacje dla KPZK* [*Water management in the context of the national territory. Recommendations for NSDC*], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert Opinions for the National Spatial Management Concept 2008-2033*, Vol. IV, Ministry of Regional Development, Warsaw, pp. 95-152.
17) Starkel L., Kundzewicz Z.W., 2008, *Konsekwencje zmian klimatycznych dla przemian w zagospodarowaniu przestrzeni kraju – rekomendacje dla KPZK* [*Consequences of climate changes for the transformation of the national spatial development - Recommendations for NSDC*], in: K. Saganowski, M. Zagrzejewska-Fiedorowicz, P. Żuber (ed.), *Expert Opinions for the National Spatial Management Concept 2008-2033*, Vol. IV, Ministry of Regional Development, Warsaw, pp. 65-94.

The share of the surface of gminas with unfavourable land conditions for construction was calculated on the basis of:

18) three-dimensional terrain model generated with the SRTM satellite data (Śleszyński P., 2009, *Wykorzystanie danych georadarowych SRTM-3 w analizie zróżnicowania ukształtowania terenu Polski* [*Utilisation of SRTM-3 geo-radar data for the analysis of diversification in the Polish land relief*], "Polski Przegląd Kartograficzny", 41, 3, pp. 237-252);
19) *System Informacji Przestrzennej o Mokradłach Polski* [*Polish Marshlands Spatial Information System*], 2006, Institute for Land Reclamation and Grassland Farming (IMUZ), Falenty, prepared by the team: H. Piórkowski, Z. Oświęcimska-Piasko, M. Rycharski, M. Szewczyk;
20) *Corine Land Cover 2000* databases, prepared and supplied for non-commercial use by the Institute of Geodesy and Cartography in Warsaw upon prior acceptance of an access application by the Chief Inspector of Environmental Protection.

[184] **Author: P: Śleszyński.**

1) Calculation of the ranges of riparian alder forests, riparian forests and peatlands according to the vector map of potential vegetation in Poland, prepared in the Institute of Geography and Spatial Organisation (IGiZP PAN) under supervision of J. M. Matuszkiewicz (see: Matuszkiewicz J. M., 2008, *Potencjalna roślinność naturalna Polski* [*Potential natural vegetation in Poland*], IGiPZ PAN, Warsaw http: //www. igipz. pan.pl/geoekoklimat/roslinnosc/prn_mapa/home_pl.htm).
2) Calculation of the ranges of marshlands according to *System Informacji Przestrzennej o Mokradłach Polski* [*Polish Marshlands Spatial Information System*], 2006, Institute for Land Reclamation and Grassland Farming (IMUZ), Falenty, prepared by the team: H. Piórkowski, Z. Oświęcimska-Piasko, M. Rycharski, M. Szewczyk.

The areas of most severe flood hazard are concentrated in Żuławy, around the mouth of Pasłęka River flowing into the Vistula Lagoon, in mountainous areas, in the central section of the Odra River and in the eastern parts of the country. However, considering the ongoing modernisation works conducted on the flood protection infrastructure, especially the planned polders and other currently implemented projects, the flood hazard shall gradually decrease. Moreover, Poland has an evenly distributed observation and measurement network (weather, climate and precipitation stations and water level indicators) which allows for collecting comprehensive data reflecting the full picture of the entire territory and providing grounds for taking action in the most exposed areas.

Map 23. Spatial planning coverage[185]

In Poland, the coverage of gminas with local land development plans in force is greatly varied. Apart from cities and their functional areas, the highest level of spatial planning coverage is noted in Małopolskie, Śląskie, Dolnośląskie and Lubelskie voivodeships where, in the majority of cases, the plans in force cover more than a half of the surface of gminas. In spite of that, only a little more than 26% of the surface of the country was covered by a local plan in force in 2010. This situation attests to the deficiency of planning on the local level and to the absence of an active spatial policy conducted by gminas. However, there is a positive trend observed in the gradually increasing spatial planning coverage, especially in urban poviats (Polish: *powiat grodzki*) where it exceeded 35% in 2010.

Maps, sources used and explanations

If it is not otherwise specified below, the maps are based on the latest data of the Central Statistical Office (including unpublished information) and the Regional Data Bank 1995-2009 in particular. Additional information was collected from expert opinions prepared for the purposes on NSDC 2030 and from maps drawn for the purposes of the Expert Draft of the National Spatial Development Concept 2008-2033, dated December 2008, whose content was developed by: Prof. Jerzy Bański Ph.D., Prof. Marek Degórski Ph.D., Prof. Andrzej Gawryszewski Ph.D., Prof. Tomasz Komornicki Ph.D., prof. Piotr Korcelli Ph.D., Marcin Stępniak M.Sc., Prof. Jerzy Szlachta Ph.D., Prof. Przemysław Śleszyński Ph.D., Prof. Janusz Zaleski Ph.D.

The cartographic base map was prepared specifically for the use in NSDC 2030. Names of foreign cities were chosen in compliance with the recommendations of the Commission for Standardization of Geographical Names Outside the Republic of Poland.

All issues are presented according to the most up-to-date information that was possible to obtain at the moment of preparing the maps (three stages: 16 maps in the period August – September 2009, 3 maps in the period February – March 2010, 4 maps in the period September – October 2010).

The explanations below refer to the charts on which maps are presented mainly on the scale of 1:2 000 000, i.e. the so-called **diagnostic** part. The **forecast** ("vision") maps were prepared – in the majority – by the Department of Structural Policy Coordination of the Ministry of Regional Development both as regards the content and their technical side. Those maps modify or partly utilise the maps of some of the authors of the Expert Draft of NSDC 2008-2033 – both the

3) The measurement and observation network of IMiGW, based on up-to-date information (see: Czarnecka H.– topic manager, Głowacka B., Krupa-Marchlewska J., Moskwiński T., Zaniewska M., 2010, *System informacyjny sieci stacji meteorologicznych i wodowskazowych IMGW jako warstwa użytkowa zintegrowana z komputerową mapą podziału hydrograficznego Polski* [*Information system of the network of weather and water level stations of IMGW as a usable layer integrated with a computer map of the hydrographic division of Poland*] Institute of Meteorology and Water Management, State Hydrological and Meteorological Service, Hydrology Centre IMGW, Warsaw).

4) Borders of partial sub-basins according to the databases of the European Environment Agency (EUNIS database).

[185] **Author: P. Śleszyński.** According to the data of the CSO/Ministry of Infrastructure originating from the study PP-01 regarding the spatial planning situation in all Polish gminas. Studies are coordinated by the Department of Spatial Management in the Ministry of Infrastructure and the annual *Reports on the status and conditions of spatial planning works in gminas* (*Raporty o stanie i uwarunkowaniach prac planistycznych w gminach*) is the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGiPZ PAN).

December 2008 version and later updates from the summer and autumn 2009 (M. Degórski, T. Komornicki, P. Korcelli). The map of the Target system of the power grid comes from Polskie Sieci Elektroenergetyczne Operator SA (*Plan działań w zakresie inwestycji celu publicznego o znaczeniu ponadlokalnym* [*Action plan for a public purpose project of supra-local significance*], PSE Operator SA, Warsaw, September 2009).

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ANNEX 1. Report on the preparatory work for NSDC 2030

1.1. Preparatory work for the draft National Spatial Development Concept (NSDC)

The first stage of work on the new document was formulation of the Theses and Assumptions for the National Spatial Development Concept. To that end, a Working Team was appointed whose composition included representatives of the Ministry of Regional Development and the personnel of other selected ministries – primarily those responsible for transport infrastructure, environment and economy. Theses and Assumptions were adopted by the Council of Ministers in June 2007. That was when organisational and analytic work started at MRD.

For the purpose of elaborating the document, three bodies were established to support the work on NSDC, namely National Spatial Management Council (NSMC), Delivery Team for the National Spatial Development Concept and the Team of Scientific Experts. The main task of the Team of Scientific Experts was to prepare an expert draft concept that would serve as a starting point for discussions about the vision of national spatial development and as an analytical basis for the future governmental document.

In December 2007, MRD launched a series of thematic seminars devoted to discussing the most important problems raised in over 40 expert opinions prepared at the request of MRD and offering a subject-matter basis for elaborating the expert draft concept. The seminars were addressed to voivodeship local-governments, regional spatial planning units and members of the teams working on NSDC.

1.2. Public debate on the vision of national spatial development conducted on the basis of the Expert Draft of the National Spatial Development Concept (ED NSDC).

In 2008, the Team of Scientific Experts prepared the Expert Draft of the National Spatial Development Concept which permitted MRD to launch, in January 2009, a national debate on the vision of the future development of the country. The key part of the debate comprised 16 individual meetings with all Marshall Offices / local-governments of voivodeships which took place between February and April 2009. Those meetings were attended by departments responsible for the planning of development, voivodeship spatial planning offices, local-government units. Moreover, representatives of self-government organisations, NGOs, businesses and the scientific circles also participated in the discussions.

The Expert Draft was additionally consulted with the Delivery Team in the course of meetings devoted to the issues of road, railway, airport and energy infrastructure as well as to problems of maritime areas, rural areas development, issues pertaining to protected areas, water management and matters related to landscape protection. The goal of those sessions was to analyse the ED NSDC in respect of its compliance with applicable strategic documents developed by other ministries.

Simultaneously, the National Spatial Management Council conducted their own part of work. The result of that effort was the preparation of the Position of the Council[186] on ED NSDC with recommendations for the governmental document.

Although the comments collected during regional meetings primarily concerned the issues of significance to individual regions, but they were taken into consideration in the context of the importance of a given region in the space of the country. Authors of comments stressed the need to define metropolitan areas in the Concept (the Expert Draft distinguished metropolitan centres) and to work out requirements for voivodeship spatial development plans. The issues that proved most controversial included problem areas and the Central Hexagon concept. The proposal of problem areas in the Expert Draft went beyond the Act on spatial planning and

[186] Position of the National Spatial Management Council for the Expert Draft of the National Spatial Development Concept until 2033 (ED NSDC) including recommendations for the governmental version of the National Spatial Development Concept (NSDC) adopted at the session of the Council on the 25th and 26th of March 2009.

development by additionally indicating areas requiring macro-scale measures. The regions argued for the need to specify clear criteria of their delimitation.

Probably, in the opinion of the debating parties, due to a very vague description of the vision, the Central Hexagon concept met with criticism resulting from the lack of understanding of the proposed concept. The Central Hexagon model postulated linking the largest Polish cities: Warsaw, Cracow, Upper Silesian Conurbation, Wrocław, Poznań, Gdańsk/Gdynia with efficient multi-modal infrastructure systems that combine into a correlated and open spatial complex. In the opinion of the participants in the debate, the hexagon proposal did not reflect the actual links between Polish cities. The reason of the misunderstanding was a graphical representation of the hexagon in the form of a geometric figure superimposed on the map of Poland which divided the country into two parts – within and without the hexagon. Moreover, the geometric figure produced associations with isolation of the Polish space from the European influence. In the opinion of the regions, the Hexagon Concept entails a territorial consolidation of the existing spatial structure of the country instead of enhancing territorial cohesion in Poland.

The discussion also tackled the degree of detail that the Concept should include as the fundamental planning document for voivodeship spatial development plans as well as its compliance with the Act on spatial planning and development. It was pointed out, that the governmental document should be supplemented with issues concerning the protection of landscape and social infrastructure, analysis of conflicts between the line infrastructure and ecological corridors, indication of implementation instruments/system for the measures mentioned in the draft, especially in respect of the operationalisation of measures aimed at restoring order to the Polish space. More specific comments focused on the correlation of transport infrastructure between individual urban centres.

1.3. Work on the governmental version of the National Spatial Development Concept 2030 (NSDC 2030)

On the basis of proposals contained in the Expert Draft and pursuant to the conclusions of the regional debate, the work on the governmental version began in autumn 2009. Draft concept was ready in May 2010. The idea of the Hexagon was reformulated into a model involving a polycentric network of metropolises. That network shall provide the basis for the diffusion of development processes in the Polish space. In effect, development impulses shall be taken into account and dispersed across the entire country. In addition, a functional approach was applied to rural areas, cross-border areas and areas with unfavourable conditions for socio-economic development (Eastern Poland, Central Pomerania, and Western Poland) in order to integrate them functionally by utilising the diffusion of development processes and the internal potential of those areas.

The Environmental Forecast for the Implementation of Draft NSDC 2030 was worked out and subject to social consultations. The key conclusions from the Forecast for NSDC 203, including a description of the process, are presented in Annex 2 to the draft document.

In the course of the work on the Environmental Forecast for the Implementation of NSDC 2030, seven hundred copies of the document were distributed. At the same time, electronic versions of the draft NSDC 2030 and draft Forecast were constantly available on the website administered by the Ministry of Regional Development. Additionally, a mailbox was set up for correspondence. Upon completing the consultations of the Forecast, a new version of the Forecast and a report on the consultations were published on-line at www.mrr.gov.pl .

An important point of the process was the preparation of the position of the National Spatial Management Council, in May 2010, which influenced the orientation of further work on the project. The Council focused primarily on the necessity to eliminate the ambiguity related to the legal status, including an explanation of why the document goes beyond the statutory framework and, in certain cases, does not correspond directly to obligations resulting from the Act on spatial

planning and management (while the draft was in preparation, an intensive work was in progress on the amendment of the Act which was withheld in autumn 2010). Moreover, the Council expected a resolution of a controversial issue of the "metropolitan centres category" by proposig for consideration "nodes of metropolitan functions development". The Council's position also suggested to consider the possibility of limiting the degree of detail of the proposed classification of functional areas, relating to the influence of Poland's membership in the EU – including to the Community concept of infrastructure development (TEN-T) – taking into account inland watercourses and expanding (in comparison to ED NSDC) the provisions related to the national defence. The position additionally recommended an assessment of the financial impact of the implementation of the newly proposed road and railway projects in comparison to the modernisation of the existing network of roads and railways.

1.4. Public consultations of the draft National Spatial Development Concept 2030

A version of NSDC intended for public consultations was prepared in January 2011 and the consultations continued until April 2011. Public consultations of the draft NSDC 2030 were conducted pursuant to art. 6 of the Act of 6 December 2006 on the rules of development policy making (Dziennik Ustaw [Journal of Laws] of 2006, No 227, item 1658). In the course of consultations, five hundred copies of the draft were distributed with additional publications related to NSDC. During that time, a selection of subjects was discussed at thematic conferences or by communicating directly with MRD in writing. In the course of consultations, over 170 various entities offered their comments (about 3,000 comments).

Organisation of consultation meetings 2011

Consultations were held from February till April 2011 in the form of:

- thematic conferences,
- direct communication with MRD – a possibility to submit opinions in writing,
- a website – mailbox: konsultacje_kpzk@mrr.gov.pl.

Launching an on-line service:

On the website of the Ministry of Regional Development (www.mrr.gov.pl), all kinds of information related to the work on the Concept were put up:

- files: draft National Spatial Development Concept 2030, basic information about NSDC, a multimedia presentation NSDC 2030,
- announcements of thematic meetings,
- reports and multimedia presentations delivered during thematic meetings.

Also, a mailbox (konsultacje_kpzk@mrr.gov.pl) was set up for direct submission of opinions and comments to the draft Concept.

Information and publicity measures

During the consultation period, over a thousand copies of NSDC (including the draft of 18 May 2010) and other related publications were distributed. The issue of NSDC was also raised by the management of MRD during press interviews and television talks. NSDC was a topic of conferences organised in cooperation between the Ministry of Regional Development and the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences.

Process of consultations

Thematic meetings were attended by representatives of various circles, including representatives of public administration, local-government units, organisations, unions, councils, chambers, national associations, Polish science as well as members of parliament and private individuals. The Concept was a topic of conferences organised in cooperation between the Ministry of Regional Development and the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences.

The following meetings were held:

- 7-8 February 2011 (Warsaw) – VASAB Annual Conference "Integrated Approach to Spatial Development in Europe – Meaning of Territorial Cohesion",
- 10-11 February 2011 (Spała) – a scientific conference in cooperation with the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences on the functional areas in the spatial planning system,
- 21 February 2011 (Zielona Góra) – national conference on cross-border cooperation,
- 23 February 2011 (Lublin) – national conference on the assistance to problem areas,
- 28 February 2011 (Bydgoszcz) – national conference on the networked polycentric metropolis and cooperation of cities,
- 2 March 2011 (Warsaw) – session of the National Spatial Management Council (NSMC),
- 9 March 2011 (Warsaw) – national conference devoted to changes that were made in relation to the draft Concept of 18 May 2010,
- 11 March 2011 (Warsaw) – presentation of the draft at the meeting of the Civic Society Working Group of CC NSRF (Polish: *KK NSRO*),
- 14 March 2011 (Szczecin) – national conference on the integrated approach to planning on the land-sea interface,
- 15 April 2011 (Warsaw) – national conference concluding the process of consultations with the participation on Elżbieta Bieńkowska, the Minister of Regional Development.

The Ministry of Regional Development was represented at all conferences and meetings of the National Spatial Management Council by: Waldemar Sługocki – Undersecretary of State in the Ministry of Regional Development as well as the management and personnel of the Department of Structural Policy Coordination. Additionally, Danuta Hübner – Member of the European Parliament – took part in the VASAB conference (10-11 February 2011). The thematic meetings alone were attended by a total of 492 participants. As regards the organisation of meetings, the Ministry was supported by Marshal Offices and voivodeship spatial planning units.

The most frequent comments of general nature, referring to the structure of the document and wording of the text included:

- excessive volume of the document (the need for preparing an abbreviated version was postulated with a simultaneous supplementing of more profound analysis to selected topics),
- emotional load of certain provisions (some authors of comments considered it unnecessary while others were positively disposed to this type of provisions, e.g. to the critical analysis of the present spatial planning system),
- provisions constitute mere postulates in relation to sectoral strategies (even though most of the postulates were related to the introduction of new provisions),
- absence of provisions concerning specific implementation instruments and indicators,
- no indication of sources of financing for the vision,
- reservations regarding the data presented in diagnostic maps, completeness and currency of those maps.

Content-related comments most often raised the following issues:

- increasing the status of regional urban centres and enlarging the group of cities included in the model of a networked polycentric metropolis,
- inclusion of new transport infrastructure projects and their earlier completion,
- too many types of functional areas,
- absence of direct guidelines for vsdp,
- a need for a more extensive discussion of the issue of social infrastructure,
- insufficiently emphasized role of local centres and urban areas,
- a need to supplement NSDC implementation indicators,
- ensuring more compliance with NSRD.

Opinions according to the structure of the document and the range of comments taken into account in NSDC

Participants of the consultations. process positively responded to the rationale and the need to prepare an integrated National Spatial Development Concept 2030. They also agreed with the claim that the sphere of spatial planning did not have a strong coordinating position in relation to sectoral policies (in comparison to other European countries) and that the very system of spatial planning in Poland required a profound reform.

The majority of comments were related to transport infrastructure. The vision was evaluated as "too optimistic". The fewest comments were addressed to: Introduction, Chapter IV. National Spatial Development Policy – Principles and Objectives, Chapter V., the section related to Objective 2. To enhance internal cohesion and Objective 6. To restore and consolidate spatial order The postulates had a form of specific comments related to updating and supplementing more details to provisions. The correctness of the directions of the measures indicated under specific objectives was not questioned.

The majority of comments were taken into account. The exception constituted comments with an excessive level of detail, e.g. proposals regarding specific routes for roads which should be reflected in other documents equipped with relevant implementation instruments (regulatory and financial) such as, for instance: sectoral strategies, voivodeship development strategies, operational programmes and other governmental programming documents which aim at accomplishing the objectives and priorities of NSDC. In addition, some editorial changes and minor corrections were made in the contents of the document.

The most important comments made in reference to individual parts of the document and the manner of their consideration.

Chapter I. Introduction Changes in the text consist mainly in editorial corrections and in adding minor supplements. They are primarily related to the explanation of the philosophy of NSDC, i.e. the departure from the model of development in the form of belts in favour of creating a network of functional links.

Chapter II. Conditions of the National Spatial Development Policy – Twenty Years Perspective In the course of consultations, it was concluded that the manner of presentation applied to the settlement system required revising. In response to comments, new subsections were supplemented to the document. A subsection titled 'Cultural heritage conditions' was added. Also, a range of editorial changes and supplements were introduced. Their purpose was to make the diagnostic part more comprehensible and better reflecting the situation in Poland and resultant development dilemmas.

Chapter III. Vision of the Spatial Development of Poland by 2030 Comments made in relation to this part of the document were concerned with the Polish settlement network in 2030. The text and its graphic material were supplemented with the following cities: Elbląg,

Włocławek, Kalisz with Ostrów Wielkopolski, Tarnów and Grudziądz. In the part related to internal cohesion, more detailed information was added to the provisions regarding rural areas and services. The provisions concerning geological structures, flood and deposits protection were supplemented.

Chapter IV. National Spatial Development Policy – Principles and Objectives With a view to increasing the precision and clarity, the text was reedited.

Chapter V. National Spatial Development Policy – Objectives In compliance with the received comments, supplementary information was added to Objective 1. 'To improve competitiveness of Poland's major urban centres' by providing a description of an example of cooperation between cities, activities of the Union of Polish Metropolises. Also, a description of the methodology for determining metropolises and delimiting metropolitan areas was supplemented.

The majority of attention was devoted to reviewing Objective 3. 'To improve Poland's connectivity'. It required extensive consultations with the Ministry of Infrastructure. The purpose of those consultations was to improve the correspondence between provisions and graphical material with the plans of the ministry responsible for the national transport policy. Editorial changes and supplementary information was introduced the wording of Objective 4. 'To develop spatial structures supporting the achievement and preservation of Poland's high-quality natural environment and landscape,' including protection of valuable mineral resources. Changes in the text of Objective 5. were primarily related to the updating of provisions in line with comments provided. Moreover, the text was reedited to make it more readily comprehensible.

Chapter VI. Typology of Functional Areas Comments regarding functional areas and their role were submitted by spatial planning offices. They called for making the text more precise. In many cases, such areas constitute obligatory requirements for voivodeship spatial management plans. The text was supplemented with more detailed information derived from the conclusions of the conference in Spała, organised by the Committee for Spatial Economy and Regional Planning of the Polish Academy of Sciences, during which detailed discussions were held on the issues of functional planning on the national and regional levels as well as on the issues pertaining to functional planning in metropolitan areas.

Conclusions

NSDC 2030 goes beyond the canonical limits of a planning document owing to the critical analysis of the status of spatial planning in Poland, providing grounds for the formulation of postulates for the appropriate implementation of spatial policy. The applicable legal basis of NSDC dates back to 2003 and defines the scope of the Concept in a way that is not sufficient to meet the challenges of 2011. The law in question was enacted prior to Poland's accession to the European Union, before the European Union adopted the Territorial Agenda and Leipzig Charter in 2007, before Territorial Cohesion was included in the Lisbon Treaty and, therefore, it does not provide for the idea of integrated development - the motto of the Polish Presidency in the Council of the EU in 2011. Moreover, the draft document was drawn while the work on the amended act on spatial planning and development was in progress which, however, is not expected to be adopted in the near future.

The document establishes a classification of the settlement system, division into a networked polycentric metropolis and the rest of cities, groups of cities of regional significance and indicates local development centres. The discussion about metropolises has been in progress in Poland for many years independently of NSDC. It further confirms the need to conduct an active spatial policy. Polish cities are poorly connected and undercapitalised. The decapitalised infrastructure serves as the telling evidence of it. The fact of inclusion into any of those groups

of cities shall not entail any financial aid or any other assistance from the state. The cities that were not included in the networked metropolis and medium-size cities below 100 thousand inhabitants will not be excluded from development processes or the urban development policy.

The majority of postulates concerned proposals to accelerate transport projects, including the construction of road, railways and airports. It attests to the continued existence of unsatisfied needs in the sphere of transport infrastructure with which Poland has been struggling since 1960's. Even the superior role of NSDC and the position of the Minister of Regional Development are not able to guarantee the possibility of taking full action in response to all of the raised postulates.

The protection of strategic mineral deposits proved to be a conflict-provoking matter. Both the parties related to environmental protection and inhabitants of areas where the presence of deposits was indicated protested against placing them under protection against building development. Parties related to extraction or owners of deposits postulated their full accessibility, i.e. prohibition of building development. The entity responsible for the implementation of transport projects planned in the areas where mineral deposits are present is yet another party to this discussion.

The document coordinating various projects – as NSDC actually is – raised the awareness of the need to conduct an integrated policy that would reconcile the interests of individual partners, protect individual freedoms, enable the accomplishment of public objectives, indicate demographic and economic conditions and propose the best operational solutions. The spatial policy should offer a ground for negotiating between needs and realistic possibilities.

We have been given a full consent to undertake action aimed at reorganisation of the planning system, introduction of the monitoring of development measures, integrated management of the maritime and land policies, integration of spatial planning with socio-economic planning, leading to the elaboration of correlated programming documents for regions and cities which would serve the purpose of utilising European funds in compliance with directions indicated in land development plans. For this reason, we have also prepared financial estimates regarding the possibility of implementing the transport infrastructure projects proposed in the document. Systemic solutions will be defined in the action plan.

To offer a general conclusion, it could be said that the document – while provoking discussions – was positively received.

ANNEX 2. Strategic Environmental Assessment Procedure

2.1. Introduction

The spatial policy of the country affects environmental processes and the capacity of ecosystems to render services used in the process of development and defining the daily quality of life and. Territorial competitiveness and cohesion also depend on that very same policy. The issues under consideration include conservation of the stability of ecosystems and species, permanent production potential of soils and the possibility of its utilisation, availability and quality of water, air quality, security against natural disasters and hazards, adaptability of space to climate change, preservation of cultural and landscape heritage as well as intergenerational continuity of growth and development conditions. This policy cannot, however, overcome the fundamental contradiction between the strategic objectives related to the protection of natural resources and processes and the objectives of socio-economic development that go beyond the traditional use of natural potential of regions in any other way than by postulating an analysis of functions of a given area and its ecosystem services so that the planned spatial development at least does not reduce the resistance of the natural environment. For this reason, the National Spatial Development Concept has been mentioned since 2001 at the top of the list of strategies, plans and programmes subject to strategic environmental assessment of plans and programmes (art. 40 (1) of the Act of 27 April 2001 Environmental Protection Law, in the wording in force till 15 November 2008) and the environmental impact assessment of spatial planning documents of all levels was introduced[187] with a systemic spatial policy instrument. In the course of implementing the acquis communautaire, this assessment was turned into a continuous process. The system involves a range of measures that allow for supervising the entire programming process of socio-economic development, determining an efficient level and forms of environmental protection control when planning management strategies for socio-economic development, undertakings and projects, including the monitoring of the effects of actions taken and adopted strategies.

The process of determining a long-term spatial policy of the state and the process of environmental impact assessment of the draft NSDC 2030 should be conducted in parallel to the work on the governmental version in order to provide effective support to the Government's efforts. This proved difficult for procedural reasons and due to the absence of domestic methodological grounds as well as because of unique characteristics of the assessed document whose function in the present management system and the scope of competences were modified in relation to the provisions of the Act on spatial planning and management of 2003. The fundamental condition that had to be met in order to start the procedure of environmental impact assessment (EIA) was to prepare the text of NSDC 2030 defining a vision of spatial order, location of functions that are the focus of spatial policy and a strategy for achieving that goal until the intended horizon of 2030 in a sufficiently advanced form so that those elements did not change in the course of further work and were only strengthened and elaborated in detail in response to the assessment procedure and public consultations conducted pursuant to the Act of 6 December 2006 on the rules of development policy making (Dziennik Ustaw of 2009, No. 84, item 712). This condition was met only by the text adopted by the MRD management on May 18, 2010.

The change of the legal basis and modification of the statutory scope of the forecast occurred during the work on NSDC 2030, already after the specification of the scope and level of detail of the Forecast by the Minister of Environment (no comments were made by the Chief Sanitary Inspector) on May 19, 2008. Despite the possibility to continue the process on the basis of previous agreements, MRD reapplied to the General Directorate for Environmental

[187] As postulated in the National Spatial Development Policy (Monitor Polski [Official Gazette] of 2001, No. 26, item 435).

Protection (GDEP) to determine conditions in compliance with the new legal norm and obtained them on February 25, 2009.

The Environmental Forecast for the Implementation of NSDC 2030 (NSDC 2030 Forecast) defines the potential impact of the spatial policy in preparation on achieving a more sustainable use of the space, lowering the burden to environment caused by accumulation of negative influences and adverse trends that accompany the socio-economic development. It verifies the correspondence of instruments for implementing the proposed development model with the needs resulting from the analysis of the state of environment, development trends and the indicated socio-economic strategies.

The NSDC 2030 Forecast consists of the following parts: synthesis, non-technical summary, technical report, report on consultations, 3 individual maps. The entire material is available on the MRD administrated website at: http://www.mrr.gov.pl/rozwoj_regionalny/polityka_przestrzenna/kpzk.

After recommendations of the Forecast were taken into account in the draft document and after a new round of public consultations – conducted in the first quarter of 2011 – was complete, the MRD's draft NSDC 2030 dated 15 April 2011 obtained opinions of the Chief Sanitary Inspector and the General Director for Environmental Protection (GDEP) issued pursuant to art. 54 of the Act on provision of information about the environment and protection thereof, public participation in environmental protection and environmental impact assessments (Dziennik Ustaw of 2008, No. 199, item 1227, as amended). The comments submitted by GDEP were included in the document and the draft NSDC 2030 was referred to the Council of Ministers. The procedure of strategic environmental assessment concludes the document's acceptance by the Council of Ministers.

2.2. Findings of the Environmental Forecast for the Implementation of NSDC 2030

The Environmental Forecast for the Implementation of NSDC 2030 (NSDC 2030 Forecast) was prepared by the consortium of WS Atkins and the Institute for Sustainable Development (Polish: *Instytut na rzecz Ekorozwoju*) on the basis of an agreement concluded after completing a public contract awarding procedure. The consortium gathered a team of interdisciplinary experts with professional experience in developing forecasts for national and regional documents whose findings had a strong impact on the Polish territory by providing grounds for the financing of public purpose projects.

The NSDC 2030 Forecast, in a range of analysed fields and their components, indicated areas of strong potential ecological conflicts related to the assumed measures for achieving territorial cohesion and competitiveness of urban centres, primarily with regard to the location and development of transport functions and other infrastructure necessary for increasing the standard of living or ensuring flood and energy security. The majority of those conflicts stem from the geographical situation of the objects of unique natural and cultural heritage as well as from the changes in the existing functions of the space as programmed in NSDC 2030 due to the previous unbalanced development of the territory (historical conditions). Therefore, there is no realistic possibility of modernising the communication system of the country without interfering with the coherence and integrity of the existing biodiversity protection networks. The crucial point is the evaluation of the acceptable level of interference, scope of environmental compensation, the analysis of costs and benefits achieved in socio-economic development as well as the sustainability of development results, i.e. the analysis of conditions pursuant to art. 34 of the Nature Conservation Act.

In general, the Forecast indicated that despite the existing potential threats related to the development process, the solutions adopted in the document support spatial order and contribute to the achievement of sustainable development. The fundamental fault found in

NSDC 2030 was the internal contradiction between individual development objectives presented in the document, particularly between Objective 4. – related to the shaping of structures responsible for the favourable status of environmental resources and their capacity for generating environmental services – and objectives related to a range of measures supporting the internal cohesion of the country and creation of a well-connected, competitive and safe space. Alternative solutions were proposed with regard to three most important trends shaping the space and negatively impacting the natural environment: energy efficiency of spatial structures, mobility of the population, and energy security. These topics are the focus of attention in NSDC 2030 as they are related to transport development, urban policy and territorial cohesion.

The Forecast recommended measures enhancing the positive role of NSDC as a document supporting spatial order, enabling a coordinated programming of the development of transport networks and functional urban areas as well as preventing the loss of contemporary unique natural, cultural and landscape resources that are of decisive significance for the identity and attractiveness of space.

2.3. Implementation of recommendations

Changes introduced to the document did not directly transfer the recommendations of the NSDC 2030 Forecast nor comments made in the course of the public debate. They are the product of reflections on the issues raised by the participants of that process. In the context of the sustainable development paradigm, the considerations focused on the energy consumption of intended spatial structures, rules for determining optimal communication corridors, roles of spatial planning in adaptation of the territory to climate changes and in measures aimed at mitigation of those changes, protection of unique and distinguishing characteristics of the space, management of water resources and on the role that the NSDC 2030 played in relation to the 9 integrated strategies that were developed at the same time and in relation to the Long-Term National Development Strategy. Those reflections also covered the principles of monitoring the implementation of NSDC 2030 requirements and national spatial development.

The programming assumptions of NSDC 2030 impose limitations on the possibility of expanding the scope of the document and on the document's capacity to accommodate recommendations or alternative solutions that are not compliant with or contradictory to policies, plans and development programmes implemented by the Government – especially if the available environmental impact assessments of those documents have not been questioned or if such assessments have not been performed. Moreover, the document did not take into account certain suggestions to extend the contents of NSDC 2030 beyond the national and regional level if they did not concern the sources of ecological conflicts originating from the faults of the spatial planning system.

Recommendations strengthening the conditions for achieving spatial order, including related to functional areas, were accepted and implemented. In addition, the internal cohesion of the document and correlation of objectives was improved in order to avoid repetitions within individual elements of the Vision or between the objectives aimed at its materialisation. Editorial changes were also meant to emphasize the energy efficiency of the proposed spatial structures – transport networks, open network of metropolises, urban functional areas and other functional areas responsible for creating conditions for development – and to eliminate the factual errors that were pointed out by the participants of the process of consultations.

The proposed principle of ecological prudence was introduced to NSDC 2030. The connections between the rules of spatial development and the systemic principle of sustainable development received additional emphasis. Provisions regarding the protection of mineral

deposits of strategic significance for energy generation were extended to include other resources indispensable for the socio-economic development of future generations.

In spite of opinions submitted in the course of public consultations which indicated a possibility of unfavourable prolongation of investment procedures due to the extension of the scope of project impact assessment by the impact on landscape, those provisions were maintained because part of the planned spatial structures affect the environment by, among others, simplifying the original landscape and adversely changing its qualities, including economic assets. Culture landscapes created nowadays will affect the quality of life of generations to come as well as the conservation status of biodiversity also due to the consequences of abandoning this type of analysis or actions resulting therefrom. It was proposed to apply the concept of ecosystem services to the management of functions in the emerging space and to the enforcement of the principle of environmental compensation.

Changes were also introduced to graphic materials, emphasizing their demonstrative functions so that the flow of information could support the coordinating role of NSDC 2030. The diagnosis contained in the form of maps was expanded and the content of other graphic material was corrected and better coordinated with the text in order to offer an improved illustration of the issues discussed and to strengthen the message regarding the coordinating role of NSDC 2030 in relation to such spheres as development of transport networks, energy infrastructure, flood security, management of water resources and development of an ecological network in the country. Additionally, a proper illustration was given to the most important ecological conflicts related to spatial development. The presented implementation status of infrastructure projects in individual periods complies with the data of the Ministry of Economy and the Ministry of Infrastructure.

The level of coordination between NSDC 2030, the strategies and other documents was improved. It should, however, be noted that the role of the national spatial development concept is not – and cannot be – to replace socio-economic strategies and policies. NSDC 2030 is a document coordinating intentions of the national and regional strategies, plans and programmes of socio-economic development as far as they influence the trends of spatial development and contribute to the transformation of the territory. NSDC 2030 may initiate the preparation of directional and coordinating documents as well as produce changes in the approach or wording of sectoral strategies, programmes and plans which is referred to in the chapter devoted to functional areas in the Action Plan of NSDC 2030 – a document to be prepared separately. For the above reasons, expectations of some of the participants of the public dialogue – regarding the inclusion of specific indication of locations in NSDC 2030 – could not be satisfied.

Alternative solutions regarding dispersed generation of energy

As regards the energy infrastructure of the state, the role of NSDC 2030 is to create conditions for ensuring energy security and not to establish any energy policy. The task of the spatial policy is, in this case, to ensure the possibility of diversification of sources, indicate directions and corridors for the development of distribution and transmission networks and potential location of new generation plants. Complete adoption of recommendations is not possible due to, among others, the need to transform entirely the role of systemic energy industry to make it supplementary in relation to dispersed generation of energy, mainly with the use of renewable energy sources. It would prevent the state from fulfilling its duty – or it would make it exceedingly difficult – to ensure energy security within 20 years covered by the Concept. NSDC 2030 confined itself to indicating the space that is necessary for the development of transmission networks and grids that collect electricity generated in a variety of sources – including dispersed – and to establishing the rules for delimitation of the space necessary for utilisation of the potential of regional and local renewable energy sources as well as for

diversification of energy sources. It also provided for guaranteeing the possibility of future extraction of strategic mineral deposits.

Sustainable mobility

The issue of rationalising the routes of roads, their class and proportionality of applied solutions is the subject of strategic planning supported with analyses of environmental impact and economic efficiency related to the scale of a project, the entire course of a road and the desired level of connectivity. (NSDC 2030 introduces a caesura of temporal accessibility to development centres and administrative centres of various classes with no guarantee of an equal level of access to various means of transport, regardless of the place of residence). It is worth noticing that uncontrolled urbanisation processes, road traffic safety considerations and the reasonable interest of local communities threatened with a decreased quality of life frequently do not allow to construct roads and railways along established routes or even improve the class of already existing roads. The resolutions to problems should also be sought beyond the mere utilisation of eco-physiographic information in the process of project preparation: in the logistics of freight transport, in the increasing of the level of public participation in the procedures preceding project implementation and in the development of methodologies of environmental impact assessment and public consultations. Part of the reasons for generating excessive traffic flows is beyond the scope of NSDC 2030 and is unrelated to long-term effects of the regional and national spatial policy. The energy efficiency of spatial structures[188] postulated in the Forecast is considered by NSDC 2030 also in relation to the performance of structures responsible for territorial cohesion, effective management of the territory of the state and the continent as well as the efficacy and attractiveness of rail freight – the fundamental condition for increasing the use of this means of transport. For these reasons, it is indisputably justified to modernise conventional railways, construct high-speed railways in the future and extend surfaced roads as indicated in NDSC 2030 despite the accompanying serious negative impacts on the environment. On the other hand, those impacts should be subject to assessment in the process of designing and selecting locations for projects – which was provided for in relevant sections of the text – so that the least conflict-prone locations were chosen and the design enabled compensation for the assets lost. Selected parts of NSDC 2030 indicate the need for the development of – especially in metropolitan areas – multi-modal transport systems, traffic management systems and integrated spatial planning of urban functional areas.

Also, the limited possibilities of developing water transport were pointed out. Despite the undeniable advantages of this kind of transport, its intensive development is not planned. The reason for it is the conflict between the values and functions, between the conservation of unique – across the continent – nature values of potentially navigable rivers and the necessity to regulate the flows of waters in order to create all-year-round favourable conditions for navigation on the entire length of major Polish rivers which is not economically justified in the present situation. Moreover, in order to utilise inland waterways efficiently for cargo transport, it would be necessary to connect them to European waterway systems which would involve the construction of new canals, including the Danube – Oder – Elbe canal. Until 2030, this direction of development is not taken into consideration. The volume of expenditures required to improve the navigability of the main inland waterways in Poland does not suggest that the

[188] The Forecast raises the problem of energy efficiency of spatial structures and formulates recommendations in relation to "areas where correlation between places of residence, work, rest or provision of other services will lead to an efficient use of energy".

development of this means of transport is realistic either. Waterways with low-class navigability shall constitute one of the means of transport in agglomerations and intended for tourist purposes and, therefore, the navigability of major rivers will be maintained in the scope that is significant to the local and regional economy. In addition, the navigability of inland canals constituting unique monuments of technology on the global scale (e.g. Augustów Canal, Elbląg Canal) shall be maintained or restored.

Counteracting urban sprawl

A rule of spatial policy was formulated to support trends that limit the depletion of available space ("space recycling"). That rule has a general application which is much broader than the counteracting of urban sprawl which is partly due to the consideration of the heritage of natural and cultural resources that make an important contribution in the space. NSDC promotes structures that help preserve the integrity of the nature's own space. That recommendation was accepted and expanded in Objective 6 to include legal and economic issues on which the effectiveness of spatial planning rules is conditional.

2.4. Assessment of the impact on Natura 2000 sites: NSDC 2030 – Natura 2000 relations

NSDC 2030 defined the role of spatial policy as one of the instruments that maintain and develop particularly those functions of space whose relation to the conservation of nature capital is undeniable and which are not supported with other desirable measures resulting from such documents as, for instance, the current national environmental policy due to a weak legal framework. Requirements and recommendations of NSDC 2030 are supplemented with more detail in sectoral or local-government strategies, plans and programmes that exist at present or are intended for the future with a view to implementing the requirements of the Concept. NSDC 2030 coordinates changes in the use of space, initiates processes of strategic planning and location of projects that may have a potentially strong impact on the cohesion and integrity of the sites of the European ecological network Natura 2000. Therefore, NSDC 2030 and the Forecast prepared for NSDC 2030 also serve as a warning and a source of information, focusing primarily on those fragments of planned transport corridors and development areas where detailed analyses should be conducted prior to deciding about the possibility to implement projects, including assessment of the impact on the species and habitats protected by the Natura 2000 network, strategic impact assessment and proceedings for issuing a decision on environmental conditions of a project. It advocates a manner of spatial planning that is based on the examination of functions fulfilled by ecosystems present in a specific geographical area, determination of the primary functions of the space covered by plans of socio-economic development and on seeking solutions that are least burdensome to the environment. It also points to the rules and mechanisms that allow for selecting development paths that help limit stress to the environment and promote development of functions that maintain the values protected by Natura 2000 sites. As the analyses performed indicate, the adopted approach does not lose its currency even when the stress related to excessively developed national roads network is lowered.

The Forecast prepared for NSDC 2030 does not release the related documents from the statutory obligation to conduct a systemic process of environmental impact assessments, define and take into account appropriate measures limiting the burden to the environment, apply extensive compensation, promote the accomplishment of protection objectives of the Natura 2000 network and to preserve landscape qualities. The measures listed in the descriptions of objectives in NSDC 2030 have a priority status owing to their contribution to a long term public interest, prevention against flood hazard or support to the processes of mitigation and adaptation to the anticipated climate changes. However, they cannot be associated with a specific geographical location: connection between two points in space

demonstrated in a map constitutes a corridor within which an available location should be found that complies with the obligatory requirements in NSDC 2030 and conforms to the recommendations for vsdp.

Cross-border assessment

In the process of strategic environmental assessment, the team preparing the Forecast did not indicate measures resulting directly from the Concept that are not grounded in the sectoral strategies or programmes subject to mandatory environmental impact assessment or in international development programmes for transport corridors which implement international conventions and agreements. It specified areas where potential cross-border influences may occur:

- development of large objects of the systemic energy industry, especially nuclear power plants,
- extension of connections between border cities,
- construction of marine infrastructure,
- interference with water and waterside ecosystems situated on both sides of the border,
- establishment of cross-border protected areas.

Actions in this sphere require further studies and possible cross-border proceedings in order to elaborate plans and programmes that result from NSDC 2030.

It was pointed out that the intended facilitation to the location of projects in borderlands require detailed planning supervision and introduction of restrictions in high nature value areas. In this respect, a positive role of strengthened bilateral cooperation, harmonisation of spatial planning or shared management in cross-border river sub-basins was emphasized.

Absence of measures that depend solely on the provisions of NSDC 2030 attests to the absence of grounds for subjecting this document to a cross-border assessment pursuant to the national or international laws, the more so that the Directive 2001/42/EC (art. 4) stipulates that duplication of the assessment should be avoided. Therefore, the obligation of cross-border assessment should be imposed on documents constituting a significant framework for the implementation of investment projects, i.e. operational plans and programmes, spatial development plans and studies of cross border areas.

ANNEX 3. List of expert reports prepared for the purposes of NSDC 2030

The expert reports that were used in the preparation of the National Spatial Development Concept (NSDC) were published by MRD in 2008 in 4 volumes under a joint title: *Ekspertyzy do Koncepcji Przestrzennego Zagospodarowania Kraju 2008-2033* [*Expert Opinions for the National Spatial Management Concept 2008-2033*]. Two other expert reports were ordered at a later date and will be published in a separate volue in the future.

Jerzy Bański Ph.D., *Przemiany funkcjonalno-przestrzenne terenów wiejskich – diagnoza, rekomendacje dla KPZK* [*Functional and spatial transformation of rural areas – diagnosis and recommendations for NSDC*]

Prof. Jan Burnewicz Ph.D., *Wizja struktury transportu oraz rozwoju sieci transportowych do roku 2033 ze szczególnym uwzględnieniem docelowej struktury modalnej transportu* [*Vision of the transport structure and development of transport networks until 2033 with special regard to the target modal transport structure*]

Prof. Stanisław Ciok Ph.D., *Uwarunkowania rozwoju przestrzennego Polski wynikające z położenia w sąsiedztwie z Republiką Federalną Niemiec – rekomendacje dla KPZK* [*Conditions for spatial development of Poland resulting from its border with the Federal Republic of Germany – recommendations for NSDC*]

Prof. Andrzej Ciołkosz Ph.D., Sławomir Anusz Ph.D. Eng., Elżbieta Bielecka Ph.D., Elżbieta Kozubek Ph.D., *Monitoring zagospodarowania przestrzennego – rekomendacje dla KPZK* [*Monitoring of spatial development – recommendations for NSDC*]

Prof. Marek Degórski Ph.D., *Przyrodnicze aspekty zagospodarowania przestrzennego kraju – przesłanki i rekomendacje dla KPZK* [*Environmental aspects of the national spatial development – premises and recommendations for NSDC*]

Prof. Bolesław Domański Ph.D., *Mechanizmy terytorialnego różnicowania inwestycji kapitałowych* [*Mechanisms for territorial differentiation of equity investments*]

Prof. Marek Dutkowski Ph.D., *Zmiany funkcji i tendencji rozwojowych miast Polski Północno-Zachodniej ze szczególnym uwzględnieniem roli Szczecina – rekomendacje dla KPZK* [*Changes in functions and development trends of the cities in North-Western Poland with special regard to the role of Szczecin – recommendations for NSDC*]

Jan Friedberg, Ph.D., *Wizja struktury transportu oraz rozwoju sieci transportowych do roku 2033 ze szczególnym uwzględnieniem prognozowanych natężeń ruchu* [*Vision of the transport structure and development of transport networks until 2033 with special regard to anticipated traffic intensity*]

Janusz Gałęziak M.Sc., *Pomoc społeczna i wyrównywanie szans osób niepełnosprawnych. Diagnoza obecnego stanu i perspektywy oraz kierunki zmian w kontekście skutków dla przestrzeni Polski w perspektywie lat 2015 i 2033* [*Social assistance and equal opportunities for the disabled. Diagnosis of the current situation, prospects and directions of changes in the context of consequences for the Polish space until 2015 and 2033*]

Prof. Krzysztof Gasidło Ph.D., *Obszary metropolitalne i wielkie miasta a problem rozwoju i wykorzystania odnawialnych źródeł energii (OZE) –rekomendacje dla KPZK* [*Metropolitan areas and large cities and the problem of development and utilisation of renewable energy sources (RES) – recommendations for NSDC*]

Prof. Krystyna Gawlikowska-Hueckel Ph.D., *Uwarunkowania rozwoju przestrzennego Polski wynikające z położenia w Regionie Bałtyckim – rekomendacje dla KPZK* [*Conditions for spatial development of Poland resulting from its location in the Baltic Sea region – recommendations for NSDC*]

Prof. Krystian Heffner Ph.D., *Funkcjonowanie miast małych w systemie osadniczym Polski w perspektywie 2033 – rekomendacje dla KPZK* [*Small cities in the Polish settlement system until 2033 – recommendations for NSDC*]

Prof. Michał Jasiulewicz Ph.D. Eng., *Sieć osadnicza małych i średnich miast i osad wiejskich a problemy rozwoju i wykorzystania odnawialnych źródeł energii (OZE), ze szczególnym uwzględnieniem produkcji biomasy – rekomendacje dla KPZK* [*The settlement network of small cities, medium-size cities and villages and the problem of development and utilisation of renewable energy sources (RES) with special regard to biomass production – recommendations for NSDC*]

Marek Kupiszewski Ph.D., *Zmiany i problemy demograficzne a rozwój przestrzenny Polski* [*Demographic changes and problems and the spatial development of Poland*]

Prof. Tomasz Komornicki Ph.D., Przemysław Śleszyński Ph.D., Piotr Siłka M.Sc., Marcin Stępniak M.Sc., *Wariantowa analiza dostępności w transporcie lądowym – rekomendacje dla KPZK* [*Variant analysis of land transport connectivity – recommendations for NSDC*]

Elżbieta Kozubek Ph.D., Prof. Piotr Werner Ph.D., *Infrastruktura społeczna o znaczeniu międzynarodowym i krajowym – stan i prognoza do 2033 roku* [*Social infrastructure on international and national significance – status and forecast until 2033*]

Prof. Elżbieta Kryńska Ph.D., *Rynki pracy a zagospodarowanie przestrzenne kraju w perspektywie 2030* [*Labour markets and national spatial development until 2030*]

Waldemar Kuryłowicz M.Sc., *Wizja struktury transportu oraz rozwoju sieci transportowych do roku 2033 ze szczególnym uwzględnieniem obecnych planów inwestycyjnych GDDKiA* [*Vision of the transport structure and development of transport networks until 2033 with special regard to the currently planned projects of the General Directorate of National Roads and Motorways (GDDKiA)*]

Zbigniew Lach Ph.D. Eng., Andrzej Łaszczuk Ph.D., Julian Skrzyp Ph.D., National Defense University, *Odporność układu polskiej przestrzeni na zakłócenie zewnętrzne – przestrzenne i terytorialne uwarunkowania obronności i bezpieczeństwa państwa* [*Resistance of the Polish space to external interferences – spatial and territorial conditions of the national defense and security*]

Zbigniew Lach Ph.D. Eng., Andrzej Łaszczuk Ph.D., Julian Skrzyp Ph.D., National Defense University, *Problemy obronności i bezpieczeństwa państwa oraz wynikające z tego konflikty i ograniczenia rozwoju przestrzennego – rekomendacje dla KPZK* [*Issues of national defence and security as well as resulting conflicts and restrictions to spatial development – recommendations to NSDC*]

Prof. Andrzej Lisowski Ph.D., Mirosław Grochowski Ph.D., *Procesy suburbanizacji, ich uwarunkowania, formy i konsekwencje – rekomendacje dla KPZK* [*Suburbanisation processes, their conditions, forms and consequences – recommendations for NSDC*]

Prof. Jacek Malko Ph.D. Eng., Zygmunt Parczewski, Ph.D. Eng., *Przestrzenne uwarunkowania i potrzeby terytorialne związane z rozwojem systemów technicznej infrastruktury energetycznej* [*Spatial conditions and territorial needs related to the development of the technical infrastructure systems of the power industry*]

Izabela Mironowicz Ph.D., Magdalena Mlek Ph.D. Eng., Magdalena Belof Ph.D., Prof. Tadeusz Zipser Ph.D., Tomasz Polański, *Uwarunkowania rozwoju przestrzennego Polski wynikające z położenia w sąsiedztwie z Republiką Czeską – rekomendacje dla KPZK* [*Conditions for spatial development of Poland resulting from its border with the Czech Republic – recommendations for NSDC*]

Andrzej Miszczuk Ph.D., Bogdan Kawałko M.Sc., *Uwarunkowania rozwoju przestrzennego Polski wynikające z położenia w sąsiedztwie z Ukrainą – rekomendacje dla KPZK* [*Conditions for spatial development of Poland resulting from its border with Ukraine – recommendations for NSDC*]

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