

TPM

Territorial Performance Monitoring

Annexes

Qualitative Analysis
North Rhine-Westphalia

Targeted Analysis 2013/02/13

Interim Report | Version 31/August/2011



This report presents the interim results of a Targeted Analysis conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

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BauGB	–	Federal Building Code
BBSR	–	Federal Institute for Research on Building, Urban Affairs and Spatial Development
BMVBS	–	Ministry for Transport, Building and urban development
B-Plan	–	binding land-use plan
BRD	–	Federal Republic of Germany
DESTATIS	–	Federal Statistical Office of Germany
EUROSTAT	–	Statistics Office of the European Union
EFDF	–	European Regional Development Fund
ESDP	–	European Spatial Development Perspective
EU	–	European Union
FNP	–	preparatory land-use plan
GDP	–	gross domestic product
LANUV	–	State Agency for Nature, the Environment and Consumer Protection
LEP	–	state development plan
LEPro	–	state development program
MAIS	–	Ministry of Labour, Integration and Social Affairs
MKRO	–	Conference of Ministers for Spatial Planning
MWME	–	Ministry of Economic Affairs, Medium-sized Industry and Energy of the Federal State of North Rhine-Westphalia
NRW	–	North Rhine-Westphalia
NUTS	–	Nomenclature des unités territoriales statistiques
PPP	–	Public-Private-Partnership
RAA	–	Regional Office for the Support of Children and Young People from Immigrant Families
ROG	–	Federal Spatial Planning Act
UVP	–	environmental impact assessment
UVPG	–	Environmental Impact Assessment Act
ZIM	–	Future Initiative for the Coal and Steel Regions
ZIN	–	Future Initiative for the Regions of North Rhine-Westphalia

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1. The German Planning System

Similar to the political and administrative federal system in Germany, which is based on a division of competence and power on different levels, spatial planning is organized hierarchically too. Each of the sixteen federal states has its own constitution, an elected parliament and its own state government. The states have the right and the power to decide on almost all issues concerning their own territory (cf. Scholl, Elgendy & Nollert 2007: 17). In the following the general principles of the spatial planning in Germany are briefly outlined before the different administrative levels and their competences will be explained.

1.1 General principles

The main function of spatial planning in Germany is the development, structuring and securing of its complete geographical outlines and its sub-regions through "comprehensive, supra-local and superordinate spatial structure plans, through spatial planning cooperation and arrangement of spatially significant planning and measurements (§1 I ROG). The leading principle of spatial planning in Germany is the **principle of sustainable spatial development** which was embedded in the course of the amendment of the Federal Spatial Planning Act (ROG) in the year 1998 (cf. Langhagen-Rohrbach 2010: 30). This leading guideline should be achieved by weighing economic, social and ecological issues and requirements of special entities and by bringing them in line. Sustainable spatial development shall consequently cause homogeneous living conditions in the different sub-regions (§ 1 II ROG).

The federal system in Germany is based on the **subsidiary concept**. It states that every decision should be made on the lowest possible political level (cf. Scholl, Elgendy & Nollert 2007: 17). Similar to this concept is the local planning autonomy which is embedded in section 28 of the constitution (GG) and states the right of municipal self-government. The municipalities must be guaranteed the right to regulate all local affairs on their own responsibility and competence (cf. Langhagen-Rohrbach 2010: 32). Nevertheless they are bound to the goals and principles of higher administrative levels of spatial planning and are obligated to arrange their plans with their neighbor municipalities (cf. Scholl, Elgendy & Nollert 2007: 18). The dependency to decisions on higher administrative planning levels refers to another important principle in the German spatial planning system, the **mutual feedback principle** (§ 1 III ROG). It states that within the development and structuring of the sub-regions requirements of higher levels have to be taken into account. At the same time the interests of the sub-regions have to be considered by the higher planning authorities (cf. Scholl, Elgendy & Nollert 2007: 20; Langhagen-Rohrbach 2010: 30). Following this principle, the federal spatial planning, by means of the ROG, represents a framework for spatial planning legislations for the federal states. These legislations will be concretized by the lower planning levels. At the same

time the municipalities can formulate their requirements that the higher planning levels should adequately consider.

Due to the function of spatial planning as comprehensive and superordinate planning as well as structuring of special entities, spatial planning is responsible for the consolidation and coordination of the sectoral planning as well as for the conflation of different space requirements (Durner, Greiving & Reitzig 2011: 383; Langhagen-Rohrbach 2010: 41). This coordination role comprises the realization of the welfare state (article 20 GG), which commits the state to counteract unequal spatial developments, as well as the coordination of sectoral space-oriented planning (cf. Goppel 1999: 103). This cross-sectional task of the spatial planning in Germany is experiencing tension between the **department principle** on the one hand and the **principle of collective responsibility** on the other. The department principle which is embedded in article 65 2 GG, states that every minister is responsible for his own business area and has consequently the right to make decisions for his department, the lower administrative bodies as well as sectoral planning on his own. Because of the partly intensive emphasis of the department principle an overweight of sectoral planning towards the spatial planning has risen (cf. Durner, Greiving & Reitzig 2011: 383). The principle of collective responsibilities on the other hand states that important cross-sectoral plans have to be decided collectively so that through this the department principle is partly suppressed.

1.2 Federal spatial planning

The highest and most abstract type of spatial planning in Germany is the planning on the federal level. The federal spatial planning possesses framework legislations and is according to the ROG concerned with preparing the spatial guidelines for the whole federation (cf. Scholl, Elgendy & Nollert 2007: 22). The spatial planning authorities on the federal level are limited to formulating requirements, goals and principles for spatial order. One exception is § 17 ROG. It regulates the responsibilities in the coast area. The states have the planning authority for the German territorial waters, whereas in the exclusive economic zone only the federal level is responsible for spatial planning (cf. Fürst 2010: 49).¹ But most of the direct planning authorities are located on the lower administrative levels.

Beside the Ministry for Transport, Building and urban development (BMVBS) also the Conference of Ministers for Spatial Planning (MKRO) deals with spatial planning. According to § 26 I ROG basic questions of spatial planning as well as

¹ | According to the United Nations Convention on the Law of the Sea (1982) the influence of the Member States in the world's oceans is divided into: (1) the Internal waters (between middle tide high water and middle tide low water), (2) the German territorial waters (until 12 nautical miles) and (3) the exclusive economic zone, which can extend to 200 nautical miles (cf. Fürst 2010: 49).

doubts have to be decided by the federal and the states level together. Therefore the MKRO consists of the federal minister for spatial planning and the states ministers responsible for spatial planning. They jointly develop guiding principles for the development of the entire area. With the adoption of the decisions made by the MKRO the members commit themselves to promote their implementation but these decisions have no binding effect (cf. Langhagen-Rohrbach 2010: 33).

1.3 State spatial planning

The coordination function also exists on the level of state and regional spatial planning. The commitment of spatial planning to treat all spatial claims equally can vary because of its institutional assignment. The assignment of spatial planning to different ministries has spread out after 1989 with association to the state chancellery, the Interior Ministry and the Ministry of the Environment. Meanwhile an association to the Economy Ministry (Bavarian), the Labour Ministry (Mecklenburg-Western Pomerania) or to the Ministry of Agriculture (Lower Saxony) can be seen (cf. Durner, Greiving & Reitzig 2011: 383).

The main task of the state spatial planning is the development of strategies for the spatial development of the federal state. The states are obliged to implement a comprehensive and superordinate plan, the spatial structure plan. Together with the state spatial planning act the states use this plan to concretize the framework of the federal spatial planning. Since the federal states differ in size, problems and traditions of administrations, it does not surprise that they also have different terms for the spatial structure plan. Term variations are for example "state development" and "state spatial planning" as well as "program" or "plan" which are respectively used synonymously (vgl. Heinrichs 1999: 219f). In North Rhine Westfalia (NRW) a 'state development plan' (LEP) and a 'state development program' (LEPro) coexist, which will be combined and adopted as a law in the new LEP2025 (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 23). The state development plan should illustrate the federal principles and goals as well as to set up detailed guidelines for the lower levels (vgl. Scholl, Elgendy & Nollert 2007: 24). The spatial structure plan has a long-term nature and covers normally a time period of ten to fifteen years. Therefore it isn't oriented towards normal political time schedules (cf. Langhagen-Rohrbach 2010: 41).

1.4 Regional spatial planning

The regional spatial planning is responsible for the cross-sectoral and supra-local planning on the regional level. According to the mutual feedback principle regional spatial planning concretizes the guidelines of the state and completes in that way the framework for the autonomous municipalities (cf. Scholl, Elgendy &

Nollert 2007: 20). It is also concerned with fulfilling the needs and requirements of the different municipalities in the region. Together with the state spatial planning its task is to assess whether the individual spatial activities are fulfilling the goals and criteria of spatial development (cf. Scholl, Elgendy & Nollert 2007: 26). Just as the state level the regional spatial planning is also obliged to set up a comprehensive and superordinate plan, the regional spatial structure plan. Similar to the time horizon of the LEP the regional spatial structure plan has a long-term nature, too.

In their political and institutional shaping the regional spatial structure plans differ from each other since they are regulated by the different state spatial planning acts. Whereas the three city states (Berlin, Bremen, Hamburg) have waived this planning level completely, the competences vary in the non-city states between counties, district administrations and the planning associations (cf. Scholl, Elgendy & Nollert 2007: 26; Langhagen-Rohrbach 2010: 44).

1.5 Municipal spatial planning

The municipal level has a large part of spatial planning competences as well as a great scope within their planning (cf. Scholl, Elgendy & Nollert 2007: 18). Therefore the concrete implementation of spatial planning concentrates on this administrative level. Despite their right of municipal self-government, in line with the mutual feedback principle the municipalities are obliged to consider and to be geared to supra-local planning (cf. Langhagen-Rohrbach 2010: 69). Thereby their main task is to prepare and control the use of land for development and other purposes on the municipal territory. Defined by the Federal Building Code (BauGB) each municipality is responsible for preparing land-use plans. The urban land-use planning on the municipal level is based on a two-tier system: the preparatory land-use plan (FNP) and the legally-binding land-use plan (B-Plan). The former defines the type of land use for the whole area of the municipality. This plan is only binding for public authorities. The B-Plan defines the detailed category of use and degree of building coverage for individual land parcels or parts of the municipality. In contrast to the state and regional spatial structure plan as well as the FNP, the B-Plan is also binding for the public (cf. Scholl, Elgendy & Nollert 2007: 28; Langhagen-Rohrbach 2010: 69ff). What is common to all of them is the according to § 10 I ROG obliged participation of the public during the installation process (cf. Langhagen-Rohrbach 2010: 43).

2. Awareness of global challenges

The Federal State of North Rhine-Westphalia (NRW) is situated in Northwest Germany and is the most highly and most densely populated state in the Federal Republic of Germany (BRD). According to the European Union's *Nomenclature des unités territoriales statistiques* (NUTS), NRW is assigned to the NUTS1 level and comprises a total of five administrative districts or NUTS2 regions (Arnsberg, Detmold, Düsseldorf, Cologne und Münster), 54 NUTS3 areas and 396 local authority areas (LAU2) (cf. Federal and Regional Statistics Offices 2010).

2.1 Demographic change

2.1.1 Spatial impact of demographic change in North Rhine-Westphalia

In North Rhine Westphalia, the total population figure is expected to fall from almost 18 million to 17.5 million people by the year 2025 (cf. Cicholas & Ströker 2009: 3f). By 2050, the number of inhabitants will decrease further to 15.9 million people, which means that population decline of 11.5% is to be assumed between 2008 and 2050 (MGFFI 2009: 8). At the regional level, there is evidence of distinct differences in this context in the model calculation results for the administrative districts and the cities not attached to an administrative district. Although the projection for the entire federal state assumes a continuous decline in the population, population growth is predicted for a total of six independent cities and six administrative districts. The strongest relative growth rates up to 2025 are quoted in this regard for the independent cities along the Rhine, i.e. Bonn (+9.7%), Düsseldorf (+9.4%) and Cologne (+9.3%) (cf. MGFFI 2009: 8), with the east and southeast sub-regions of NRW as well as the areas in the eastern Ruhr area affected by shrinkage processes (EI14: 1f) [e.g. Hagen (-12.1%), Remscheid (-12.0%), Höxter district (-11.6%) and the Märkischer Kreis district (-11.4%) (cf. MGFFI 2009: 8)].

The population structure and age pyramid are also changing in NRW on account of the falling birth rate, rising life expectancy, as well as the growing proportion of people with a history of immigration. While the population structure and age pyramid were characterised in the past by a high proportion of young people and a distinctly lower level of older people, this ratio has shifted considerably over the last few decades. The proportion of people over 60 years of age increased from 20.8% to 25% between 1990 and 2008, with a figure of 32.4% expected in 2025 and as high as 38.4% for 2050 (cf. MGFFI 2009:11). The proportion of younger population groups will therefore decrease accordingly. While the percentage of those under 20 years old declined from 20.8% to 20.4% between 1990 and 2008, this figure will fall to 17.1% by 2025 and to 15.5% by 2050. The proportion of those between 20 and 40 years of age is expected to be 21% in 2050 (1990: 31.5%), with the 40 – 60 age group amounting to 25.1% (1990: 26.8%) (cf. MGFFI 2009: 11).

This development is also evident in the change of the number of the labour force, which is likely to fall. Considerable regional differences are also to be expected in this regard, with growth to be anticipated only in Düsseldorf, Cologne and Bonn². However, in addition to the number of persons gainfully employed in NRW, the changes will also affect the age structure of this group, with the 40 – 45 year-old age group, which accounted for the largest proportion of the labour force with 16.3% in 2008, relinquishing this status to the 50 – 55 year-old age group in 2050 (cf. Cicholas & Ströker 2009: 12).

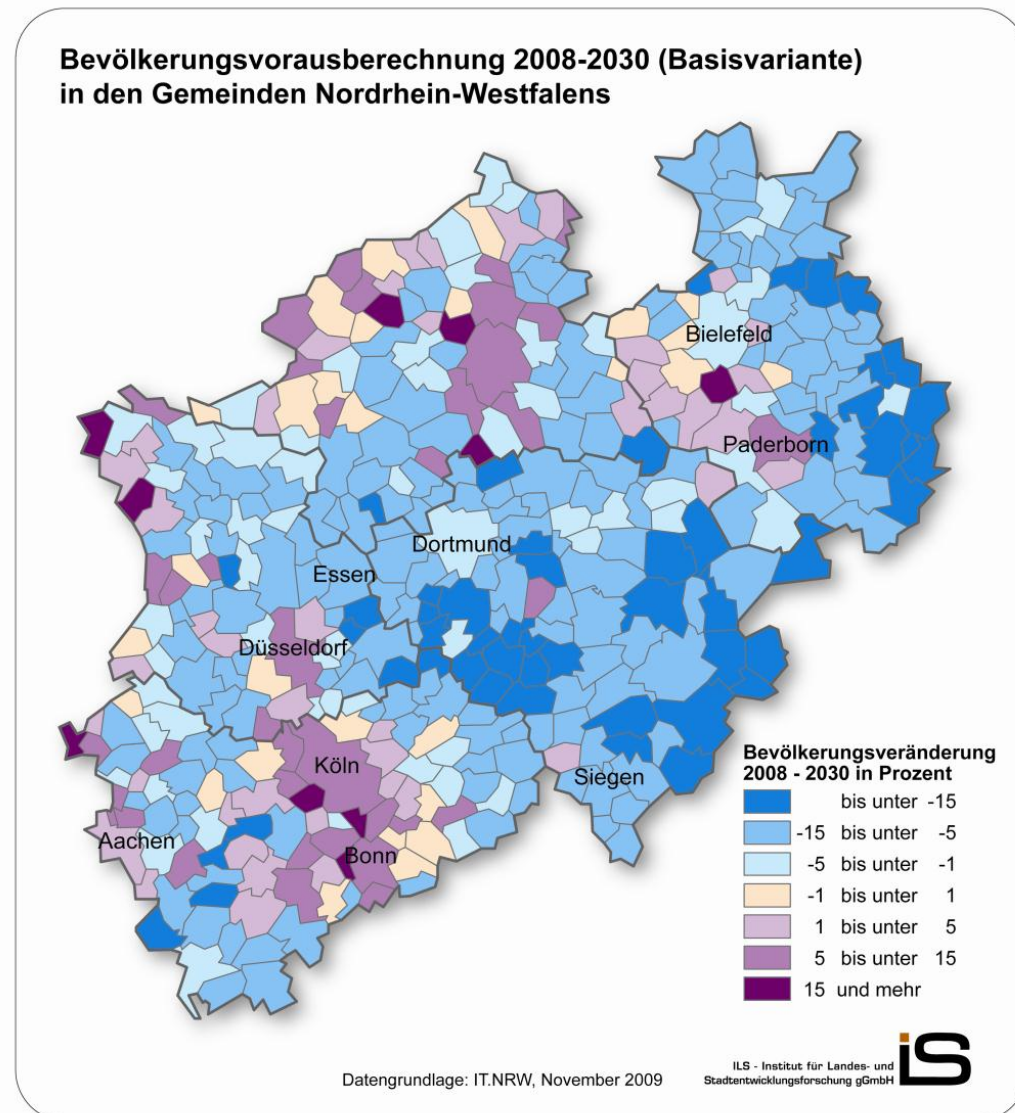


Figure 1: Population projection 2008-2030 (basic version) for the municipalities in NRW

The changes within the population structure of NRW have an influence on the number of households in NRW: these will increase and their structure will alter. These developments also appear to differ very much regionally. A growth in household numbers can only be expected in Düsseldorf, Cologne, Bonn, Aachen,

² | Depending on the projection variation, this is also true for Aachen, Leverkusen, Münster, Rhine-Erft District, as well as the districts of Borken, Gütersloh and Paderborn (cf. Cicholas & Ströker 2009: 12).

Münster and Leverkusen, with this applying to a total of 15 administrative districts in NRW. The largest growth rates are quoted for the administrative districts Borken, Kleve and Rhine-Erft (cf. Cicholas & Ströker 2009: 8). An increase in households with three or more persons can only be recognised for the three cities not attached to an administrative district Cologne, Düsseldorf and Bonn, whereas the majority of administrative districts and independent cities in NRW is particularly affected by a rise in the number of one and two-person households (cf. Cicholas & Ströker 2009: 8).

The noticeable increase in one and two-person households in some places is leading to an upturn in the number of households in some locations despite the decline in the number of inhabitants and, thus, also to an increase of settlement area (cf. Mielke & Münter 2010: 58). Around 15 hectares of natural areas per day are being turned into settlement and transport areas (MUNLV 2009a: 214). While there is evidence of a distinct decrease in agricultural areas, a considerable increase can be found in building and open spaces. Forest, recreation, transport and water areas have also increased over the years.

At this juncture, a challenge specific to NRW becomes apparent. Meant by this in particular, in addition to the size of the region, is its very heterogeneous structure, which, as explained, is also expressed in the sphere of the demographic development of some sub-regions of NRW. Despite the negative overall tendency, a number of growth regions can also be recognised, for example, besides clearly shrinking regions and urban districts (cf. EI02: 3f). Shrinking and still growing municipalities can sometimes be found in the direct vicinity of each other, with this juxtaposition also observed within individual cities (cf. Danielzyk & Meyer 2010: 5). The demographic development and its spatial impact in NRW have to be examined in an extremely differentiated manner accordingly.

2.1.2 Manner of focusing on demographic change

Demographic development plays an important role in political discussions and official documents of the state spatial planning and state government. The decisive elements of demographic change in NRW, such as ageing, population shrinkage and their regional differences represent a central element in state spatial planning work and are also to be taken up in the new LEP (cf. EI02: 2). Although demographic change is addressed in a number of official documents, sometimes explicitly, sometimes implicit, the issue is only dealt with intensively in the specially designated documents in this regard (Demographic Change in NRW; Impact of Demographic Change in NRW). Also linked with the challenge of demographic change and globalisation in terms of content is the topic of area and open space protection, an issue that is also an important part of all the official state government and state spatial planning documents as well as political discussions and is taken up in a cross-sectoral way.

2.2 Globalisation

2.2.1 Spatial impact of globalisation in North Rhine-Westphalia

The impact of globalisation is made especially clear in North Rhine-Westphalia by the strongly export-oriented economy of the federal state of NRW. In addition to contributing over 20% towards the overall gross domestic product (GDP) in Germany, it is also number one in the export sector and is therefore distinctly characterised by international networking (cf. MWEBWV 2010: 26; NRWSPD & Bündnis 90/Die Grünen 2010: 23). As in all other regions inside and outside of Europe, NRW is also competing for international enterprises and well-trained personnel in the context of its international networking. Spatial consequences can also be deduced from this, e.g. the global competition for location of investment gives rise to the possible risk of jobs and know-how being lost (cf. EI02: 5). On the other hand, demographic changes, such as the change in the number and structure of the workforce, sometimes involve serious consequences with regard to securing skilled personell (cf. MWEBWV 2010: 35).

Correlations and interdependences also exist with other global challenges such as climate change and energy supply. This clearly restricts scope for action in the areas of policy and planning for dealing with the spatial impact of globalisation. Objectives and measures in the sphere of energy supply and climate change must accordingly be compatible with those for the overall economic development of the state *“to enable us to organise energy supply and measures against climate change in such a way that we also remain industrially competitive”* (EI02: 5). In addition to linking with the topics of climate change and energy supply in terms of content, the increasing economic interdependence in NRW is also examined from the transport policy perspective. On account of the importance of NRW as a transit region, the intensive external relations and the traffic levels in the conurbations, high demands are made on transport infrastructure and organisation.

2.2.2 Manner of focusing on globalisation

Globalisation is examined, in particular, from the economic perspective in NRW and mainly finds its way into official documents and political discussions via the issue of competitiveness. Individual areas of globalisation, such as greater international networking, the associated competitiveness required, rising traffic volumes etc., play a significant part in virtually all the documents examined and in political discussions. Differences in the perception of the challenge of globalisation can, however, be discerned at the various administrative levels.

“But when I look at the renowned regional development concepts that they³ had to elaborate, I find that the term “globalisation” meant nothing to most of them.

³ | This goes back to the beginnings of regionalised structural policy, which has quite a long tradition in NRW. This was also supposed to involve non-state players, such as chambers of commerce, associations and trade

They were stewing in their own juice and did not see this threat from outside at all at the time. This is changing slowly. Most of them have developed more of an international perspective now and know what is going on in other countries and how this can impact on their region in normal terms" (EI08: 2).

This does not mean, however, that the two administrative levels, federal state and district administration, carry out discussions separately from each other. The Ministry of Economic Affairs, for example, has made increasing endeavours to convince the regions to focus more on the issue of globalisation.

"Our success in the regions varies in this regard. I would say that some regions have grasped this very quickly, while other regions are perhaps still lagging behind even today. [...] This does not, in my estimation, have so much to do with the organisation and structure but, rather, primarily with the people and the heads there. That's why I have mentioned it; it is typically those regions where the higher education institutions are located" (EI08: 4).

Conclusions have not yet been drawn in the older documentation with regard to the effects of increasing international networking on the competitive situations between cities and municipalities. This is only taken up as a topic in explicit terms in the new documents. This is where the term 'soft location factors' and the reference to investment location competition between cities and regions for enterprises and well-trained personnel are first mentioned. The issue of the environmental technology market is taken up, in particular, in publications by the Ministry of Economic Affairs, Medium-sized Industry and Energy of the Federal State of North Rhine-Westphalia (MWME) from 2010 in the context of globalisation. There is also, in terms of content, close interaction with the challenge of climate change in this area. This topic is also being looked at by the current government in NRW and has been incorporated into official documents of various departments and planning authorities under the heading of 'environmental economic strategy' (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 37f).

2.3 Climate change

2.3.1 Spatial impact of climate change on North Rhine-Westphalia

With emissions totalling 317 million tons of CO₂ equivalents (2005), corresponding to approximately one third of the entire emissions for Germany (cf. MUNLV 2009a: 110), North Rhine-Westphalia is also involved in causing climate change. Spatial effects are already noticeable, including the change in temperature extremes. This will manifest itself in rising temperatures, a longer-term decline in the number of days of ice and frost, an increase in the number of

unions, in structural policy measures and thus generate new forms of cooperation (cf. Voelzkow 1994: 347). This approach was realised for the first time in 1987 under the title 'Future Initiative for the Coal and Steel Regions' (ZIM) and was extended to the entire area of NRW under the name 'Future Initiative for the Regions of North Rhine-Westphalia' (ZIN) (cf. Danielzyk; Wood 2004: 198).

summery and hot days, more extreme weather events with precipitation, as well as the increased frequency of hurricanes (cf. MUNLV 2009a: 122f). However, the climatic changes in NRW display regional difference in some respects.



Figure 2: Natural spatial units of NRW

According to the climate projections presented in the Ministry of the Environment document entitled 'Adaptation to climate change – a strategy for North Rhine-Westphalia', a tendency toward somewhat more extensive warming of the Weser Hills, Westphalia Bay, as well as the Sauerland and Siegerland regions can be expected, while the warming phenomenon in the Lower Rhine area will not be as pronounced (cf. MUNLV 2009b: 40). Given that the East-West gradient of the temperature development is very slight, however, this is by no means a foregone conclusion. Nonetheless, it does confirm the trend already predicted for NRW by global models. The same applies to opinions given in relation to precipitation amounts in the future, which are even more uncertain. They predict a greater increase in precipitation for the Süder and Weser Hills than in the Lower Rhine, Westphalia Bay and Westphalia Lowland areas (cf. MUNLV 2009b: 41). Increased

frequency of hurricanes is to be expected in the winter months, especially in parts of the Süder and Weser Hills, the Lower Rhine and Westphalia Lowland.

Climate change does not only have different spatial repercussions; it also affects the most varied areas of life, nature and the economy in NRW. The climate changes can, for example, have an impact of biological diversity, the composition of biotic communities, as well as the biotopes of species (cf. MUNLV 2009a: 32). Less diversity of species is to be anticipated for NRW in the future. However, the impact of climate change will also be felt in the management of water resources, especially in relation to flood protection, sewage disposal and drinking water supplies (cf. MUNLV 2009a: 125). Climatic changes also impact on the forestry sector in NRW, as was made clear in 2007, for example, by Hurricane Kyrill, which resulted in extreme damage, with at least 15 million of solid cubic metre timber destroyed (cf. MUNLV 2009b: 64). Winter sports tourism is also particularly susceptible to climate change in NRW on account of the number of days of snowfall decreasing considerably over the next few decades (cf. MUNLV 2009a: 31).

2.3.2 Manner of focusing on climate change

Climate change plays an important role in the official state planning and state government documents as well as in policy discussions and is fast becoming a central component of the new LEP in addition to demographic change (cf. EI02: 2). The climatic changes and their spatial consequences for NRW, such as the impact on the urban climate as well as water, agricultural and forestry management, are discussed in detailed and explicit terms documents of the Ministry of Environment which are dealing explicitly with the issue of climate change, such as the 'NRW environmental report' and the report entitled 'Adaptation to climate change – a strategy for North Rhine-Westphalia'. However, the subject of climate change has also found its way into interdisciplinary state administration and state spatial planning documents. What all the documents have in common is, in particular, the dividing up of the content of the topic into two sections:

"On the one hand, it is a case of adapting to the consequences of climate change which we cannot influence in any way. On the other hand, there is the question of what an industrial region like North Rhine-Westphalia can do to help put a stop to climate change" (EI02: 4).

In addition to measures aimed at helping to protecting the climate and substantially reducing the region's greenhouse gas emission, the climate policy of North Rhine-Westphalia also involves coming up with strategies to adapt to the consequences of climate change that can no longer be averted for the individual regions of NRW and various sectors (cf. EI02: 4; MUNLV 2009a: 109). In this regard, the climate policy of North Rhine-Westphalia follows the international

discussion on synergies and interactions between the 'adaptation' and 'mitigation' strategies.

2.4 Energy supply

2.4.1 Energy supply in North Rhine-Westphalia

The highest emissions of the total amount to 317 million tons of CO₂ equivalents (cf. Section 2.3.1) result from the use of fossil fuels in the energy sector, especially in relation to public electricity and heat supply. Other sources of emissions include the production of energy in refinery plants, in production facilities for solid fuels such as coking plants and coalmines, industrial firing processes (iron and steel production), traffic, domestic households, small consumers as well as agriculture (agricultural soils and fermentation in the digestive system of farm animals) (cf. MUNLV 2009a: 110). Almost 90% of energy generation in NRW originates from fossil energy sources, which is one of the highest proportions in the whole of Germany (cf. MWEBWV 2010: 50). The remaining 10% comes from renewable energies, with wind and bio-energy together accounting for 88% of that figure, followed by photovoltaics and hydro-power (cf. MWEBWV 2010: 50).

The final report published by the German 'Ethics Committee on a safe and secure energy supply' at the end of May 2011 recommends the abandonment of nuclear energy by 2020, though without jeopardising the competitiveness of industry or the business location (cf. Ethics Committee – Safe and secure energy supply 2011: 4). Although the two NRW nuclear power stations in Würgassen and Hamm-Uentrop were shut down more than ten years ago, the imminent abandonment of nuclear energy in Germany does also influence the energy policy in North Rhine-Westphalia. It is, for example, also intended to push ahead with the expansion of renewable energies in NRW (cf. MWEBWV 2010: 51), which also has an impact on the support for coalmining, among other things. In 2012, the German Parliament will examine, in consideration of economic efficiency and securing energy supply, whether coalmining is to be further supported beyond 2018 (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 32). In addition, *"the gradual reduction of brown coal open-cast mining will have to be specified in binding terms in relation to the efficiency gains achieved"* (MWEBWV 2010:51). A current example of the spatial impact of the energy supply aimed at is the Datteln power station, which is criticised by environmental groups and citizens' action initiatives. On account of the development plan for the power station having been declared inoperative, its completion is still uncertain at present.

2.4.2 Manner of focusing on energy supply

Like demographic change and climate change, energy supply also plays an important part in political discussions and official documents at the level of state government and state spatial planning:

“In NRW, we have to organise energy supply in an industrial and energy region with a chemical industry and steel industry, etc. The CO₂ emissions of North Rhine-Westphalia are greater than those of Portugal, Greece and the Netherlands combined. That means it is a huge issue here” (EI02: 4).

While the older documents emphasise more the importance of domestic mineral resources for supplying energy raw materials, with only brief mention being made of renewable energies, the focus has clearly shifted towards the latter in the newer documents. Special emphasis is placed, for example, on the essential significance of technological developments in the area of energy production and efficiency for compatibility between economic growth and climate protection. The two challenges of energy supply and climate change are closely linked to each other in terms of content in the documents and discussions at the level of state spatial planning and state government. In the context of the environmental economic strategy (cf. Section 2.2.2), the supply of energy for NRW is also linked to the challenge of globalisation by virtue of it playing a major role within the international networking of North Rhine-Westphalia and the associated competition for business locations. Questions of (future) energy supply are therefore also focused on in documents of the Ministry of Economic Affairs (Economic report 2011; Economy in North Rhine-Westphalia 2010).

2.5 Use of forecasts

In the area of demographic development, particular use is made of population projections, which mostly cover a time frame up to the year 2050. Housing estate and traffic infrastructure scenarios are, however, also used with reference to the spatial impact of demographic changes. These are designed to evaluate the effects of land use and traffic infrastructure measures aimed at the spatial concentration of uses in the higher status centres at the expense of suburban and rural areas in the region under review.

Projections and forecasts are, in part, indispensable in order to be able to respond appropriately to future developments as well as the spatial effects of the four global challenges referred to at the beginning (cf. EI05: 17). Results of the population projections and studies on demographic change are incorporated into further planning in this way and change the associated measures accordingly. *“Of course I don’t go down that road if I find in relation to demographic change that the population is decreasing in certain places; I take a critical look at growth targets in the regional development plan”* (EI05: 17). This also applies to forecasts in the area of climate change. The results of the climate projections as

well as the predictions of the spatial impact of future climatic changes are, for example, taken into account and incorporated into the plans of the Ministry of the Environment and at the levels of state government and state spatial planning. The extensive use of climate predictions and projections also becomes particularly clear with the example of the second pillar of the North Rhine-Westphalia climate policy, i.e. adaptation to the consequences of climate change. In other topic areas, such as globalisation, it is, in the main, methodical problems that make the use of forecasts difficult: "*Who can really predict such complex processes?*" (EI08: 8). All in all, however, financial and temporal aspects also have to be taken into consideration within the context of the utilisation of predictions.

"The results are put on the table when they can no longer be used. This means, therefore, that we are living from hand to mouth in relation to a large part of our decisions, leaving out the really central and important issues. This is not specifically a problem of this regional government, it is a general phenomenon throughout Germany" (EI08: 8).

3. Resilience of the planning system

The possibility of becoming aware of the four global challenges and their spatial consequences and being able to respond to them in an appropriate manner depends to a great extent on the strategic capacity of the planning system. The question arises, for example, of how flexibly the planning system can also respond to short-term trends, how the objectives set are coordinated at and between the different administrative levels and to what extent civil society is given the opportunity to participate in the planning process. It is these very aspects that are discussed in greater detail in the following.

3.1 Strategic capacity of the planning system

3.1.1 Establishing objectives and guiding principles

The state spatial planning of North Rhine-Westphalia draws up requirements, principles and goals for the development of the state. Despite their normative significance, they do not, however, have any direct regulatory effect on account of their first *"still requiring more detailed spatial (target) specification, e.g. in regional planning"* (David 1999: 85). While the establishment of guiding principles in state spatial planning work, and therefore within the state development plan, plays a major part, this is not so much the norm in terms of departmental policy. The setting of targets in this regard also ensues solely within the framework of the joint tasks of the Federal Government and the individual federal states as well as under EU programmes (cf. EI04: 6). In turn, the coalition agreement between the two parties in power and the government policy statement by the Minister-President include numerous target agreements and declarations of intent for the present parliamentary term, the specific implementation of which in terms of planning is, however, also dependent on the guiding principles set out in the new state development plan. However, the four global challenges, as clearly shown by official documents and political discussions, have now already been extensively taken up and are being dealt with.

A general discussion of guiding principles, called for both at the federal state and regional level and, in particular, linked to discussions in the area of renewable energies, also appears to be necessary in the context of drawing up the new state development plan. Especially in the case of wind power, it concerns the question, among other things, of the extent to which the expansion of renewable energies, particularly in rural areas, leads to harmful interference and whether this is acceptable to the people there (cf. EI01: 16). A discussion of guiding principles could be meaningful in this case from the planning perspective in order to elaborate clear rules, in this context in the area of renewable energies (cf. EI06: 23).

3.1.2 Flexibility and inflexibility of the planning system

The extent to which the planning system is in a position to respond to and tackle the challenges is also related to the planning instruments that exist. The long time intervals up to the establishment of a new LEP lead to less flexibility in dealing with current issues. They raise the question of whether policy legislation periods are possibly too short for instruments such as the LEP (cf. EI04: 8), given that the frequent short-term changes in policy objectives can only be incorporated within the framework of a currently valid LEP to a limited extent. At the same time, the independence of political legislative periods and the long-term nature of the planning horizon certainly represent a strong point in the context of the LEP on account of it being possible to establish planning certainty with the help of a superordinate and non-partisan master plan.

The relative 'inflexibility' of spatial planning at the federal state level can, however, be partly compensated for or qualified in NRW with the help of the following planning levels. *"At the regional planning level, we have, of course, regional planning modification, which makes it possible to respond to current developments comparatively quickly"* (EI05: 13). A more flexible response to current issues and challenges therefore appears possible more at the regional level in NRW. This is also provided for in the planning system insofar as the degree of abstraction of the LEP is very high. This means that it provides regional planning with sufficient scope, allowing new possibilities and responsibilities to emerge at the regional level.

However, the modifying of spatial structure plans is also very involved at regional level. On account of their relatively inflexible structure, the significance of informal planning instruments is growing increasingly (cf. EI04: 8, EI08: 6). State spatial planning also judges these to be a good addition to the formal instruments. They are used, for example, to discuss critical aspects in significant spatial projects with those affected in advance of the formal planning and to look for solutions. This enhances the acceptance of the plans and consequently supports the formal planning method (cf. EI05: 15). Within the discussion surrounding the importance of informal planning instruments, the clear emphasis of the supportive and complementary function for the formal instrument is noticeable, with formal planning still regarded as essential for binding arrangements by virtue of this representing a fundamental prerequisite for planning and, therefore, also investment certainty (cf. EI02: 15; EI05: 15). However, an improved link between formal and informal instruments is still needed at some junctures in this regard (cf. EI03: 10).

Interestingly, calls are being heard more and more for greater use of formal planning instruments parallel to the spreading of informal planning approaches, mainly at the regional level. The possibility of drawing up quota arrangements for regenerative energies or the identification of priority areas for wind energy is

cited in relation to energy supply in this regard, for instance (cf. EI11: 13). It is also understood in this area that state spatial planning does not avail itself of the possibilities of increased planning control on account of legal reservations and risks, leaving this to the regional level instead. This means that the legal reservations then also have to be solved at the ensuing level (cf. EI11: 14).

3.1.3 Use of monitoring instruments

The list of monitoring instruments available in North Rhine-Westphalia is extensive. Their spatial coverage, however, varies a lot – some of them cover the entire federal state of NRW (NUTS 1). Other systems instead relate predominantly to the level of the districts (NUTS 2), to the level of the regional planning authorities, to the counties or even to single municipalities. The majority of monitoring instruments that cover the entire federal state concentrate on natural-scientific topics, for example climate change and biodiversity. Some of the instruments relate to the level of the regional planning authorities, which are under the statutory obligation to carry out so-called residential area monitoring in North Rhine-Westphalia by virtue of an amendment to the NRW state spatial planning act dated 16 March 2010 (cf. Welter 2010: 2). In view of the objective of space-saving residential and transport area development, which is established in the spatial planning in Germany, residential area monitoring serves primarily to record and observe municipal building land development. By providing an overview of the actual development of residential areas, it facilitates the purposeful organisation of municipal and regional planning, thus serving as a basis for political decisions with regard to identifying and availing of unused areas or re-using existing or brownfield sites (cf. Welter 2010: 4). Except for the administrative district of Münster, where residential area monitoring is still being worked on, all the regional planning authorities have such an instrument at their disposal. What is problematic, however, is that a collective comparison of building land development and area needs in the individual regions is not possible on account of different recording criteria and the diverging allowance of the reserves imposed in the context of determining requirements (cf. Welter 2010: 48). An NRW-wide, standardised system is therefore being discussed at present.

The majority of the state-wide and regional monitoring systems are linked to the global challenges of demographic change, globalisation and climate change. The existing instruments are mostly narrowly focused on specific topics, with this made clear by a number of examples: monitoring of care personnel, industrial site monitoring ruhrAGIS, biodiversity monitoring, water quality monitoring, etc. Integrated monitoring instruments are not found.

Requirements for the usability of monitoring instruments

Problems sometimes occur with the access and compilation of monitoring results from the regional level by the state spatial planning. Cited as being problematic in this regard are the different criteria and standards on which the collection of data is based and which consequently sometimes prevents the comparability of such data or makes it considerably more difficult (cf. Section 3.1.3). The state spatial planning department is aware of the need to standardise the data and is making endeavours in this respect. Monitoring the consistency of the data also plays a major part in relation to the reliability of the data where certain facts or situations are linked to conditions. If it would be predetermined, for example, that new planning is permitted if the municipality's land use were to be reduced to five hectares per day *"the temptation for the municipalities to present this goal as having been reached would be absolutely huge"* (EI02: 23).

In addition to the problem of standardised statistical details and recording criteria, the question of what developments are to be recorded at all are of particularly great importance. These have not yet been compiled in a systematic manner; nor has it been determined what data are needed at all. It would be meaningful to collect management-relevant data, though it must also be clear in this regard what developments spatial planning would really like to control and monitor (cf. EI06: 31). This has so far not been discussed by the state and regional planning bodies.

"And, furthermore, the question arises with regard to what benefit we derive from this at all? We end up, perhaps, as those that benefit least of all. With regard to the monitoring of residential areas, it is clear to me that, if space is to be saved, this is needed to enable it to be controlled. With regard to other aspects, for me it would depend on what parameters are to be corrected and adjusted in this way. There is also the question first of what parameters are to be followed up in other areas in this manner. As long as this is not clear, I cannot see what kind of monitoring is to be carried out in precise terms" (cf. EI06: 31). The main areas addressed in this context contain residential housing, energy and the extraction of raw materials (cf. EI11: 27). Although use above and beyond this is assessed as desirable, it would appear to be outside what staffing capacities would permit. The expense and workload required to operate and update a monitoring system, for example, can become a problem. The main workload associated with residential area monitoring will fall squarely on the shoulders of the municipalities which, like other administrative levels, are suffering from substantial personnel constraints.

"This has something to do with acceptance; it also has to do with the fact that the municipalities do not have the staff. Conversely, this means that the more we push and the more we want to refine monitoring, the more difficult it will be to keep the municipalities onside." (cf. EI09: 28)

Added to this is the fact that, apart from the regional spatial planning data, for example, the use of data from other departments of the district administration is often difficult. Linking with the data records of other departments would be of

particular interest in this regard in order to observe how different developments influence each other, thus making it possible to manage them better in overall terms (cf. EI01: 33; EI09: 28). The question concerning the content priorities of a monitoring instrument depends, however, on the new regional planning parameters in the new LEP since the former should be linked to the latter (cf. EI11: 29; EI03: 29).

3.2 Horizontal coordination and integration of policy content

Despite its responsibility for superordinate planning, state spatial planning has only a limited control effect vis-à-vis sectoral planning. *"We do not have such a coordinating function as, perhaps, a region with integrated planning which executes a package of specialist plans"* (EI03: 1). On the contrary, the cross-sectional task of spatial planning in Germany is experiencing tension between the department principle on the one hand and the principle of collective responsibility on the other (cf. Section 1.1) (cf. Durner; Greiving & Reitzig 2011: 383). In addition, the possibility of superordinate planning varies, partly also on account of the changing affiliation of state spatial planning over the course of time. After 1985, this was assigned in NRW as being the responsibility of, among others, the Ministry of the Environment and Economic Affairs, whereas it is now part of the state chancellery again in the current legislative period. This decision is likely also linked to the requirement of cross-sectoral mediation: *"This is not the continuation of departmental policy via other means; rather it is also quite clearly intended to meet the requirement of an overall balancing out through being linked in organisational terms [...]"* (EI02: 13). The different interests of the individual ministries are partly harmonised in the context of the government policy statement.

"In the final analysis, it is however the case that they can all be found in the framework of the government policy statement made by the Minister-President, which is coordinated and agreed between the departments. And the coalition agreement is not only implemented by us [state spatial planning; author's note] or the Minister of the Environment but, rather by all departments. This means that we have our work programme, elaborated and implemented by all the departments within their own areas of responsibility" (EI05: 12).

The state spatial planning is responsible for the new LEP and attempts to balance out the different interests with its interdisciplinary draft. Extensive forms of participation for the public bodies affected exist with regard to the drawing up of the plan (cf. Durner; Greiving & Reitzig 2011: 420). The aim of the state spatial planning is to produce a preliminary draft from the outset which is as interdisciplinary, supra-local and non-partisan as possible in order to thus reach a consensus as broad as possible. Only in this way does the prerequisite exist to *"create a plan that will also survive parliamentary terms"* (EI02: 18f) and thus

establish planning certainty. This would also appear important in view of the political party landscape in NRW.

The coordination of content between the different departments is quite different according to the policy area. There is particularly intense coordination of content at present in the area of environmental and climate protection and the economy, i.e. between the Ministry of the Environment and the Ministry of Economic Affairs (cf. EI04: 12). This becomes especially clear with the example of the environmental economic strategy (cf. Section 4.2.1), which is pursued intensively by both departments as well as the state government. Potential for conflict exists more in the area of the distribution of money as "*nobody argues about the fundamental issues any more*" (EI08: 7). The picture is different in the sphere of demographic change as well as in the area of internationalisation. Diverse departments or sections of the most varied ministries deal with matters of internationalisation, though without consulting each other on this. Greater coordination would therefore be desirable (cf. EI04: 12).

Coordination between politics and planning

Political demands on the part of the state government have to be taken up and implemented by the departments as well as state spatial planning. This also applies to the current coalition agreement in force between the two parties in power (cf. EI05: 12). The statement cited above (cf. Section 3.2) that all institutions come together under the government policy statement given by the Minister-President on account of the coordination between the departments should, however, not hide the fact that there may well be a certain form of competition between politics and planning. This also becomes clear at the regional level: "*I can have the best ideas as a planner in our district, [...] but if this is cut out in very specific place [politics; author's note], that was it*" (EI09: 3).

A good example of this is a city in NRW which is presently in the process of selling a former container depot which is now no longer in operation but could be an important handling centre in the area from a spatial planning perspective. The local authority favours the designation of an commercial area, which is why the importance as a transport hub is being pushed into the background. This example shows clearly that politically motivated action can have a major influence on local decisions that have a spatial impact.

3.3 Vertical coordination and integration of policy content

3.3.1 Coordination between state and regional planning

The previously mentioned mutual feedback principle within regional development plays a particularly major role in the context of vertical coordination and cooperation of policy content and instruments. Nonetheless, the vertical

coordination of policy content is not entirely unproblematic. As soon as the state spatial planning parameters become more specific and, for example, the development of residential areas needs to be limited, this is fended off on frequent occasions by the lower planning levels (cf. EI02: 11). It must also be borne in mind that the different political majority relationships between the state, regional and municipal levels in NRW can, in the case of one-sided consideration of the interests of the party/parties governing at the state level, give rise to the situation where planning decisions are already boycotted at the regional level (cf. EI02: 19). By and large, however, the interaction between the superordinate plans of the state spatial planning authority and the detailed specification of regional planning by the state spatial planning is judged as being very good *"to organise the balancing of and strategy for regional concepts"* (EI02: 11).

The vertical coordination between the regional and the municipal level would appear to be determined more in the future by the regional planning authorities being required more to perform a moderating role between the individual municipalities. Regional processes should consequently be initiated by the regional planning authority but subsequently only supported in a more or less passive manner (cf. EI07: 5; EI10: 7).

"I feel it is important to deal with how these [traditional regional planning instruments; author's note] can be supported. Via moderation, measure-related projects, regional development concepts, etc., which have to form the basis for these decisions. I believe the municipalities are quite capable in this regard" (EI07: 5).

3.3.2 Integration of European objectives and guiding principles

European policy content, objectives and guiding principles like the Europa 2020 strategy, the European Spatial Development Perspective (ESDP), the territorial agenda, etc. are looked after at the federal state level, though are also handled via federal authorities such as the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) (cf. EI02: 27). They have only a minor influence on the drawing up of planning objectives in this regard (cf. EI05: 26). This is related to the fact that the European Union (EU) does not have any original competence for spatial planning policy by virtue of this being a matter for the Member States. The documents display an informal and, therefore, non-binding nature in this respect, with the initial aim of enhancing awareness in relation to European spatial development trends. Direct control aspirations cannot be concluded from this and they are, instead, more of a paradigmatic nature. Documents like the ESDP are therefore kept correspondingly abstract and general so as not to restrict or commit any of the Member States (cf. EI05: 28).

European documents and strategies are thus paid attention to, though *"less from the point of view of 'what do we have to learn from them?'"* (EI04: 11). An attempt is made, rather, to deduce specific effects to the funding period and

analyse to what extent one's own objectives and interests can be subsumed under them (cf. EI04: 11). While European spatial development policy is thus not taken into consideration to any great extent, incentive-oriented approaches like the European Regional Development Fund (ERDF) or the INTERREG programme do influence national policy to a far more significant extent. European policy content does, however, exhibit a particularly strong influence through EU Directives, such as the European Water Framework Directive or the EU Waste Framework Directive. These are also cited in documents (see coalition agreement) more frequently.

"These things [European guiding principles and documents; author's note] have a huge impact in de facto terms because we are partly forced, on the one hand, to gear our statutory provisions towards this. [...] And, on the other hand, because without observance we will not get the money, either from the ESF or the ERDF" (cf. EI08: 9).

New findings tend not to be drawn from the European documents in most cases, however. As Germany is, for example, often involved in the planning and further development of the new programme period within the framework of the support possibilities under the ERDF, the content is sometimes already known to the state governments before the documents are published (cf. EI08: 10).

3.4 Cooperation and participation possibilities for civil society

The involvement of the civil population in the drawing-up of state development, regional, preparatory land-use and binding land-use plans is a statutory requirement in the German planning system. This is mostly carried out in a two-stage procedure, with the draft plans made accessible for scrutiny by the public for a period of four weeks. During that time, the public has the possibility to express misgivings and suggestions, which are then decided on subsequently.

In addition to the formal participation possibilities provided by law, informal participation procedures are currently being considered and discussed in NRW. Participation possibilities for the civil population are *"something that is pronounced here to a relatively high degree above and beyond all the changes in government in NRW over the past number of years"* (EI04: 13). An early example of this is provided by the Ruhr area conferences, which at that time represented a new instrument for regionalised structural policy. Representatives from the fields of politics, science, associations, also including church representatives, had the opportunity to discuss problems affecting the Ruhr area and appropriate solution approaches at those conferences. This was designed to guarantee an institutionalised consideration of the different interests in advance (cf. Schlieper 1980: 476).

Aside from the exchange of views with lobby groups, the main emphasis in the present discussion is on improved dialogue structures with the citizens. Probably

also because frustration seems to sometime prevail regarding the often very ritualised exchanges with the lobby groups.

“These are processes where you can already say now what the other person will say in five minutes. It has been ticked off basically and you don’t need anything like that any more. The citizen can be involved more in order to bypass these ritualised things, which never lead to a sensible result. We would then also benefit from this directly, and so would the citizens, I think. I set great store by this” (EI08: 6).

However, considerable disillusionment has set in, not only at the municipal level, with forms of cooperation like public-private partnerships (PPP) where these are initiated within the framework of a privatisation process (cf. EI08: 11). The gains in efficiency frequently propagated beforehand have not materialised in most cases. On the contrary, often it is “*the municipalities [...] that are hoodwinked*” (EI04: 13) and public interest in PPPs has tended more to wane.

4. Effectiveness of policy content

The current spatial structure plan for North Rhine-Westphalia (LEP NRW) was published in 1995, though amendments haven't been made since. As the topics dealt with in the LEP are strongly associated with the 'new' challenges in 1995, such as German reunification and the fall of the Iron Curtain, amending is inevitable and has also been at the planning stage for some time. As specific content is not yet publicly known for this reason, the following remarks are still based on the current LEP as well as the statements concerning strategic objectives contained in the coalition agreement between the to parties in power. This coalition agreement sets out five priorities that the current government intends to concentrate on in its work: (1) Making the education system fairer and more efficient; (2) Boosting the economy and, at the same time, ensuring climate and environmental protection; (3) Asserting the principle of "good work": permanent jobs, good working conditions, fair pay and effective co-determination; (4) Capacity to act on the part of the municipalities and (5) Strengthening the social cohesion of society (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 1f).

In all the official documents, more or less specific objectives are focused on, the content of which can partly be assigned to several challenges. A clear assignment is not possible at all in some cases, especially in the areas of globalisation, climate change and energy supply, on account of the transitions of the plans and objectives being in flux between the different specialist departments and several ministries sometimes contributing to one cross-sectoral strategy.

4.1 Demographic change

4.1.1 Objectives

In relation to the challenge of demographic change, a number of goals and intentions are put forward and explained in the documents examined, though they are worded in quite vague terms. The coalition agreement, for example, refers to the *"use and shaping of opportunities and potential of demographic development in the cities and rural areas"* (NRWSPD & Bündnis 90/Die Grünen 2010: 49). In connection with the falling numbers of young people and the lack of skilled labour, it is pointed out that NRW is dependent on fully exhausting all types of educational potential and developing this in an optimum manner. A more active integration policy is therefore indispensable in this regard (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59). In this way, professional and social advancement is to be made possible for all children and young people regardless of their origin, native language and religious affiliation (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 60). In addition, the state government intends to

stand up for spending 10% of GDP on education and research in Germany by 2015 (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 5).

The area protection objective has already been set out and pursued under the old and the current LEP and will also be one of the central topics of the new LEP (cf. EI02: 2; EI05: 2). Specific objectives on the issue of land consumption can be found in the coalition agreement. Support is to be given, for example, to the national sustainability strategy, the aim of which is to lower land consumption nationally to 30 hectares per day by the year 2020. In this sense, NRW undertakes to at least reduce land consumption to five hectares per day, with the aim of achieving net-zero land consumption over the longer term (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 40).

4.1.2 Implementation of the goals set

To achieve these goals, measures are being formulated, the degree of definition of which differs very considerably in parts. Taking account of the shrinking processes occurring as a result of the demographic change, local supply and housing functions are to be strengthened in NRW (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 49), legal and political participation possibilities improved within the framework of a more active integration policy and priorities set in the area of school and education policy (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59). To counter the emerging shortage of skilled personell, an overall cross-departmental concept is to be drawn up, among other things, to professionally integrate young people with special needs and provide them with support until they complete their vocational training (cf. Landesregierung NRW 2010: 11). The growing proportion of older people going hand in hand with the demographic development is also being examined, with the result that needs-based housing and care forms are to be supported in North Rhine-Westphalia (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 67). Just like many other objectives set out in the documents in relation to the impact of demographic change, the examples listed remain at the level of general intentions or wishful thinking, with the consensus in this regard likely to be uncontroversial on account of their high degree of abstraction. In other cases, some of the measures are, however, becoming very specific, as shown by the planned 'anonymised application pilot project'⁴ (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59). Also mentioned in the sphere of integration policy are the expansion and further development of the Regional Office for the Support of Children and Young People from Immigrant Families

⁴ | The background to this project is provided by scientific studies which have shown that, in addition to women with children and older applicants, those applicants with Turkish names are particularly discriminated against when looking for employment. So the name and age are to be blackened out in applications so that only the qualification decides whether the applicant is invited for an interview. The North Rhine-Westphalia state government intends to implement the pilot project in a state authority (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59).

(RAA), which is to be made available in every independent city and in every administrative district of NRW in the future (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59f).

Measures are also itemised for the objective of area and open space protection. At first this goal is implemented by an economically and needs-based handling of settlement areas in the regional spatial structure plans. This is the only formal and legally binding measure to reduce land consumption. According to this only if the settlement areas existing in the regional spatial structure plans are not sufficient for the foreseeable development of the population und the economy, it is allowed to make use of open space. But this should be reduced to a minimum (cf. Staatskanzlei des Landes NRW 2011). Furthermore, there are a number of initiatives that have emerged in cooperation with the Ministry of the Environment to reduce land consumption in NRW. These include, for example, the "Area Alliance" initiative introduced in NRW in 2006 by the Ministry of the Environment. With this initiative, the state of NRW is attempting *"to meet the objectives pursued by the Federal Government with regard to the use of land for residential housing and transport purposes to an economically and ecologically justifiable extent. The problem of land consumption needs to be tackled with the help of a joint, interdisciplinary approach by political, social, economic and private forces"* (cf. Welter 2010: 1). Further measures worthy of mention include, for example, the recycling of brownfield sites as well as internal compaction to contribute towards area protection at the municipal level (cf. MUNLV 2009a: 216). Area and open space protection in urbanised areas is also associated with the issue of climate change. The coalition agreement sets out the 'Green City' programme in this respect, the aim of which is to promote the emergence and protection of more green belts, natural bodies of water, urban trees, gardens and parks in cities (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 39). This will probably also be a subject of the new LEP (cf. EI02: 10). A so-called land certification system is also being discussed for space-saving municipalities. Incentives are to be given in this way within the framework of the municipal revenue equalisation procedure to encourage municipalities to save space (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 40).

4.2 Globalisation

4.2.1 Objectives

The 'environmental economic strategy' is focused on in the coalition agreement as well as the NRW 2009 Environmental Report by the Ministry of the Environment and Nature Conservation, Agriculture and Consumer Protection of the Federal State of North Rhine-Westphalia. The aim is to combine ecological responsibility and economic reason in this manner, with the objective of making NRW the *"forerunner of the ecological-industrial revolution"* (NRWSPD & Bündnis

90/Die Grünen 2010: 37). As global trends like population growth, food and water shortages and climate change will force a new form of cooperation between economy and ecology in the future, according to the MWME, environmental technologies are becoming an attractive market (cf. Bloching, Spontheuer, Böhm 2010: 21), including the areas of power engineering, mobility/electro-mobility, water management, recycling management, nutrition and health (cf. Bloching, Spontheuer, Böhm 2010: 28ff). The opportunities presenting themselves on these markets are to be exploited in this way, maintaining and expanding the position held so far by NRW in the competition between the high-technology states. Specific targets are being set in the field of electro-mobility. The plan is for at least 250,000 vehicles to be on the roads with an electric drive train in NRW by 2020 (cf. MWEBWV 2011: 22). In addition to establishing the economy of North Rhine-Westphalia within the environmental technology market, responsible climate policy and the associated consistent expansion of regenerative energies form a particular part of the environmental economic strategy and are intended to contribute towards NRW becoming the most important energy innovation location in Europe (cf. Thoben 2010: 13).

Transport policy also plays an important role in the context of economic development on account of the significance of NRW as a transit region. Buses and railways in NRW are to be systematically adapted for a relevant rise in passenger numbers, with the efficiency of the rail network generally enhanced in this regard and local and long-distance transport strengthened in an effective way with targeted investments. Minimum equipment and fittings in the amount of € 240 million are to be secured for local public transport financing, for example. A further objective is, for instance, to move goods consignments to rail transport in view of the growth forecasts for goods traffic (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 50ff).

4.2.2 Implementation of the objectives set

Cluster strategy

A number of indirect and direct measures are formulated in the documents examined as part of the environmental economic strategy. For example, NRW supports existing potential in the area of environmental technologies and in the context of economic and ecological sustainability by concentrating on lead markets in which the North Rhine-Westphalian industry has particular strengths or which promote environmentally acceptable trading (cf. MWEBWV 2011: 18). In order to provide companies from NRW with the optimum assistance in securing and conquering future markets, attempts are being made to provide the necessary infrastructure, develop targeted support mechanisms as well as makes platforms available for networking and cooperation within the framework of clusters. Cooperation and technology transfer between companies, research institutes and the public sector are supported with the help of cluster

management in this way. Cluster management offers information and advice on corporate financing in this regard as well as support via European, national and regional programmes for individual sectors as well as industry-wide (cf. MWEBWV 2011: 25). An 'environmentaltechnology.NRW' cluster exists, for instance, the aims of which are to broaden innovative capabilities in NRW as well as strengthen the market position of environmental engineering and technology from NRW (cf. Bloching, Spontheuer, Böhm 2010: 56). Other facilities and projects in the area of sustainable development include the ECOPROFIT project, the resource efficiency programme, the electro-mobility master plan as well as the NRW Efficiency Agency.

Infrastructure expansion

In order to establish NRW as a world-class industry and energy location for cutting-edge and future technologies, the availability and further development of excellent infrastructure as a location factor also needs to be improved (cf. Bloching, Spontheuer, Böhm 2010: 26). What is meant in this regard are, among other things, transport routes, energy supply, as well as information and communication technologies. Assistance is given in this regard by the company NRW.International GmbH, for example, with the costs shared one third each by the chambers of industry and commerce, chambers of crafts and NRW.Bank. This enterprise promotes foreign trade by assisting and advising small and medium-sized enterprises, in particular, in the development of new markets abroad (cf. MWEBWV 2011: 62). NRW.Invest GmbH is a 100% state institution responsible for marketing North-Rhine Westphalia as a business investment location, concentrating on attracting new investors and companies. It is assisted by several offices in other countries in this endeavour (cf. MWEBWV 2011: 62).

The competitiveness and international networking of NRW is also linked to the federal state's transport infrastructure. In order to resolve the renovation backlog and bottlenecks in the rail network, a concept for the future is to be developed for the rail transport sector (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 50). The plan is to move goods transport to the railways so as to ease the burden on the highways and local residents. An increase in toll rates for trucks is being discussed in this context, for example (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 52). To protect residents living close to the highways and goods transport corridors against noise and air pollution, the use of innovative noise protection technology has been announced for a number of routes, with the state government intending to take the initiative with regard to contractual commitment as well as funding. The funding in the budget provided for state roads is also to be gradually reallocated in clear favour of road maintenance from 2011 on account of the inadequate maintenance and repair measures undertaken so far (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 51ff).

Securing skilled personell

As the shortage of skilled personell has already become an obstacle to further economic development for a number of regions in NRW, with the problem being further exacerbated by demographic development, measures are also planned in this area. A special programme for securing skilled personell in small and medium-sized enterprises is being considered as a joint initiative of the entire state government, for example, employing existing instruments from individual departments combined with new measures. The aim here is, among other things, to assist companies in securing skilled personnel or run programmes for improving the compatibility of family and working life, the integration of migrants or guiding the transition from school to the workplace or from school to higher education (cf. MWEBWV 2010: 34f). Municipalities, regions, companies and trade associations are to be involved in implementing the measures, with the Ministry of Labour, Integration and Social Affairs (MAIS) in overall charge of drawing up the programme.

4.3 Climate change

4.3.1 Objectives

In addition to focusing on climate change within the environmental economic strategy, further objectives are being set for the future climate policy of the state of NRW which can be divided into the two pillars of 'protection' and 'adaptation'. The close link in content between the issues of climate change and energy supply becomes clear in this regard, given that the latter will play a decisive role in the protection of the climate in the context of the consistent expansion of renewable energies sought in addition to the parallel endeavours to enhance efficiency and modernise existing power plants (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 32f). The CO₂ emissions of North Rhine-Westphalia are to be reduced by at least 25% of 1990 levels by 2020 to support the attaining of national climate protection targets (-40% by 2020 and -80-95% by 2050) (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 28). A state-wide biotope connection system is to be installed on at least 15% of the land area of the state to counter the progressive extinction of species, which is also partly associated with climate changes in NRW (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 28).

4.3.2 Implementation of the objectives set

A number of measures are being formulated in the area of climate policy and the expansion of regenerative energies which build, in part, on the first policy paper entitled 'Climate change in NRW – adopting an adaptation strategy' from 2007. An extensive package of actions and measures is to be initiated for the protection

of the climate, with the aim of meeting the German climate protection targets by 2020. A central element of the future climate policy for the state of NRW will be the planned climate protection law, under which mandatory climate protection targets are to be specified for NRW. Based on this law, a climate protection plan is to be drafted by the middle of 2011 at the latest, setting out the specific measures needed to protect the climate in addition to establishing interim targets (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 28).

The effects of climate change are to be confronted by way of a consistent, cross-departmental climate impact strategy in which, for example, participation and environmental information rights are strengthened, an environmental information law is initiated and the Environmental Impact Assessment Act⁵ (UVPG) and landscape conservation law are amended (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 36). Active environmental reporting will also be promoted. The second pillar of the North-Rhine-Westphalia climate policy – adaptation to the consequences of climate change – also comprises, among other things, small-scale climate projections, the drawing-up of adaptation measures, as well as the determination of sector-specific vulnerabilities in the regions (cf. MUNLV 2009b: 16ff).

4.4 Energy supply

4.4.1 Objectives

The aim is to make North Rhine-Westphalia one of the pioneering regions for the use of renewable energies and sustainable energy supply, with the share of wind energy, currently amounting to 3% of the electricity supply, being increased to at least 15% by 2020 (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 29). In order to also assist the expansion of wind energy from the planning perspective, the regional planning authorities are also called on to specify priority areas for the use of wind energy in the regional spatial structure plans. These priority areas are to cover a total of 2% of the state's land area. In addition, national expansion of cogeneration is to be supported by way of a state quota in NRW. By 2020, it is hoped that 25% of electricity in NRW will be produced via cogeneration (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 29f). Reduction of electricity consumption is being sought in order to assist the measures referred to. The aim is for electricity consumption to be reduced nationally by 11% by the

⁵ | Under § 2 II of UVPG, an environmental impact assessment (UVP) must “be conducted for the erection and operation of a technical installation or the construction of other plant as well as for the implementation of measures that encroach on nature or the landscape” (Langhagen-Rohrbach 2010: 62). Depending on the size of the installation, it shall be examined in a prior screening procedure whether an environmental impact assessment is needed. In the context of the environmental impact assessment, it shall be examined what impact the planned measure has on the environment.

year 2020, with NRW striving for a 20% cut over the same period (cf. MWEBWV 2010: 51).

4.4.2 Implementation of the objectives set

The objectives set out in the area of energy supply, which concentrate mostly on the expansion of regenerative energies and savings potential in the consumption of electricity, are to be accompanied by a number of packages of measures which, however, vary in their degree of detail, including a specific proposal, for example, to replace electrical night storage heaters in connection with the targeted lowering of electricity consumption (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 30). In contrast, the need to support research and excellence institutes in the area of renewable energies is emphasised, for instance, though without any more specific details being given. All in all, the expansion of renewable energies through, among others, Energie-Agentur.NRW, whose areas of competence cover research support, technical development, demonstration and introduction of products onto the market, as well as energy consultancy and further vocational training, is to be promoted in a consistent manner (cf. Bloching, Spontheuer, Böhm 2010: 38f). Restrictive provisions concerning height limitations and fixed distances are to be scrapped in the wind energy segment, for instance. Furthermore, the state government intends to commit to improving the support and framework conditions for the expansion of cogeneration, e.g. by removing existing investment obstacles, etc. The drafting of a concept for an energy efficiency fund in cooperation with the municipalities is planned in order to facilitate investments in energy saving and energy efficiency projects in the industrial and commercial sectors of NRW. Low-income households are also to be given the possibility to purchase energy-saving appliances with new financing models (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 30f).

4.5 Coherence of the content of objectives and measures

The objectives and measures for dealing with the four challenges can be described as very coherent. This is due, on the one hand, to the often very high degree of abstraction of the measures referred to, so the coherence of the objectives of various ministries is also not surprising.⁶ On the other hand, however, this results from the cross-departmental handling of the challenges, with ecological lead markets to be developed within the cross-departmental environmental economic strategy, for example. Economic interests and ecology and, thus, the challenges of globalisation, climate change and energy supply are consequently very closely linked and the interests of different departments linked

⁶ | This particularly applies to the challenge of demographic change.

in this way. The state government and different departments, such as the Ministries of the Environment and Economic Affairs, are involved in the development of this strategy, which means that it has a cross-sectoral nature. This also becomes clear through the placing of the issues in the coalition agreement, which are summarised therein in the form of 'Section IV - Economy, Climate Protection, Energy'. Meeting the German climate protection targets is thus very closely related to a close correlation with expanding the use of regenerative, climate-friendly energy sources, already made clear by the energy and climate protection strategy published in April 2008 (MUNLV 2009a: 111). The ongoing adaptation of the objectives set becomes particularly clear in the area of energy supply by comparing the old LEP with newer documents (cf. Section 2.4.2).

Specific time targets to guarantee implementation of the associated measures are not set to any extensive degree. This is, as made clear by the following comments, also deliberately avoided in some cases:

"Only the formulated intentions are included in it [referring to the coalition agreement; author's note.], nor does it say that we will do this in 2015 and we plan to do that in 2016. The entire political process is so complicated and complex that there is no way of doing this. It would mean promising things that cannot be delivered because they are dependent on so many other factors" (EI08: 5).

Although very precise time targets are stipulated in relation to climate policy, in particular, the degree of detailed specification of the individual measures is rather low in this regard. Financial budgets for the implementation of the targets referred to are not indicated in any of the cases.

Adaptation of the objectives is mostly carried out by way of extensive scientific studies as well as statistical data. In the area of demographic change, for example, numerous statistics and studies provide an insight into past and present population development and structure, while extensive projections give a view of future development. Details of demographic change and its very differing degrees in the individual regions of NRW are known on the basis of the data material available, with reports in this regard also supported in the documentation by extensive data material. This includes the official statistics with population data from the past and present, as well as projections by the statistical division of the state office for information and technology NRW (IT.NRW) as well as statistics from the Federal Statistical Office of Germany (DESTATIS) and the EU Statistics Office (EUROSTAT). The thematic focus of the documents is exclusively on the federal state of North Rhine-Westphalia in this regard, i.e. demographic development in neighbouring regions is not addressed. Furthermore, regional dynamics are only rarely observed in a European context. In the area of climate change, adaptation of the objectives to regional conditions ensues mainly by way of extensive scientific studies, projections and models. Regular updating of the objectives is easily possible, especially with the help of

the monitoring systems extensively available on the subject of climate change. The numerous scientific studies are normally carried out in cooperation with university departments and scientific institutes. They produce a broad database on the topic of climate change, elucidate the intensive debate on the issue in NRW and also guarantee the coherence of the content with the objectives formulated.

5. Future threats and opportunities for NRW

5.1 Demographic change

Threats and risks

Demographic change has given rise to substantial shrinking tendencies and huge vacancy rates in some sub-regions and municipalities of NRW. The declining population development involves dangers relating to the provision of basic services for the population as well as for the local supply and housing function (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 49). Adaptation of the social and technical structure of municipalities is required in many cases on account of the change in the population structure, which is often not taken into consideration to an adequate extent. The additional use of land despite declining population figures is leading to excessive debts in many municipalities by virtue of the follow-up costs often being underestimated (cf. Mielke & Münter 2010: 64).

In view of the rising numbers of older people, the demands on social infrastructure facilities are also changing, with needs-based housing and care forms as an example of this. Hospital planning also has to be adjusted to demographic change in order to continue to guarantee the comprehensive provision of health care institutions even in shrinking areas. There is an urgent need to act in the two latter areas on account of the severe changes occurring. In addition to the adaptation of the infrastructure, demographic change also entails necessary changes in the area of education, in relation to the supply and demand of jobs, as well as on questions of material and social security for the elderly, which have to be resolved as a matter of urgency. A further danger exists in the high level of land consumption in NRW. Sealing the soil surfaces leads to the loss of their natural functions as, for example, habitats for flora and fauna or for the new formation of ground water. In addition, biotope structures are often cut up by housing and industrial estates, with the habitats of plant and animals becoming separated. However, land use can also have negative consequences for people, with the loss, for example, of retention areas for flood protection as well as recreational areas (cf. MUNLV 2009a: 217).

Opportunities and possibilities

In the area of demographic change, the high proportion of people with a migratory background is perceived as being a particularly good opportunity for the economic development of NRW. It is lamented in a number of official documents, however, that the potential of large sections of the population with a background of migration is not being taken advantage of on account of their lack of integration. Attempts are accordingly being made through numerous measures, such as the RAA, to exploit this potential by way of targeted support (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 59). However, demographic change can also open up new opportunities in the area of urban development, e.g. through shrinkage gaps caused by clearance measures being used to create

urban open spaces. This can lead to the creation of cold air corridors, which represent new urban qualities for the population in high-density districts, in particular (cf. EI05: 9).

The rivalry for residents engaged in by a number of municipalities on account of the declining population figures can only be countered via regional cooperation because this problem cannot be solved in individual municipalities alone (cf. EI10: 6). One possibility could be the merging of municipalities on account of these *"not being able to survive in the long term because of demographic change [...]"* (cf. EI09: 6).

5.2 Globalisation

Threats and risks

Risks arising from globalisation are rarely referred to specifically in official documents. Only one development representing a danger for the economy of North Rhine-Westphalia and its ability to assert itself in the context of globalisation is mentioned in all the documents – i.e. the shortage of skilled personnel. The changes in the number and structure of the labour force in NRW thus has serious consequences for the securing of skilled personnel, which already represents an obstacle to further economic development in a number of regions in the state, especially for small and medium-sized enterprises as well as craft and trade firms (cf. Landesregierung NRW 2010: 11). The demographic development already discussed will exacerbate this problem further. The causes of this can be seen in the migration of well-trained young people as well as the insufficient exploitation of the potential of large sections of the population with a migratory background on account of a lack of integration (cf. MWEBWV 2010: 35). In addition to the shortage of skilled labour, the further development of the processing and manufacturing industry is also viewed with concern. Despite the present boom, it is feared that this could be subjected to increasing pressure on account of globalisation. After the Ruhr region and the Bergisch City Triangle, a number of individual regions whose industry is still prospering, such as Sauerland, are also affected by this by virtue of the combination with demographic developments – i.e. the huge population shrinkage in parts (cf. EI04: 4). Risks also arise for the traffic situation in NRW resulting from increasing economic integration, with the state under the threat, for example, of *"suffocating in a permanent traffic jam"* in view of the growth forecasts for goods traffic (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 52). The need to take action would therefore likewise appear to be urgent in this area, something that is also clearly emphasised by the state planning authority (cf. EI03: 22).

Opportunities and possibilities

The frequent emphasis of opportunities is also noticeable in the area of globalisation. The understanding of the 1990s, when globalisation was predominantly felt to be a threat, has now been eliminated. Outsourcing and relocation processes are slowly coming to a halt (cf. EI08: 2f). Globalisation represents an opportunity for NRW insofar as a great deal of companies that have so far mainly produced for the domestic market are now taking on an international perspective, which could also create jobs in the region (cf. EI08: 3). On account of its favourable location regarding transport, NRW has also been able to benefit from globalisation as well as cooperation with other important globalisation players. For this reason, existing close relations, e.g. with the USA, Japan and China, are to be developed further. Transnational cooperation is therefore to be expanded further and obstacles removed (cf. NRWSPD & Bündnis 90/Die Grünen 2010: 83).

5.3 Climate change

Threats and risks

Threats and risks of climate change for the spatial development of NRW have already been discussed in detail in Section 2.3.1, which is why only a short list of the individual areas affected is given at this juncture. Dangers associated with climate change exist, for example, in some parts of NRW mainly on account of the increased frequency of hurricanes, which can considerably increase the risk of uprooted trees in the areas affected (cf. MUNLV 2009a: 31). Furthermore, climate change has a serious impact on biological diversity, the composition of symbiotic communities and the propagation areas of species. Effects on people result mainly from the medium to very high increase in susceptibility to heat. Especially affected by this will be people living in densely populated areas and cities of the Ruhr region by virtue of the lack of compensating effects, such as green spaces (cf. MUNLV 2009a: 32). From the economic perspective, climate change holds dangers for, among other things, the areas of water management and winter sports tourism (cf. MUNLV 2009a: 31f). The effects on agriculture can be seen as being more positive to a great extent (cf. Section 5.3.2), though this will vary considerably within the state. Regional differences can arise on account of the varying soil characteristics and properties. Regions where soils have low water storage capacity can thus be affected more by the changes in climate (cf. MUNLV 2009a: 31). Although the consequences of climate change in NRW can be classified more as moderate, on account of the high population density, expensive infrastructure and a pronounced agricultural and forestry sector, there is, however, a risk of major economic damage as well as harm and danger to people and the environment even in the case of minor climate changes (cf. MUNLV 2009a: 127). Early adaptation to the consequences of climate change in NRW is therefore indispensable.

Opportunities and possibilities

As already explained, compared to other regions of Europe and the world, the consequences of climate change in NRW can be classified more as moderate. In the agricultural sector, both negative and positive effects can be anticipated, depending on the soil properties in the individual regions of NRW as well as the sufficient availability of water. Although soil changes that can be detected currently cannot definitely be attributed to climatic factors, there are some indications that do suggest this in part. A lower number of days of frost and ice, for example, indicates a higher degree of susceptibility for soils to compact, which can lead to increased surface runoff with the greater likelihood of severe rainfall (cf. MUNLV 2009a: 226). On the other hand, the warmer temperatures and resulting lengthening of the vegetation period combined with continued sufficient availability of water in the future will lead more to higher yields, with the result that the agricultural sector in North Rhine-Westphalia will tend to profit more from the anticipated climate changes (cf. MUNLV 2009a: 31).

The challenge of climate protection is not only seen as a liability; it is also perceived as an opportunity on account of it also contributing towards the emergence of new markets. NRW is attempting to take advantage of this challenge to establish itself as a world-class participant on the environmental technology market. The cross-departmental environmental economic strategy and the support of innovations in the areas referred to should make this possible.

5.4 Energy supply

Threats and risks

Even though the present boom in the area of renewable energies has a lot of positive aspects not only for climate development, it does nevertheless entail a number of risks. It is feared on some sides, for example, that, in view of the topicality (also because of the events in Fukushima) and intensity with which the current debate surrounding renewable energies is being conducted, the focus is solely on the expansion of regenerative energies, while an integrated strategy taking equal account of all the challenges is being pushed into the background.

“Sustainability in the sense of our conducting a debate which, in the final analysis, also takes account of all the aspects that we have to consider. We cannot suddenly engage in regional spatial planning now which pushes away all the other points of view [...]” (EI06: 14).

There are warnings that questions of acceptance in the population should not be pushed to one side or forgotten (cf. EI01: 15). In addition to potential analyses called for by supporters so as to achieve the greatest possible capacity utilisation of renewable energy sources in the region, restriction analyses should not be

forgotten which take account of the potential in the area as well as possible obstacles. Only with their help can be analysed what limiting factors there are and what can be reasonably expected of the population and other stakeholders (cf. EI06: 14). In order to clarify questions of acceptance, the new discussion of guiding principles already called for in Section 3.1.1 could prove to be helpful.

Opportunities and possibilities

In the area of energy supply, opportunities exist, in particular, in the promotion and expansion of renewable energies. The global need for technological solutions for the more environmentally friendly organisation of dealing with energy is viewed as a particular possibility on account of it having created a market for 'green technologies' in which the industry of North Rhine-Westphalia is well positioned. Seen in industrial terms, wind energy and low-temperature solar thermal energy in NRW have the highest national importance respectively (cf. MWME 2010: 30).

Following the feared problems of acceptance, which are discussed in the previous section, it should be communicated to the municipalities in a better manner that there definitely are possibilities to participate in the success of such new technologies and that renewable energies could thus very much represent an opportunity for the respective municipality and serve as a new source of revenue (cf. EI06: 14; EI11: 17). The expansion of renewable energies could, through the increased use of formal planning instruments on the part of state and regional spatial planning, be advanced and taken advantage of as an opportunity "*to give more weight again to regional development*" (EI11: 12).

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The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.