ESPON

TPM
Territorial Performance Monitoring
Annexes

Regional Report
Flanders Region

Project Partner 6

Targeted Analysis 2013/02/13

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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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This basic report exists only in an electronic version.

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0. List of acronyms

BRV	Beleidplan Ruimte Vlaanderen
CIW	Commissie Integraal Waterbeheer
INBO	Instituut voor Natuur- en Bosonderzoek
LNE	Departement Leefmilieu, Natuur en Energie
RSV	Ruimtelijk Structuurplan Vlaanderen
SERV	Sociaal Economische Raad van Vlaanderen
VEA	Vlaams Energie Agentschap
VIA	Vlaanderen in Actie
VMM	Vlaamse Milieu Maatschappij

1. List of figures

2. Introduction

Territorial development at the regional level is becoming increasingly important to address local and regional transformations as well as challenges at the European level. This manifests itself in a planning and policy context which encompasses different geographical scales, from EU-wide directives towards national/regional implementation of policy measures. European polycentric regions face different global challenges with specific regional consequences: climate change, energy supply, demographic development and globalization (Department of Spatial Planning 2010).

This is the regional Report for Flanders related to the ESPON Territorial Performance Monitoring (TPM) project, which focuses on the regional impact of global challenges (Lennert et al. 2011). The explicit aim is to establish a monitoring system which collects knowledge on how territorial impacts of these macro challenges translate at the regional level in spatial and policy context.
The report consists of different parts: chapter 3, an introduction on Flanders with a brief description of general demographic and economic characteristics, followed by an outline of the spatial planning context of the last decades. Moreover, some recent developments in Flemish territorial planning and regional development are highlighted, since their crucial role in the later discussion. Chapter 4 reviews the way in which climate change, energy, globalization and demography are perceived as challenges in the Flemish policy context. In this analysis, "awareness" is defined as the local articulation of the challenge and it spatial consequences / impacts, but also the awareness concerning general policy perspectives of the macro challenges, notably on higher governance levels (e.g. Europe, national policy). The chapter also reflects upon the threats/risks and opportunities related to the different challenges and their territorial effects. An important element of the chapter is a revised mind map per challenge, based upon the mind map in the inception report, but supplemented with themes, fields of policy interest to the Flemish stakeholder and restructured to highlight the important driving forces related to the challenge.

Chapter 3 deals with an assessment of the regional indicator systems completeness. The mind maps are used as a reference for this discussion, accompanied with a proposal of a first indicator set. This indicator set is used as a reference for the identification of data gaps.

Chapter 4 reflects on the concept of resilience applied to planning system, interpreting how the Flemish planning system is prepared to face spatial challenges and can provide in-time and strategic answers adopting a spatial perspective.

Chapter 7 should be read in different ways: it first aim in the analysis being a qualitative assessment, based on policy document analysis and expert interviews on the coordinative power of Flemish policies to deal with these challenges and the effectiveness to respond to them in a strategic way with shared visions. Moreover, it can also be interpreted as a first methodological exercise for a qualitative monitoring system to be repeated at later time. Eventually, the chapter gives some interesting examples of coordinative policy plans, which can

prove to be inspirational for an integrated policy response to the global challenges.
Chapter 6 draws out some important methodological conclusions and policy recommendations related to the construction of a monitoring tool in Flanders. How to deal with missing data, why the qualitative assessment of policy bundles is also of great relevance and the repeatability of this exercise, but also some general remarks about the usefulness of monitoring and necessary embeddedness in vision development and policy processes in general.

This report is based primarily on document analysis, followed by in depth interviews with key experts. This first analytic phase resulted in a first version of analysis of the awareness of global challenges and the way in which they affect the Flemish territory (chapter 2); next to this a discussion about the resilience of the planning system (chapter 4), policy coordination and the effectiveness of the policy bundles (chapter 5) (interim report). Simultaneously, IGEAT proposed a set of quantitative indicators for EU wide benchmarking and a concrete tool for visualization and comparison of the region in an EU wide context. Results of this are to be consulted in the ESPON TPM Interim Report.

In a following phase, a workshop was held at the department RWO, with the members of the Core Team BRV. The workshop had different aims:

- An evaluation of the EU wide benchmarking as a whole;
- Discussion about the mind maps;
- Discussion about the proposed indicators and ideas for new indicators.

The input of this workshop needed as an input for a fine-tuning of the situational analysis (cf. chapter 2), but also aimed at a critical reflection upon indicators and their relevance to spatial planning in particular. Since no feedback was received regarding the latter one, the research team chose to illustrate the difference between indicators to be collected on regional level, possibly in a European comparable perspective, and indicators related to spatial impact which require a more spatial detailed analysis. In the last phase, the main report and the regional reports of the project partners were consulted and used as a reference for methodological considerations and interesting examples of data collection.

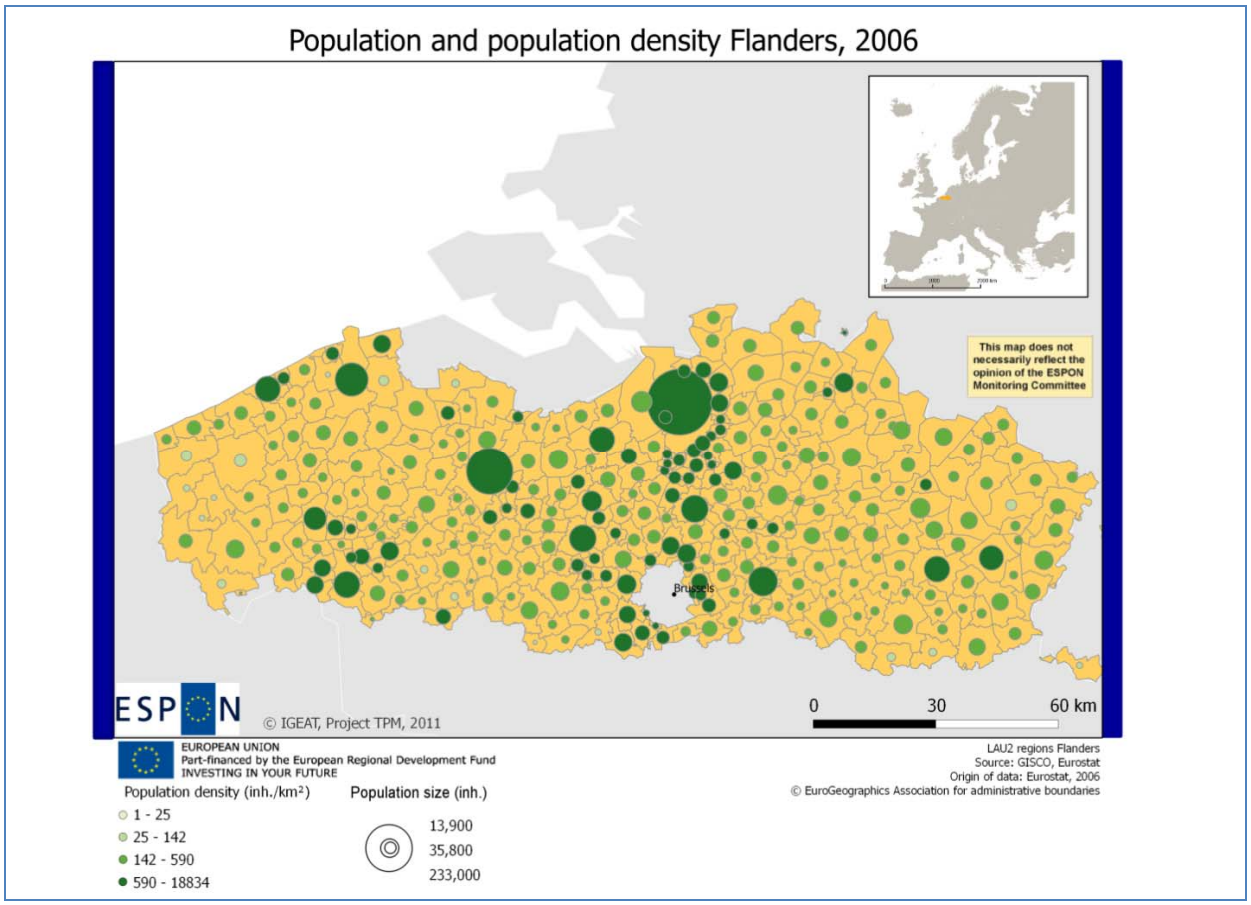
3. Description of the stakeholder and its position in national structure

3.1. General demographic and economic characteristics

Flanders is situated in the North of Belgium and adjoins to the other two Belgian regions Brussels and Wallonia, whereas its neighbours in the North and East are Dutch regions and in the west a French neighbour. Flanders comprises an area of approximately 13,500 km² and hosts 6.2 Mio inhabitants, which results in a population density of 459 inhabitants per km². The relevant statistical units in Flanders are just as in NRW the NUTS 2 and NUTS 3 regions: 5 NUTS 2 and 22

NUTS 3 regions constitute the statistical basis for the benchmarking analysis of Flanders (Schindler and Lennert 2011).

Figure 1 – Population and population density Flanders, 2006



The highest population density in Flanders is found in the area circumscribed by the Brussels-Antwerp-Ghent-Leuven agglomerations that surround Mechelen and is known as the Flemish Diamond, in other important urban centres as Bruges and Kortrijk to the west, and notable centres Turnhout and Hasselt to the east. In January 2010 the Flemish Region had a population of 6.251.983.

In economic respect, Flanders shows evidence of:

- High prosperity, but a crisis with drastic consequences for the labour market;
- High productivity, but investments and in-service training under peril ;
- An open economy, but aimed a traditional markets and countries of origin ;
- Many entrepreneurs, but a little amount of fast growers and a imminent ageing ;
- Not to be indentified (yet) as a strong knowledge economy (Peeters 2009).

3.2. The Flemish Spatial Planning system

(This paragraph is based on excerpts from Van den Broeck P., Kuhk A., Lievois E., Schreurs J., Moulaert F. (under revision), "Spatial Planning In Flanders. Serving a by-passed capitalism?", chapter in ARL book on the comparison of European Planning systems (forthcoming).

After thirty years of experimenting with local structure planning and accelerated by the since 1970 ongoing federalisation of Belgium (see below), in 1996 the Flemish parliament voted the so-called spatial planning decree ('Decreet houdende de ruimtelijke planning van 24 juli 1996') which laid out the legal basis for structure planning in Flanders. With the decree a three tier subsidiary system of spatial plans was created. First, the Flemish government, all five provinces and all 308 Flemish municipalities were obliged to make structure plans giving a vision, strategies and actions for the spatial future of their territory. Second, these structure plans were supposed to be complemented with so-called spatial implementation plans (R.U.P.'s), which would gradually replace the existing hierarchical land use plans based on the 1962 town planning law. These R.U.P.'s still can be seen as land use plans, but leave more flexibility for governments in designating and regulating land uses. As a first practice of the 1996 planning decree, in 1997, the first "Ruimtelijk Structuurplan Vlaanderen" (Spatial Structure Plan for Flanders, from here on referred to as RSV) became operational.

The RSV provides the desired spatial structure for Flanders 2007. The spatial development of Flanders is not only determined at the regional level, but in three administrative levels (regional, provincial and municipal) and by means of two types of plans at every level (spatial structure plans and spatial implementation plans). It is intended that the lower levels focus on the framework and limitations of the higher level and the framework and verify/elaborate on the framework and regulations. The Flemish regional level will not elaborate on all structures in the RSV and certainly will not assign land use regulations on parcel level. It will, however, look at the spatial structures and elements with are of regional and supraregional importance.

Structure Planning is thus performed based on the subsidiarity principle, which means that every competent authority for planning is concerned with those matters that are appropriate to the conscious level to be arranged. Decisions must be taken at the most appropriate level. A decision on a higher level is justified as the importance and / or its coverage clearly exceeds the lower level. A higher level occurs only insofar as the objectives of the proposed action cannot be achieved by the lower level in a sufficient way. The principle of subsidiarity also implies, however, that provinces and municipalities watch over provincial and municipal interests insofar they are affected by the higher planning level. The spatial vision developed in their own structure plans, serves as a basis and is achieved by participating in the creation of the spatial structure of the upper levels.

3.3. Present situation: Vlaanderen in Actie and Beleidsplan Ruimte Vlaanderen

3.3.1. Vlaanderen in Actie and Beleidsplan Ruimte Vlaanderen

In a nutshell, after the regional plans in the seventies, the RSV in 1997 (as well as provincial and municipal spatial structure plan), was established as a framework for spatial planning. Simultaneously the existing regional plans still determine mainly the action on the ground. Along with societal changes and new spatial choices connect with it, policy frameworks must also evolve. In the coalition agreement, the Flemish Government's ambition is to set out a new “Beleidsplan Ruimte Vlaanderen” (policy plan for spatial planning, from here on referred to as BRV), for the end of the legislature (RWO 2011).

Next to this, The VIA Pact 2020 (VIA = “Vlaanderen In Actie”) sets out an encompassing vision for Flanders for 2020. The ambitious aim is to lead Flanders to the top five of European regions. Flanders is envisioned as an economically sustainable and socially warm society. This ambition is embodied in the Pact 2020, signed in January 2009 by the Flemish government, social partners and associations. Strategies and actions are grouped into seven fundamental breakthroughs or fundamental turnovers.

VIA also responds to the Europe 2020 strategy, which proposes actions and benchmarks to tackle the global challenges of globalization, demography, climate change and energy.

A key question will be how these ambitions, expressed in the various VIA breakthroughs, will be placed in a spatially coherent story and to what extent the existing spatial policy framework should be adjusted (RWO 2011).

The project coordinator and the core team of the BRV started their activities mid May 2011. The core team consists of representatives of the other policy competences, in particularly Agriculture and Fishery, Economy/Science and Innovation, Mobility and Public Works, Services for General Governmental Policy, Culture/youth/Media (Tourism), Urban Policy, Housing Policy, Family/Wellbeing and Health.

3.3.2. Comprehensive plans related to global challenges

The BRV is not the only "integrator" or theme-overarching plan with respect to the global challenges. Other examples, relevant to this topic, are the Flemish Climate Policy Plan and the Flemish Adaptation Plan (2012), The Energy Efficiency Plan and the Plan Renewable Energy, the Flemish Reform Plan, the Poverty Action Plan .... much of which is currently in phase of formatting (for details see the discussion in relation to the different themes).
The analysis of spatial challenges linked to global challenges and the effectiveness of policies to address them in an integrative way, comes at a time that spatial policy in Flanders is in full transition phase.

4. Awareness of global challenges and forecasting / monitoring

This chapter gives an overview of the way in which climate change, energy, globalization and demography are perceived as challenges in the Flemish policy context. In this analysis, “awareness” is defined as the local articulation of the challenge and it spatial consequences / impacts, but also the awareness concerning general policy perspectives of the macro challenges, notably on higher governance levels (e.g. Europe, national policy).

An overview will be given of the threats, risks and opportunities related to these specific themes and spatial articulations, , but the analysis of , the effectiveness of existing policy bundles to deal with the challenges in chapter 7, will give additional insights on governance related threats and opportunities .

The chapter is assembled based on document analysis, more in particular policy documents and a selection of scientific reports that are very relevant to the challenge. Additionally the analysis has been complemented by insights gathered in the interview phase of the research, and finally have been round up by a workshop / discussion in the Flemish Administration (core team Beleidsplan Ruimte Vlaanderen). This has lead to a refinement of the proposed challenges formulated in the interim report, articulated in a revised mind map per challenge. The mind maps, proposed in this chapter, are a result of this workshop discussion, but the themes were reclassified in a later stage to account for the main driving forces related to those challenges and a better understanding of the relationships.

Based upon the analysis and the mind map, an indicator set is being proposed in order to monitor relevant phenomena related to the different challenges. In the following text, references to the indicator labels are included. However, chapter 5 deals with the explicit data question: availability of data and existing indicator sets, which means that the discussion about specific indicators will be outlined there.

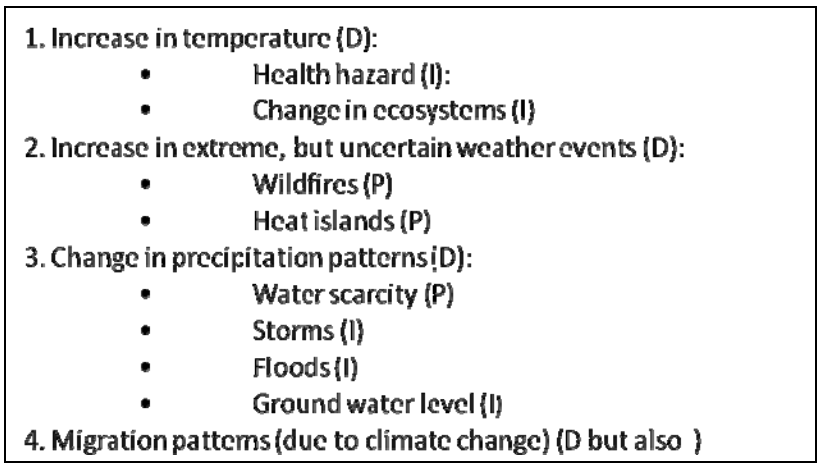
4.1. Climate Change

4.1.1. Regional challenges and spatial impact

Climate change manifests itself, amongst others, in a global warming process, which is clearly noticeable in Flanders during the last decades *(env05, env06, env07, env08)*. Although observed greenhouse gas emissions in Flanders contribute to this climate change, global warming is a global event par excellence. The Intergovernmental Panel on Climate Change (IPCC) is an agency of the United Nations, gathering scientific findings concerning climate change throughout the world. According to the IPCC it is set out with a high probability (> 90% certainty) that human behaviour contributes to climate change. This contribution is due to the increased emissions of greenhouse gases (carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), ozone (O3) and fluorine containing gas) into the atmosphere (*env04, env25, env26*). Other factors also play a role in the observed climate changes: for example, the variation in solar radiation, the changing presence of dust particles in the atmosphere *(env03)*

caused by volcanic eruptions or natural phenomena such as variations in atmospheric circulation patterns.

Figure 2 – Climate Change: mind map



The precise change in climate is difficult to predict, especially on a smaller geographical scale like Belgium. Belgian research in this field will continue. Nevertheless, national and international research reveals several future challenges for Belgium. The central driving force is temperature increase, but the increase in extreme weather events and phenomena related to the water balance also receive much attention in Flemish policy.

These 3 central issues cause specific socio-economic and spatial pressures. Firstly, temperature increase causes a change in biotic systems and affects biodiversity *(env33, env34, env35, env36)*, whereas extreme temperature related weather events such as droughts and heat waves, will affect the forests in the southern part of the country (National Climate Commission 2010) , and the heath lands in the northern part of the country. A loss in the total surface of protected nature areas *(env02)* could be a consequence.
Another related aspect in the man-made environment is the emergence of heat islands *(Hea03)* and smog formation *(Hea04),* which consequently are related to health issues such as casualties during heat waves *(Hea01)* and the effect of respiratory diseases *(Hea02).*

Secondly sea level rise and inundations *(env28)* – possibly caused by extreme weather events such as storms *(env27)* affect the coastal and lower areas *(Env29, Urb15).* It is also difficult to predict how climate change will affect the evolution of the ground water level *(env31)* and water availability in general (*Env37*).

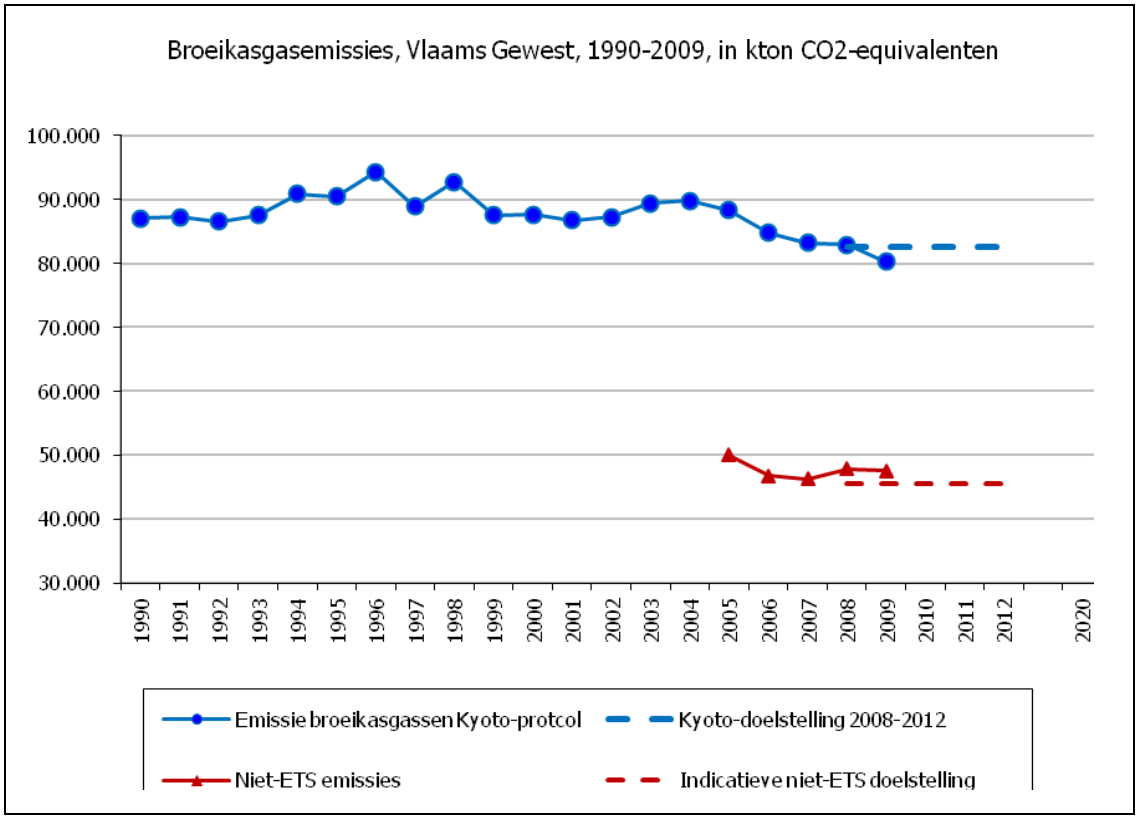
4.1.2. The challenge of climate change: general policy response

Local challenges for Flanders are being prepared for a changing climate and its spatial conditions on one hand (**adaptation**), e.g. by climate adapted urban development *(Urb16, Urb17),* on the other hand in offering a response to the European policy objectives considering the suppression of greenhouse gas emissions, in order to avoid any surplus change of climatic conditions throughout

the world (**mitigation**) (cf. Figure 3). The precise challenge is to work out a long term strategy which should be coordinated between different competences within the Flemish policy field. This means Flanders is certainly aware of a European policy (Europe 20-20-20 and Green and White papers on Adaptation) (Commissie van de Europese Gemeenschappen 2007, Commissie van de Europese Gemeenschappen 2009), which is also translated in "Pact 2020: Een nieuw toekomstpact voor Vlaanderen: 20 doelstellingen" (Vlaanderen in Actie 2009). One encompassing vision for Flanders is that in 2020, it should be one of the best performing European regions as far as ecology and energy related issues are concerned. It is mandatory to translate the objectives of Pact 2020 in the different Flemish Policy Domains (2009-2014).

The two most important and central-coordinative plans (policy bundles) related to climate change, are the **"Klimaatbeleidsplan"** which deals with mitigation, and the **"Vlaams Adapatieplan"**, concerned with adaptation strategies. The latter is in its development and negotiation stage (due 2012), the former is a cyclical policy plan, submitted for the periods 200-2005, 2006-2012 and 2013-2020 (the last being in its development phase and due 2012). For an assessment of these policy bundles and their effectiveness in the Flemish policy context, see paragraph 7.1.

Figure 3 - Evolution of green house gas emissions in Flanders, in comparison to the Kyoto objectives 2008-2012



Source: LNE afdeling Lucht, Hinder, Risicobeheer, Milieu & Gezondheid, SPW-DGARNE-DEMNA-CEEW, BIM, Eurostat

(http://www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2011-01-13-europa2020.aspx)

4.1.3. Threats and risks

In a European perspective, Flanders falls behind the European average expectation in terms of area being sealed up (cf. Figure 4), as well as the concentration of particulate matter on surface level and the change in minimum and mean temperature in January. In the EU-wide benchmark, Flanders also scores lower in average in terms of the share of NATURA 2000 areas of the total NUTS 3 surface; although regional variations can be observed. (cf. Figure 5). This means that a loss of biodiversity is a threat, related to the fact that Flanders had already a low share of nature protected areas compared to the rest of Europe.

The risk and threat of health related issues were already mentioned in the former paragraphs, even as the water related problems. In the Green Paper "**Adapting** to climate change in Europe - options for EU action" Flanders is characterized as a coastal area with the most acute problem of rising sea levels and flooding (Wallonia, on the other hand, is characterized as an area with the possible risks of drought) (Commissie van de Europese Gemeenschappen 2007).

Figure 4 – Soil sealing in % of total NUTS 3 surface: Flanders compared with neighbouring regions

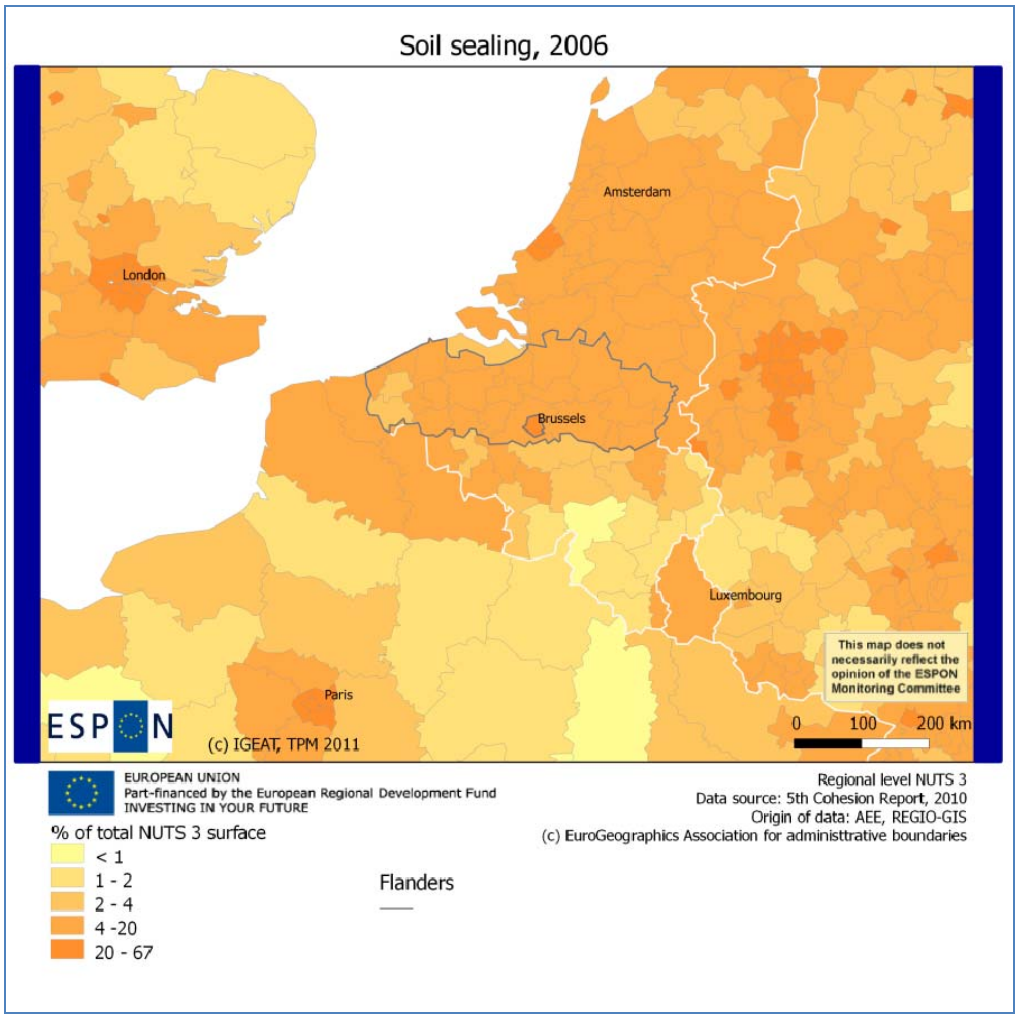
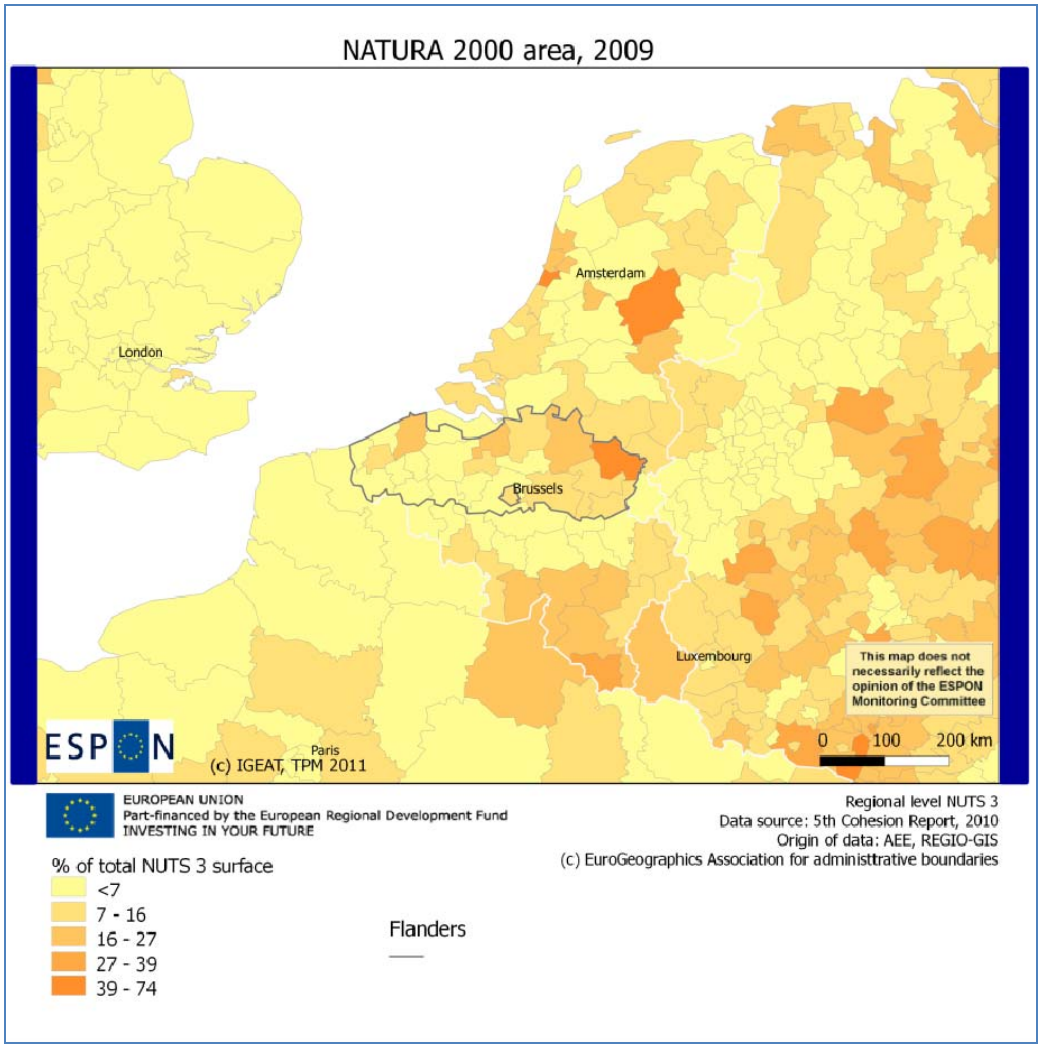


Figure 5 – NATURA 2000 area in % of total NUTS3 surface: Flanders compared with neighbouring regions



As regards **mitigation** Flanders feels the legacy of a lack of spatial planning in the past. This means that many additional emissions are generated due to the dispersed spatial structure of settlements and built up area which hampers water permeability *(env01)* and mobility. Since mobility is not covered by emission trading policies, the Flemish government is responsible for designing policies to a problem on which it has little control. This problem is also manifesting itself in energy efficiency policy (cf. paragraph 0). As a consequence, the inability to deal with consequences of spatial structure as an inheritance from the past, and the difficulty to deal with external forces, outside the scope of regional of national policy, could be a governance related threat to the effectiveness of dealing with climate change as an acute problem.

The aforementioned policy bundles – Klimaatbeleidsplan and Vlaams Adaptatieplan, both instigated within the policy domain of "Leefmilieu, Natuur en Energie", call for an effective coordinative power of this policy domain onto other policy domains and the ability to weigh upon sectoral (and spatial planning related) policy competences. Whether this issue is seen as a threat or an opportunity depends on the success – failure of an effective integration of

climate related policies. These issues will be discussed in more detail in paragraph 7.1.

4.1.4. Opportunities

Opportunities for Flanders due to a rise in temperatures are mostly related to tourism. A moderate rise in the mean temperature could have an overall positive effect on tourism in Belgium (particularly at the coast). A similar effect has been observed in Great Britain: after one or more sunny summers, more British tourists stay in the country and there are also more foreign tourists. Additional efforts will nevertheless be needed to deal with the added stress on infrastructure (both by tourists and associated goods), maintenance of beaches due to increased coastal erosion, and the quality of bathing water. There are also limits to tolerable temperature increases, in particular due to heat waves, even though the drier air should make heat more acceptable. Warmer temperatures may also favour “nature tourism” (National Climate Commission 2010).

However, not all tourism sectors and destinations could be positively affected by climate change. River sports and associated activities could be negatively impacted by reduced river flow in summer. Winter sports, which are already compromised due to warmer winters, may completely disappear. Rainy and possibly cloudy winters will not favour outdoor activities. Indirect impacts of climate change on other sectors may also have effects on tourism, e.g. deterioration of natural zones, damage to infrastructures or historic buildings due to flooding, etc. Furthermore, it should be kept in mind that socio-economic factors may also have significant impacts on tourism (National Climate Commission 2010).

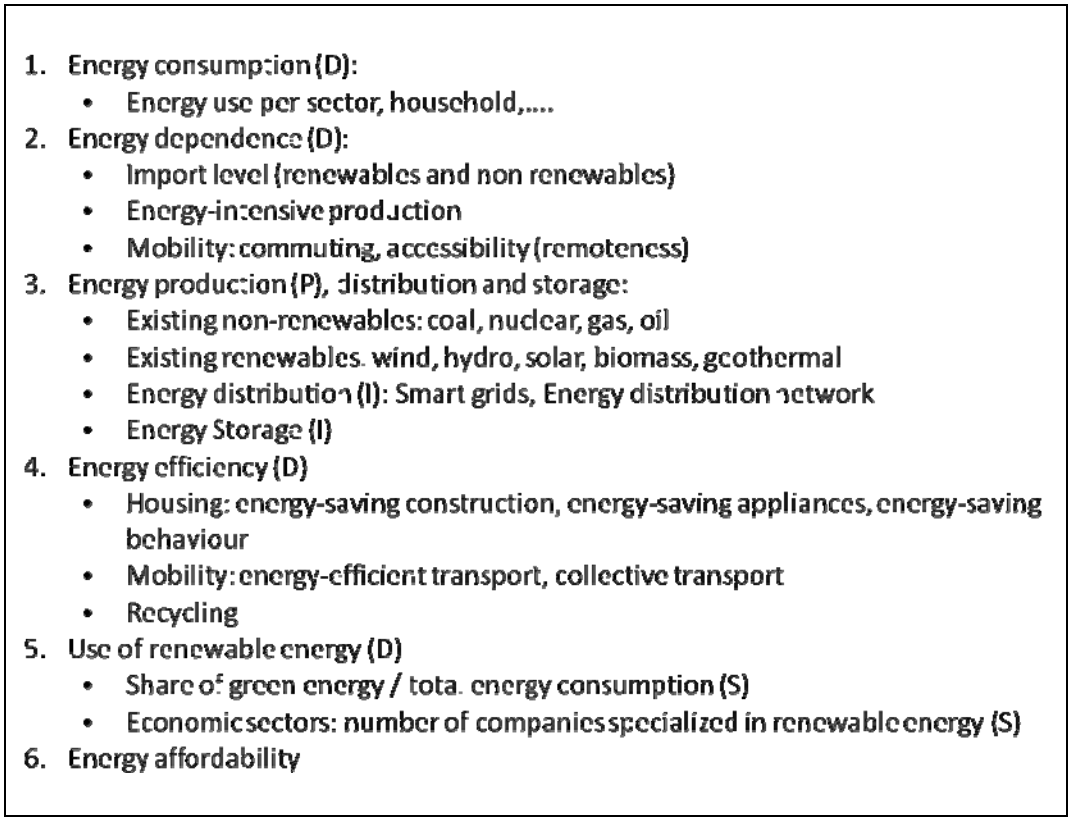
A second sector that could benefit from a warmer climate is agriculture. Below a three-degree rise in local temperature, the impacts of the climate change on agriculture expected in Belgium during the 21st century, should be limited and even positive for certain crops such as wheat. However, a rise in mean temperature tends to lower the yields of many crops. This is mainly a consequence of faster plant growth, resulting in more rapid maturity and reduced accumulation of organic matter. Up to around 2-3°C, yield reduction tends to be compensated for by the fertilizing effect of increased CO_2 concentration for most crops. Carbon dioxide also improves the efficiency of water use in plants, and increased temperatures are favourable for some crops such as maize.

However external events such as heavy rains and the probable spread of diseases and exotic animal and plant pests may also have a yet unknown significant (negative) effect. Up to around 3°C, the expected impacts are thus quite limited. Adaptation measures such as changes in crop choices, changes in sowing dates, improved humus content of agricultural land and possibly irrigation, may help reduce the severity of climate change impacts and will result in fewer losses caused by the changing climate. On a Flemish level, the financial losses will be moderate, between 0.1 % and 4.1 %, depending on which climate Flanders will evolve to in the future. If agriculture adapts itself to the changing climate, the losses might decrease from 0 % to 0.4 %. Summer drought will especially have a negative influence on crops with superficial rooting, such as beetroot and potatoes (National Climate Commission 2010).

4.2. Energy

4.2.1. Regional challenges and spatial impact

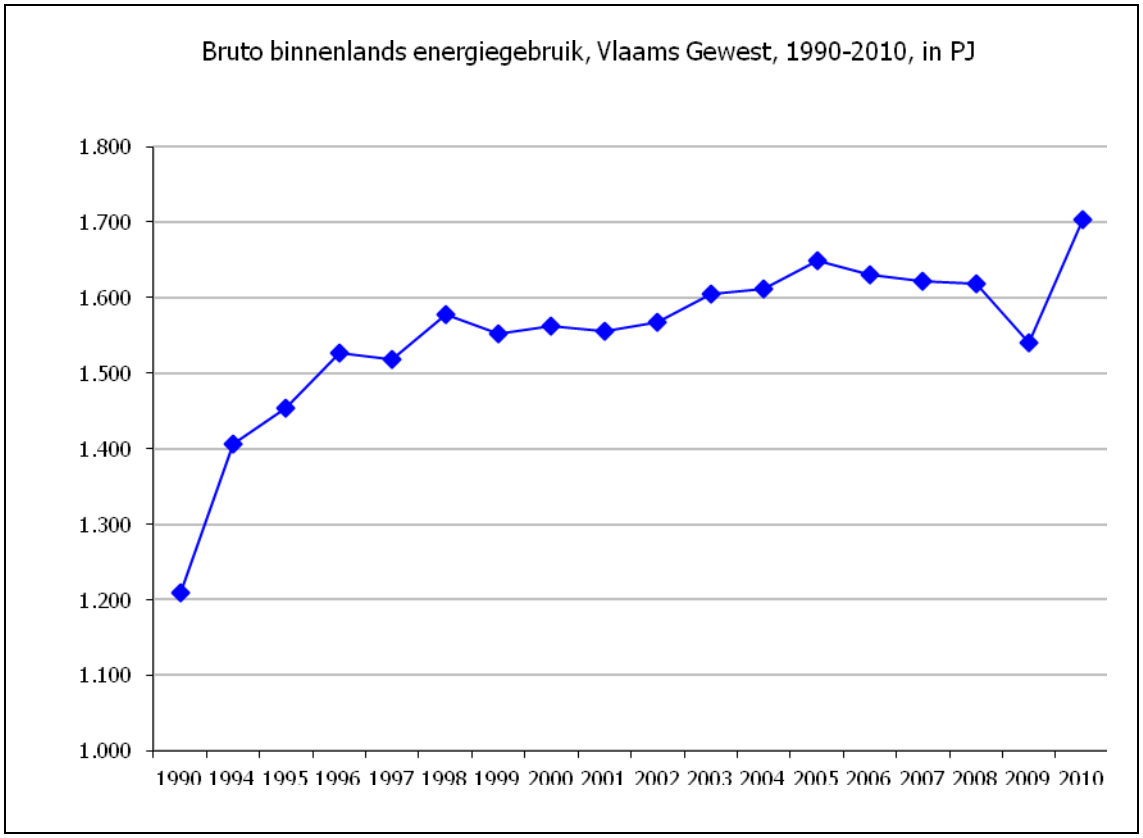
Figure 6 – Energy: mind map



The energy consumption in Flanders has grown significantly in the last decades. Compared to 1990 in 2009 the gross domestic energy consumption rose by 27.5% and by 4.8% compared to 2008. The final consumption increased by 34.6% compared to 1990 and decreased by 6.5% compared to 2008. The final consumption in 2009 compared to 2008 decreased significantly (- 6.5%). The decrease is the result of the economic crisis which mainly had an effect on the demand of the industrial sectors and on the freight traffic (*Ene30*).

The gross domestic energy consumption in Flanders in 2010 increased with 10.4% compared to 2009 (cf. Figure 7). Compared with 1990, gross domestic energy consumption increased by 40.8%. The final consumption showed an increase of 14.1% compared to 2009. The major reasons for this increase are a revival of the economy after the crisis year 2009, including a sharp increase in energy consumption in the industrial sector. In addition, 2010 was a cold year, in which sectors dependant on the outer environment showed higher energy consumption (*Ene30*). (Aernouts, et al. 2011b)

Figure 7 – Gross domestic energy use, Flemish Region, 1990-2010 (in PJ)



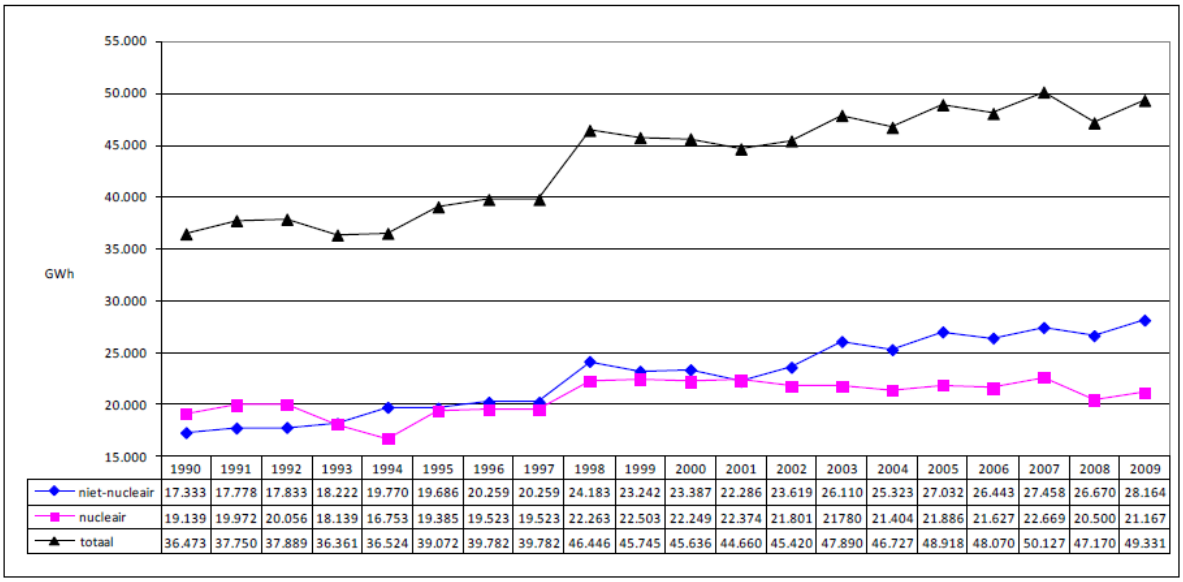
Source: Energiebalans VITO, ICEDD, Eurostat

In 2009, 43% of the net electricity produced in Flanders was nuclear. The net electricity generation increased by 4.6% in 2009 compared to 2008 (+5.6% non-nuclear, nuclear +3.3%). Compared with 1990, net electricity generation rose by 29%. Especially the non-nuclear generation increased significantly: +62% in 2009 compared to 1990 while the nuclear-generated electricity increased by +11% over the same period (cf. Figure 8).(Aernouts, Jespers and Vangeel 2011)

However, the energy intensity of the Flemish economy (gross domestic energy consumption per unit of gross domestic product at constant 2000 prices) has been decreasing since 1998 *(Ene12).* Since 1998, gross domestic product grew much faster than the gross domestic energy consumption. Since then there has been a decoupling of energy use and economic growth. Between 2005 and 2007, the energy intensity shows a remarkable decline. In 2008 and 2009 the energy intensity has been decreasing further. In the crisis year 2009 the decrease of energy was greater than the decrease of gross domestic product (Van den Bossche 2009a).

Even if the energy intensity has dropped, the increase of energy use in 2010 has to be borne in mind (Figure 7). Moreover, the EU-Benchmark shows that Flanders is very dependent on energy (based on the percentage of employment in energy intensive industries, *Emp04*) (Schindler and Lennert 2011).

Figure 8 – Evolution of the net energy production in Flanders: nuclear vs. non-nuclear



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
niet-nucleair	17.333	17.778	17.833	18.222	19.770	19.686	20.259	20.259	24.183	23.242	23.387	22.286	23.619	26.110	25.323	27.032	26.443	27.458	26.670	28.164
nucleair	19.139	19.972	20.056	18.139	16.753	19.385	19.523	19.523	22.263	22.503	22.249	22.374	21.801	21780	21.404	21.886	21.627	22.669	20.500	21.167
totaal	36.473	37.750	37.889	36.361	36.524	39.072	39.782	39.782	46.446	45.745	45.636	44.660	45.420	47.890	46.727	48.918	48.070	50.127	47.170	49.331

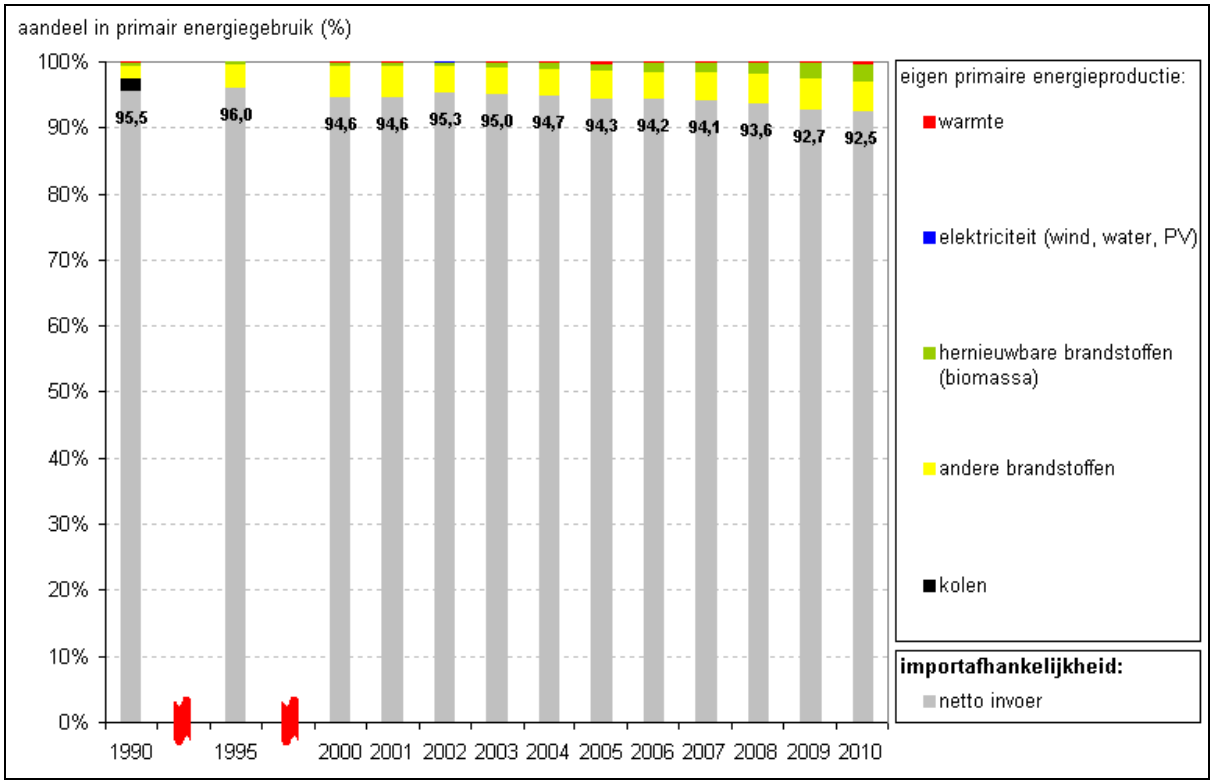
Source: Aernouts, Jespers & Vangeel, 2011, p. 14

Flanders does not have gas or oil production, in contrast to e.g. Netherlands and Norway, nor does it have any uranium reserves. The dependence on imported fossil fuels such as coal, petroleum, nuclear fuel is not very different of much of the other European countries *(Ene29),* although the potential for renewable energy is very small. As far as energy is concerned, Belgium is one of the most important importing countries of Europe *(Ene21),* and so is Flanders. In 2010, 92.5 % of the energy consumption is originated from import (cf. Figure 9). (www.milieurapport.be)

Flanders is also different from other European regions regarding the potential for renewable energy. In the North Sea potentialities exist for wind energy *(Ene02, Ene03),* but Flanders does not have the adequate climate for solar energy (see also EU wide benchmark, cf. Figure 10), there are no possibilities for hydro power. Finally, because of the dense housing in Flanders and the lack of space there is a shortage of opportunities for wind energy or biomass.

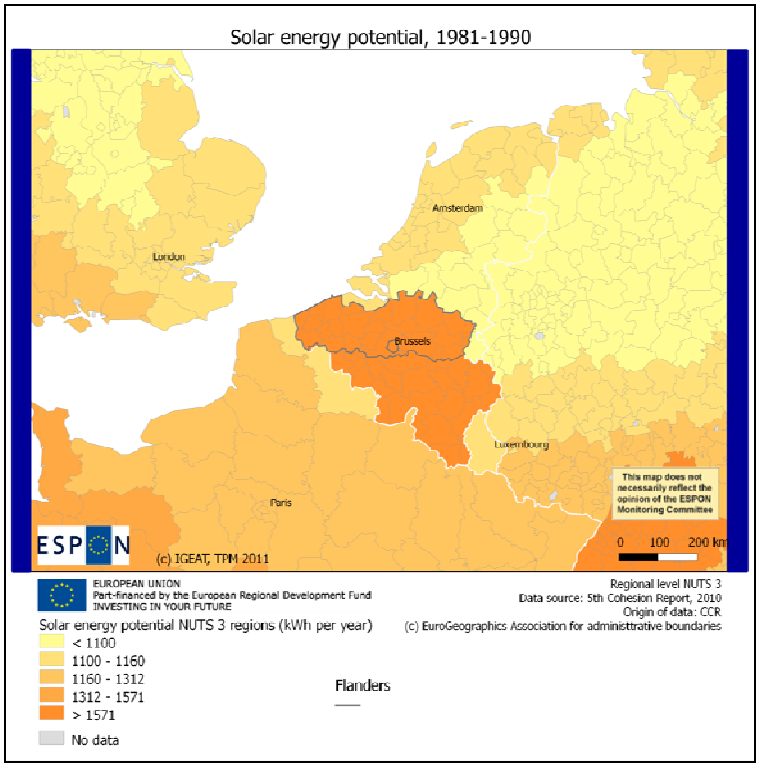
In Flanders, the total net green electricity production in 2009 amounted to 2,704 GWh, or about 5.2% of total net electricity generation (including self-production) (Aernouts et al. 2011). This means the 2020 benchmark (13%) is still far away (cf. Figure 11)...

Figure 9 – Primary energy consumption and dependence on import (Flanders, 1990-2010)



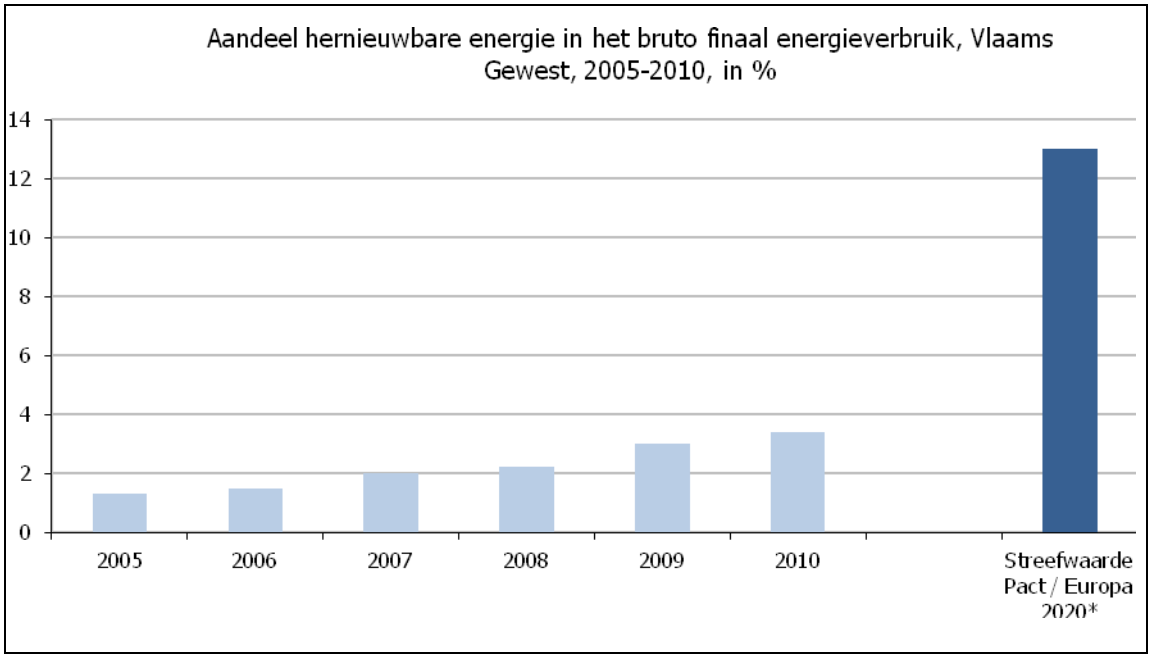
Source: MIRA (VMM), based on Energiebalans Vlaanderen VITO, www.milieurapport.be

Figure 10 – Solar energy potential for Flanders, 1981-1990



Source: Schindler & Lennert, 2011, based on 5th Cohesion Report

Figure 11 - Share of renewable sources in gross final energy consumption, Flemish Region, 2005-2010 (in%)



In Flanders the affordability of energy is an additional challenge *(Ene22).* Europe suggested to effectuate this by a restructuration of the energy market and to allow for more competition on the gas and electricity market (Vlaamse Overheid and Vlaanderen in Actie 2009). However, this is a federal competence.

4.2.2.Energy as a challenge: general policy response

Similar to the issue of climate change, the challenge of energy is a global one, and in particular manifests itself in the effectuation of the European policy goals concerning energy-efficiency *(Ene30)* and renewable energy *(Ene31).* Reaching European goals is also explicitly mentioned in Pact 2020 (Vlaanderen in Actie 2009), which means that all Flemish policy documents have to respond to the challenge and include it in their vision.

Most obvious spatial impacts of the energy dependence of Flanders, AND the challenge to provide for renewable modes of energy, are:

- A spatial demand for non-renewable energy *(Ene23);*
- A spatial demand for renewable energy (wind, solar, cogeneration,….) The search for locations for those energy facilities and the construction of RUP's to make them possible; *(Ene13, Ene14, Ene15, Ene16)*
- Rethinking the most optimal settlement system for the reduction of movements – spatial layout of the infrastructure network *(Ene17);*
- The construction of industry parks, effectuation of public works, neighbourhoods, dwellings, always with energy efficiency as starting point *(Ene18, Ene19);*
- Construction of supporting infrastructure for green energy (e.g. for hybrid cars*).(Ene20)*

The limited potential of Flanders regarding "rather big scale" alternatives for renewable energy (such as solar energy, biomass), means that strategies for

decentralized forms of energy generation (on site-specific locations such as residential districts, on industrial estates,…) are not overlooked: re-use of dirty water (*Ene24*), district heating *(Ene25),* cogeneration, recycling (*Ene32)*,….the number of firms specialized in renewable energy can be an overall indication of renewable energy initiatives *(Ene33).*

The two most important overarching documents to respond to Europe 2020 concerning energy are:

- The energy efficiency plan (2008-2010 (Vlaams Energieagentschap 2007); the next plan with a following up for the progress made will be ready at the end of June 2011, next one 2014; a 3-4 yearly process)
- The plan renewable energy (which is a national plan).(ENOVER/CONCERE 2010).

The question concerning the proportion of green energy is primarily a responsibility of the Ministry of Energy and the Flemish Energy Agency (VEA – Vlaams Energie Agentschap), so is the coordination at the Flemish level, of measures related to the reduction of energy consumption (Van den Bossche 2009a). They coordinate among the "sectoral" competence levels, which implement specific policy bundles. For more in depth information regarding the division of policy competences and the policy process, we refer to paragraph 0.

4.2.3.Threats – risks

Flanders is a transit region with a very dense road network, centrally located in Europe and relative to some very important logistical nodes (e.g. port of Antwerp). This means a big share of energy use caused by transit mobility, with a high share of freight traffic *(Ene04)* on which it is very difficult to perform policy or articulate concrete measures [1] (modal split can be measured through *Ene26, Ene27* and *Ene 28* although it is not possible to determine what is domestic and what is transit mobility).

The constraints on the development of large scale modes of renewable energy production were already mentioned. So it will be a challenge to overcome those restrictions and to develop alternative forms of energy production/storage, and an efficient energy distribution system.

The EU-wide quantitative benchmarking also reveals some weaknesses to consider: "besides the relatively high share of fuel costs as percentage of GDP and the relatively large share of employment in energy intensive industries at all benchmarking scales, Flanders also accomplishes low benchmarking results when looking at its potential for solar energy as one way of generating energy in a renewable way. The region only scores well in terms of wind power at European scale as well as compared to other regions classified as the same type of the

[1] Therefore, Flanders basically is allowed to make a correction on the aims, but did not do this since no uniform method is available to quantify this correction - in contrast with other indicators and targets from Europe where very specific top-down methods are developed.

ESPON energy typology. Overall, one can say that Flanders is very dependent on its status quo of energy supply and purchase when looking at the monitored indicators and thus, needs improvement in order to keep up with other regional players" (Schindler and Lennert 2011) .

The Pact 2020 (VIA) put the development of logistics forward as one of its important strategic lines. Logistics however is an energy intensive industry. Consequently, the provision of a certain energy supply is very important.

4.2.4. Opportunities

A strategy to respond to the need for innovation and competitiveness, related to the climate change and energy challenge, is to strive for the development of a green economy, a circular economy which is not only a policy objective for Flanders, but also an inner potential to strengthen the competitive position of the region. Pact 2020 mentions spearhead sectors for economic development with a world-class innovative character. Focus on innovative economies with regard to energy and eco-efficiency is one of these spearheads. They are considered to be an important asset for internationalization of entrepreneurial activity, and for the international image of Flanders as region for innovation. A policy focus on a further diversification of energy supply and a structural production increase with focus on renewable energy, is conducive a certain energy supply to the Flemish economy. By an enhancement and modernization of the Flemish distribution network, the development of decentralized energy sources can be fostered. Flanders had the ambition to make the transition towards a sustainable energy system, sustainable use of materials and a sustainable mobility. A transition to renewable, cleaner energy is also stimulating for a healthy environment. (Vlaanderen in Actie 2009).

4.3. Globalization

4.3.1. Regional challenges and spatial impact

This analysis uses the following definition of the challenge of globalisation:

- a change in environmental factors, notably the greater dependence of a region and authorities on international and professionalised decision-makers in the fields of economic development and space use/spatial planning, but also other transformations related to globalization, namely an increased mobility, sociocultural phenomena and homogenization of landscapes.;
- a need to respond to this new context through policy - including European policy – among other things by pursuing some strategic spearheads of economic development and by strengthening competitiveness and promoting economic growth.

Figure 12 – Globalization: mind map

Dependence on global forces

The consequences of globalisation are far-reaching. Global economic players are increasingly taking their decisions at a level beyond or almost beyond the reach of national or regional authorities. Multinational companies and international organisations are gaining influence compared with national authorities (Ministerie van de Vlaamse Gemeenschap 2003). The way in which Flanders is inserted in

multinational form networks influences this dependency on decisions taken elsewhere (Glo04, Glo05).

The globalisation phenomenon has resulted in a changing relationship between companies and authorities. There is an international shift towards a guiding real estate developer. In the past, a company looked for a location and purchased a plot of land with help from the authorities. Now, the real estate developer acts as an agent who arranges everything for the company, including the procedures (obtaining licences and similar), and also becomes the owner of the developed buildings. Corporate real estate is an emerging new market with unpredictable consequences. The same phenomenon is noticeable in logistical warehousing, where the real estate agent takes on development responsibility and brings his own clients (companies) with him. These projects are generally financed by all kinds of investment funds.

This means that the players - stakeholders the Flemish authorities must deal with - are changing. Users of space are internationalising and professionalising. They are becoming more like organisers than users of space. Compared with the past when the authorities decided places for development, the real estate market is now getting a bigger say in the choice of location. They mobilise strong legal support and this occasionally confronts the authorities with a fait accompli (cf. brownfield development covenants). Spatio-economic development is no longer a question of a single company approaching the authorities, inquiring where space is available and asking what steps must be taken to start up a company within a certain time. Instead, there is a real estate company that is looking for a commercially profitable project and finds out what legal preconditions must be met to achieve this goal.

The increasing globalisation of the economy also exerts local effects on spatial developments in the economic structure, entrepreneurship (Glo13, Glo14, Glo15), growing mobility, less stability in the labour market, social polarization (Glo17), pressure on the environment and so on. Technological innovations are driving ever-faster changes in production methods and products and services. The increasing globalisation makes companies less tied to fixed places. They manufacture where they consider it most favourable from a business point of view and they do business worldwide.

Increased mobility and spaces of flow

The economy is fanning out, with tangible consequences for the living environment. Among other things this development is significantly increasing the number of movements of people and, above all, of goods. The net result is radical changes in the production space, both in terms of location choice as in activity space. New production processes and management techniques, the typically global organisation of major companies and takeover effects have made it more difficult to plan and arrange this sector spatially.

At the time of the RSV, a relative benefit was identified in the globalisation context for cities located in a central metropolitan area, like the Flemish cities. As nodes the airports of global significance and high-speed rail links and HST stations are becoming a decisive factor in the spatial structure of Northwest

Europe. The location of cities in relation to these nodes and the capacity to stand out in these transnational networks is pivotal to their urban development. At European and Flemish levels there is a growing gap between these cities - which because of their location in the communication network have an extensive and efficient relationship with the actual decision-making centres – and the peripheral cities that due to their location, natural disadvantages or industrial past are not able to raise capital or attract investments (Ministerie van de Vlaamse Gemeenschap 2004). This has resulted in functional specialisation and in competition between cities for specific types of production, high-quality services and so on. In step with growing specialisation, the city develops a unique label or image. In turn this attracts other specialised economic activities and highly educated workers who stimulate an increase in the number of specialised jobs of a specific nature.

Spaces of flow however are not only indicated by an increase in international traffic flows (Con02, Glo6, Glo7, Glo8, Glo9), but also an increasing mobility of population, residential (Dem05, Mig02) as well as touristic (Tou01, Tou02, Glo28).

Sociocultural effects of globalization

It is argued that globalization has the effect of a social polarization and a socio-economic rupture between those population groups that are in tune with the global economy and those that are "lagging" behind (Glo17). As an answer to the competitiveness adagium, the principle of social cohesion is put forward.

On the other hand, Florida proposes a set of measures or phenomena to indicate the "global citizenship" and tolerance towards an international lifestyle (Glo25, Glo26, and Glo27).

Homogenization and McDonaldization

As already mentioned before, globally operating investors seek out locations in Flanders for profitable projects, such as globalised retail concepts, large wellness complexes and fun shopping combined with fitness, wellness, sport and recreation. However, the proposals sometimes run counter to the local spatial context and mentality. The real estate developer must sometimes scale down his ambitions (e.g. UPlace in Machelen).

Next to aforementioned aspects that are more related to the impact of globalization on economy, the way in which globalization or phenomena related to it (e.g. scaling up), are affecting and homogenising landscapes, are affecting natural and manmade historic environments, on short: the identity of the landscape. One can think of specifically rural phenomena such as scale enlargement of agriculture activities destroying traditional landscapes, or multinational retail chains which lead to a McDonaldization effect in inner city shopping areas (Glo17, Glo18, Glo19, Glo20, Glo21, Glo22, Glo23, and Glo24).

Competitiveness and economic growth

An economy operating at the global level also results in an intensified competition between regions. This "increased competitiveness" can be seen as a

driving force that determines the location decisions of private and public actors, but can also be seen as policy response on the phenomenon of globalization.

The economic structure of Flanders has evolved from a highly capital-intensive economy - based on cost-competition and energy-depleting, large-scale mass production with international competition centred on costs - to an economy increasingly concentrating on added value (e.g. through design and product differentiation). An economy of this kind tends to be less sensitive to wage costs and energy costs. When employment (Emp04, Emp05, Emp06) and salaries (Eco04, Eco05, Eco06).are considered, Flanders is comparable to other European regions.

Flanders is a little and very open economy, little in the sense that the BBP is only a small percentage of the European BBP. Open in the sense that import and export is 69.5% and 66, 5 % respectively of the BBP. This openness is increasing(Ministerie van de Vlaamse Gemeenschap 2004). (Glo28, Glo29).

Generally speaking Flanders is also characterised by a large proportion of small and medium-sized enterprises (SMEs) (Glo30).

The emergence can be seen of new types of companies not confined to traditional activities established in traditional business parks. There is now also an important economic pillar made up of tourism, social economy, business services and a 'services economy' that is being created for lowly-educated people and goes hand-in-hand with an affluent economy or population (e.g. ironing and other forms of domestic help). All of these sectors benefit from an urban environment. (Mertens).

At the time of the RSV, the spatio-economic strategy contained an ambition (including an international ambition) for economic gateways, but lacked an explicit strategy for attracting foreign investment. Wage costs in Belgium had already become so high that there was a reluctance to respond (Glo1). This was reflected by a temporary decline in foreign investment (although this might have been due to normal economic fluctuations). Together these circumstances must be interpreted according to the political mood at that time for making choices in economic development.

The RSV, however, has broken an established trend by breaking away from the idea that every region had to lean towards a Flemish average for a comprehensive set of variables and should now look for its own strengths: this might be industry (including heavy industry), tourism, green spaces, etc. This reflects the principle of 'rediscovery of local merits', which is coupled to globalisation (Vermoesen). Specialization within regions should be possible (Glo29).

This is far less prevalent nowadays since the companies themselves make these decisions. It is possible to facilitate a movement in a certain direction, but it requires the earlier acquisition of knowledge of how companies view Flanders. This observation suggests that the image of Flanders as place of business could depend rather on perceptual issues than on objectified elements of competitiveness (such as specification in specific segments of production, cost of

production and productivity (Glo01, Glo03), qualification of labour force (Edu01, Edu02), accessibility of markets (Con01, Tec01), innovation (Tec02, Tec03),...

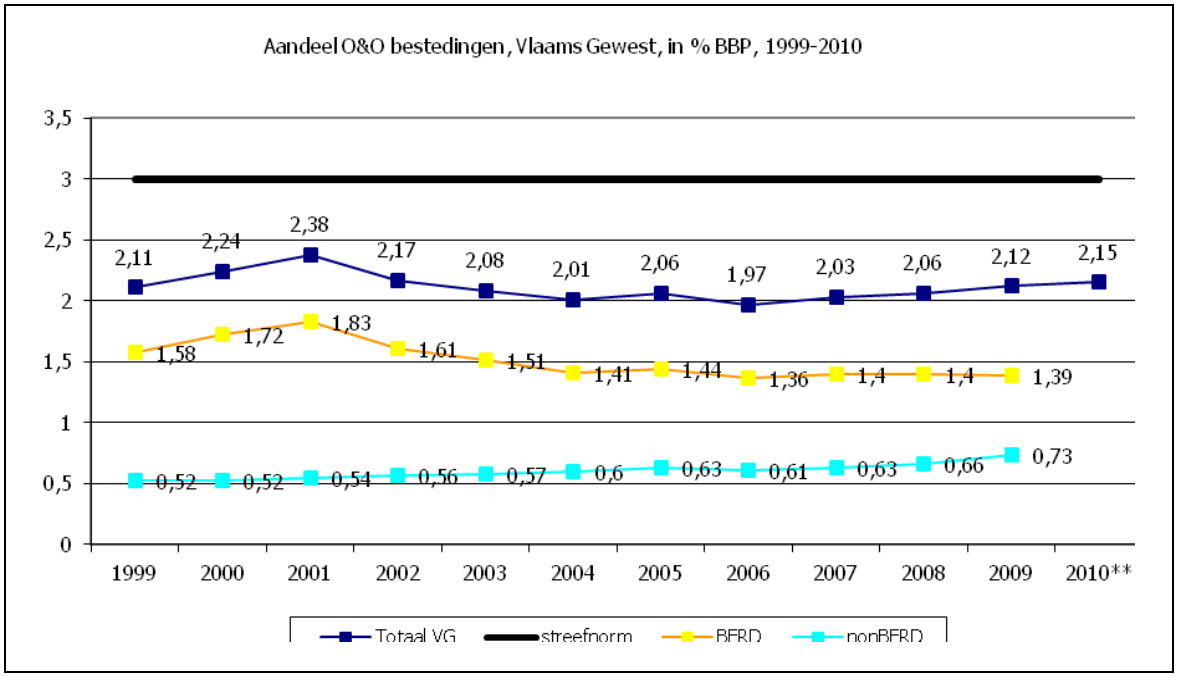
Globalisation has also spawned the 24-hour economy: Flemish enterprises will increasingly cooperate with American, Chinese, Indian and other foreign companies in a tele-working situation and will align with office hours in other parts of the world. This form of flexibilisation of working time is already noticeable (people who sleep/shop during the day and work at night). Although the policy consequences and the spatial consequences are not yet entirely clear, we have already seen the emergence of teleconferencing centres that have responded to this development by opening at night.

4.3.2. Globalization as a challenge: general policy response

In 2010, the European Commission presented concrete benchmarks related to the different themes;

- Employment for 75% of the population between 20-64 years; (Glo31)
- 3% of the EU-BBP to be invested in R&D (tec02) (Figure 13 shows that Flanders has not yet reached its benchmark);
- Reaching the "20/20/20"-climate and energy targets (cf. climate and energy);
- The school drop-out rates should be lower than 10% and at least 40% of the younger generation (30-34 year olds) should have a degree or diploma (Edu2 and Glo32);
- The number of people, who are poor or socially excluded, should be diminished by 20 million. (www.vlaandereninactie.be)

Figure 13 – Expenses in Research & Innovation in Flanders (BERD: private sector/nonBERD: public sector).



Source: Steunpunt O&O Indicatoren, Eurostat + CIS-enquete (2010)

Following the European directive, Belgium needs to prepare a national reform program for a period of three years based upon 24 integrated guidelines ("richtsnoeren"), complemented by a yearly progress report. Europe made some concrete recommendations for Belgium based upon the former report. Flanders also has its own reform program and progress reports.

In "Vlaamse Lissabonrapportering 2009" (Vlaamse Overheid and Vlaanderen in Actie 2009) an overview is given of the most important structural indicators following the European directives. Pact 2020 (Vlaanderen in Actie 2009) is a formulation of the Flemish vision, in which "the need for a competitive and sustainable economy is put forward, which responds to the opportunities given by globalization" (the report also proposes a set of indicators).

As far as spatial planning is concerned, the challenge and question is what strategies to follow to support the development of certain spearhead sectors. The discussion currently centres on the premise that it is no longer about the provision of sufficient pieces of land for the development of business sites or large-scale developments, other location factors / preconditions are crucial, such as good accessibility, an attractive urban climate and an attractive labour market (Mertens).

Spatial planning also acknowledges the new emerging sectors such as such as healthcare, the economy for lowly educated workers and recreation, which are becoming increasingly significant sectors following their own spatial logic. These activities are spatially embedded and are found chiefly in cities but now also in villages. It is a challenge to give consideration to this matter and to respond through policy to this embedded form of economic activity, although recently the quaternary sector also puts spatial claims on traditional industrial sites.

Another spatial phenomenon is the spatially dispersed forms of economy in the peri-urban area. An insight is needed into the types of companies concerned and how this matter can be addressed by means of policy.

4.3.3. Threats – risks

The EU wide benchmark observed a relatively low share of employment in the selected economic sectors information/communication and professional/scientific/technical activities is relatively low. Also average salaries in these sectors are high above all averages (Schindler and Lennert 2011), but this can be explained by the steep labor costs Flanders and Belgium as a whole is known for (Glo01).

Possible threats for Flemish development were already mentioned in the situational analysis, e.g. the littleness and openness of the Flemish economy which can be an opportunity (flexibility) but also a threat (dependent on economic developments elsewhere). Also the changed relationship between the government and real estate developers can, in worst case scenario, mean that local and regional governments are unable to formulate policies to steer spatio-economic developments.

Different aspects of the Flemish economy can enhance its competitive position,

such as economic specialization, specification in specific segments of production, cost of production and productivity (Glo01, Glo03), qualification of labour force (Edu01, Edu02), accessibility of markets (Con01, Tec01), innovation (Tec02, Tec03),…However, next to objectified elements of competitiveness, perceptual issues are also crucial. Knowledge is needed on how companies view Flanders.

4.3.4. Opportunities

Summarizing the results of benchmarking Flanders as one region reveals that Flanders is performing well in most of the examined aspects. Overall, Flanders lays above the European average when looking at R&D, accessibility by car, by plane and to services like internet access; education is ranked very highly while the unemployment rate is volitional low compared to the rest of the European space. Attractiveness measured on migration into its NUTS 3 regions as well as temporarily for tourism is comparably very good (Schindler and Lennert 2011).

The debate on how Flanders should position itself within this globalising network and how economic development will be affected by it poses a challenge. The challenge has manifested itself on a Flemish scale, namely the question of the extent to which the Flemish poly-centric urban structure fits into this network. This prompts the question (although more at governance level) of whether it might be better for Flanders to promote itself internationally as a single entity instead of each city doing this on its own. A prevailing idea within Spatial Planning is that there should be a rescaling that thinks beyond Flanders. The intention is to break with the tradition of viewing cities independently of each other and to regard Flanders as a single entity, even in relation to neighbouring regions. This idea received far less exposure in the RSV, but can open up opportunities for the future.

Within the globalized world, Europe has the ambition of becoming the most powerful economy in the world (Europe 2020). The tertiarisation does the demand for space and increase the knowledge of space is simultaneously former secondary activities. The innovative economy will operate in networks with research institutions. Dynamic sectors such as retail, logistics or office need professional sites that meet specific site requirements. Unfortunately, knowledge economy seems to be narrowly defined as scientific-technological knowledge, while Flanders also disposes of segments of an economy with more opportunities for socio-cultural and ecological sustainability. One can think of highly specialized agricultural and horticultural, artistic, health care, ... These sectors also offer great challenges for research and development, and perhaps on a scale more suited to the spatial possibilities of Flanders (Steunpunt Ruimte en Wonen and RWO 2009).

4.4. Demography

4.4.1. Regional challenges and spatial impact

Figure 14 – Demography: mind map

The population – volume, age structure, spatial distribution and possible evolutions (Dem03) – is a very crucial driving force to a pleiade of sociospatial issues and policy themes. Those themes can be related to young age groups (family allowance, provision of education, education personnel), the labour population (job creation, unemployment, fiscal issues, social security, commuting), and the elderly (health care, retirement pays). More generally the population size also affects consumption patterns, housing, provision of services and need for energy.

The demographic challenge can be further subdivided in:

- Population growth and migration (external and internal) ;(Dem05, Mig02)
- Household composition and number of households/single households / new family structures
- Ageing and greening (or more in general: age structure) (Dem06, Dem07)
- Ethnic composition (Dem04, Dem05).
- Quality of life as an attractor, and therefore considered to be correlated to population.

In the ESPON DEMIFER project (ESPON and NIDI 2010) a spatial differentiation has been made of European regions concerning demographic aspects. Flanders belongs to the European standards group, with an age structure close to the European average and a growing population (as opposed to other regions which have a younger age structure, and/or shrinking). During the interviews also a "greening" process was mentioned, at least in comparison with Eastern Europe. So Flanders is unlike other regions that may be facing the challenge of population decline. From the most recent **population** projections (Studiedienst Vlaamse Regering), an increase of 6.6 million inhabitants by 2030, which is an increase of about 7% compared to 2008. It is expected that in 9 / 10 of the municipalities the population will increase. Flanders is a typical **immigration** region, and is gaining more population through immigration than by natural growth. The strong immigration raises the question whether European policy should deal with this, since some municipalities are reaching their limits regarding population influx. (media reports, according to Hilde Schelfhaut).

European flows will increase in future, but there is considerable uncertainty about the impact of some political evolutions in North Africa, so external migrations may be currently underestimated, as the projections assume a trend scenario). This means not only a quantitative but also a qualitative difference (North African families have a different family structure than Eastern European families).

Seen in a spatial perspective, it can be observed that external migration flows concentrate upon the "big cities" (Brussels, Antwerp, Ghent), with a certain mass suburbanizing subsequently to the outskirts, e.g. of Brussels, and also towards Wallonia. In this way, a certain population group is there substituted by a less affluent and with a bigger household composition (family reunification). The slightly smaller families are leaving the city to the outskirts. It can prove to be necessary to anticipate on this in both provision of services as housing (although a more active policy could also be at the heart of the discussion, cf. further).

As such, the suburbanization process is still continuing (Dem09). Along with the ageing population this also raises the problem of the suburban belts where many baby boomers have built their homes, but now (want to) return to the city. Besides the effects of these differential migration patterns, addressing these suburban areas is an important spatial challenge.(Muyters 2009).

Alongside the former trends, there is also an existing demand for detached, freestanding houses. The response on this trend is the construction of allotments with different price levels, with a slightly smaller average allotment size. Older people also are attracted to rural areas resulting in an increase in housing prices, which causes younger families to have problems finding affordable housing (Dem30).

Moreover, the growing trend of **households** persists; the amount of households is expected to increase up to more than 2.7 million in 2020, and in particular the number of single households is expected to grow considerably (Muyters 2009) (Dem08). The growth in number of households is expected in almost all municipalities. The largest increase occurs in the villages situated on the coast, in the Kempen and especially in the border region with the Netherlands. A

particularly strong increase is expected outside the cities and along the coast. This will result in a continuing demand for housing, but with an overall decrease in housing size (Dem10). It is estimated that by 2020 there will be a demand for about 80,000 additional housing units which are suitable for singles. By 2050 this can be estimated on 170,000 units.(Muyters 2009). This reduction in average household size and demand for smaller units is evidently related to the aging process and based upon a trend scenario. In Flanders, this leads to a phenomenon of apartments taking over the cores of cities and small towns (Dem11) and new urban architectures.

The **ageing population** is partly the result of declining fertility and longer life span (Dem01, Dem02). This development has major budgetary implications. The modified structure of the population leads to a decrease in the population of working age who contribute to taxes (Soc05) and increases the number of elderly who receive pensions, with also the need for sufficient health care facilities. This leads naturally to an active debate in Belgium and Flanders regarding the elevation of the retirement age. However, the ageing process has not yet reached its cruising speed today. In the coming ages Flanders will face a sharp increase in the proportion of elderly. More in particular, the proportion will increase significantly over-80s. Yet ageing also has positive associations. Most elderly people are living long in good health and still quite independent. Moreover, the diversity, both socio-economic and socio-cultural, in the elderly population increases. This example has implications for the housing preferences, the combination of housing and care for example. It is a new trend that elderly function more independently (with or without a partner) and are less likely to be included in a retirement or nursing home. (Muyters 2009)

The spatial impact of the ageing process manifests itself locally in the need for providing appropriate (smaller) units, which is already observable in existing trends (more apartments in city and town cores, compaction, a trend of smaller lots,). Moreover, older people depend heavily on facilities near their places of residence, green spaces and public transport. Alternative forms of housing such as group homes, sheltered housing and kangaroo homes can offer a solution for them to live independently for a longer time, as well as solutions for adaptable or “lifelong” housing. The ageing population has an important spatial impact by both the demand for more public (healthcare) facilities that demand extra space and by the demand for a wider and more varied range of housing and services for the elderly (Dem23, Dem24, Dem25). (Muyters 2009)

There are indications that the relationship between housing and care for the elderly functions at other scale levels than it did before; instead of a strong dialectic between staying at home and call for homecare, opposed to move to a home of rest, a whole spectrum of possibilities is developed nowadays (e.g. amount of health care provided at home, Dem31).

The need for adapted housing and services also varies within the Flemish territory. In this respect the retirement migration to the coast should be considered, although the 40-60 age cohort is following. The projections show an inflow until 2018, but after 2018 a decline of influx is expected (based on the population pyramid). This is expected in cities such as Bruges, Kortrijk and Ostend. This creates a major policy challenge related to services: housing, health

care, e.g. ... should be adaptable to migration fluctuations and preferential needs of specific age groups

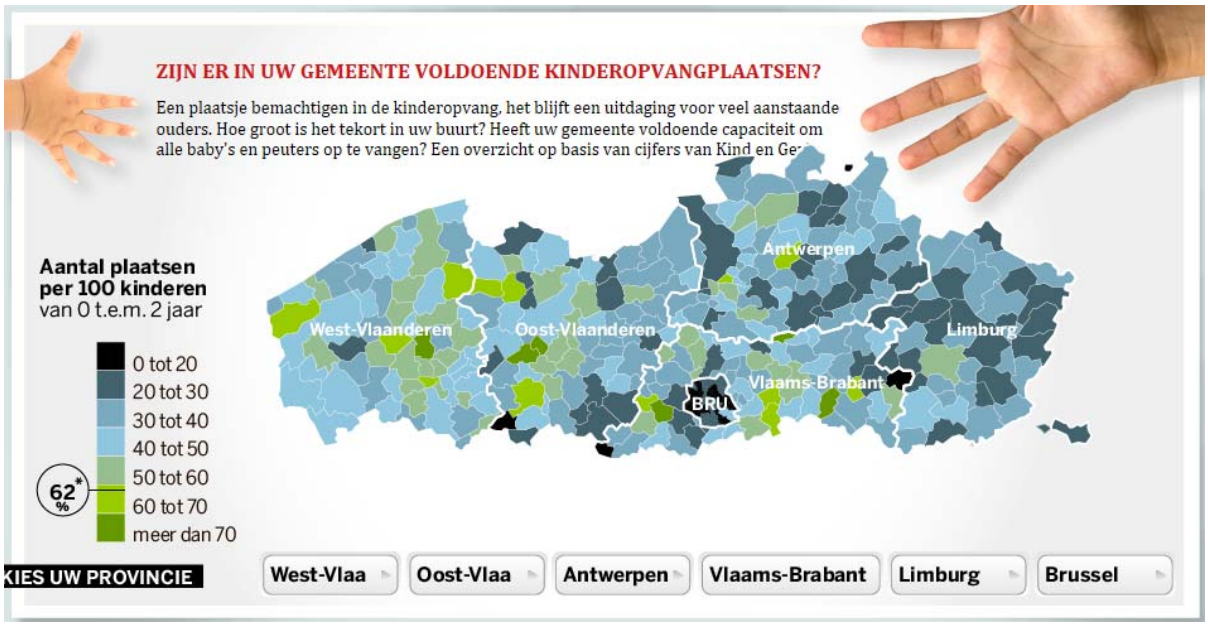
This challenge poses itself also in Antwerp, where a predicted "greening" of the population until 2018 will result in the need for new schools. Provision of enough child care facilities is also an important demography related challenge (cf. Figure 15; 62% is not a policy benchmark, but the percentage of parents – based upon research by the VVSG, who would like to make use of child care facilities if available. The average for Flanders is 48%).

Although service provision for specific target groups has already been mentioned supra, other aspects contribute to quality of life. Examples are environmental quality (air, noise, light pollution, odour levels, green spaces, water bodies), cultural and recreational facilities, transportation which provides for a good accessibility, retail, other facilities such as schools, childcare and other service of general interest.

- Environmental quality: Dem12, Dem13, Dem14, Dem15, Dem16
- Cultural and recreational facilities: Dem18, Dem19, Dem20, Dem21;
- Commercial structure: Dem22;
- Provisions for children: Dem22, Dem23, Dem24

Overall, it is argued that the biggest challenge is how flexible responses can be found to the varying demand for services related to the anticipated population growth and demographics. This can be realized by constructions which can be used for different purposes: both child care and elderly care, education,... (Swinnen 2010). Currently the RWO has commissioned a study to see which instruments should be used and how policy can deal with these types of multiple uses.

Figure 15 – Child care in Flanders: total capacity / 100 children



Source: De Standaard Online, based on data "Kind en Gezin".

Evidently, a crucial factor is how the Flemish settlement system will evolve and/or is planned to evolve, and what spatial structuring models will serve as a guiding principle. This distinction is important because the "urban areas - rural" division is now used as a main rule for the placement of new facilities and housing. Obviously the settlement pattern also needs to be well accessible (Dem26, Dem27, Dem28, Dem29).

In any case the population projections (until 2018) require urgent action. A very important issue in this respect is the role of cities. A close monitoring and adaptation to the population projections which are based on current trends, do not take account of visioning or strategic policy of the cities to attract families with children (see paragraph 7.4).

4.4.2. Demography as a challenge: general policy response

No explicit European policy exists regarding the demographic problem, nor is it dealing in an integrated way as far as external migration policy is concerned. Some derivative strategies exist, and the Flemish Reform Programme which gives an answer to Europe 2020 proposes guidelines that relate to demographic challenges, such as e.g. providing employment, and policies for improving the quality of life (which is mainly focused on poverty reduction and ensuring equal opportunities). Environmental quality receives less attention.

In this, policies concerning demography are different from e.g. energy and climate policy, in which Europe sets out very specific directives and benchmarks, which European countries (and regions) have to follow. This is most likely because demographics is largely a local issue and dealt with at the local level (cf. Chapter 7). This however does not mean that demographic developments aren't closely monitored in the Flemish region and the policy consequences of regular policy forecasts discussed.

There is no overarching plan dealing with demography, but it is treated as a crosscutting theme in which any policy competence is responsible for the necessary measures. Spatial Planning and Urban Policy are to be considered as transversal policy domains, since their obligation to synthesize thematic policies within a spatial context. One of the Visions of the "Ruimtelijk Structuurplan Vlaanderen" was "Vlaanderen Open en Stedelijk" (Flanders open and urban). An implementation of this vision was a delineation of settlement areas which were designated as areas for residential and centrum based functions (such as housing, commercial structure, services of general interest). However, opinions are divided considering the successfulness of the policy. Regarding spatial planning, the "Beleidsplan Ruimte Vlaanderen" is a very important flagship project of Flemish policy since it is strongly related to the implementation of one important VIA-breakthrough: "Vlaanderen Groen Stedengewest". In the Groenboek Ruimte, visions for the development of Flanders are put forward and the Witboek (2013) will provide for policy guidelines. It can be expected that those guidelines will be discussed in a participatory process with the relevant policy domains.

4.4.3. Threats – Risks

According to the EU wide benchmarking, Flanders's demographic structure can be described as similar to other European regions and its neighbors: the region has an average population growth between 1999 and 2009, an average share of young population as well as elderly people, but a life expectancy above average and with 40.6 years a relatively old median age. Comparing the region's performance to the different benchmarking values does not reveal a great depending diversity. Taking the average of the according typology type as benchmarking value also results in an average performance in terms of demographic structure. Thus, this analysis does not show any specific threats. However, with the previous situational analysis in mind, an ad hoc reactive policy on population forecasts can be risky. The lack of specific provision for certain age groups - child care, schooling, is already apparent, especially in urban regions. An expected "grey" migration flow to the coast demands specific care facilities, housing and accessible services. On the whole, certain municipalities experience limits of possible population growth. On the other hand, reacting on population forecasts base on existing trends such a suburbanization, does not take into account the need of policies to "bring people back to the city".

A structural problem in Flanders, however, to deal with this issue, is the private ownership of land. This means an additional difficulty to governmentally steer the housing developments.

Another specific threat related to the demography and governance, is found in the capacity of integration. The persistent external immigration combined with a growing group of new Flemings will give Flanders a more multi-ethnic character in the future. Since 2004, integration therefore has become a full and important policy theme. Integration is related with social issues (employment, education, housing, welfare and poverty and social participation), but in spatial planning terms the issue of social segregation and overcoming it is an important challenge.

4.4.4. Opportunities

As stated before, the biggest challenge is how to find flexible responses to the varying demand for services related to the anticipated population growth and demographics, but also recent trends and needs within the care sector and social housing proves to be an interesting opportunity, according to the Team Vlaamse Bouwmeester[2], since they can give rise to very interesting developments in housing and provision typologies. The challenge of care provision does not only manifest itself in the context of an ageing population, but should be seen as an integrated approach of care provision from birth to death. The Flemish Government Architect sees the development and thinking of new building typologies as an important challenge.

[2] In the Flemish Government's regulation (VR/98/12.05/D0C.0377) regarding the appointment of a Flemish Government Architect and the Proclamation of the Flemish Government (VR/98/1905/DOC.MED/11) regarding the mission of the Flemish Government Architect, the mission is stated as follows: "Through long-term vision, in consultation with different administrations and involved external parties, to contribute towards policy preparation and execution of the architectural strategy of the Flemish Community, with the aim of helping to create a high quality architectural environment (buildings, infrastructure, landscape) in Flanders."

5. Assessment of the Regional indicator systems completeness

Introduction

The completeness of regional indicator systems assessment is based upon the analysis in the previous chapter, in which the most important driving forces, pressures and impacts related to the four challenges were characterized. Also, an exhaustive indicator list is proposed, based upon different sources / methodologies:

- Indicators proposed in annex in the Inception Report;
- Indicators of the EU wide benchmarking;
- Indicators proposed by other project partners / exchange of ideas;
- The workshop discussion with policy representatives of spatial planning and related areas (core team BRV – 20 October 2011);
- New proposals of indicators based upon the refinement of awareness and situational analysis performed in the draft final report stage.

No extra desktop analysis of indicators developed within Espon was effectuated. It was assumed that the relevant Espon related indicators were referred to and implemented in the EU wide benchmarking (cf. Interim Report).

Indicators, however, can be further classified along some guiding principles which are important for the assessment of their usefulness.

Classification along the DPSIR model

It is possible to provide each indicator with a label based upon the DPSIR approach (Driving Force – pressures – states – impacts – responses). It is an analytical approach to help the understanding on how the different aspects related to the challenges are interrelated and linked. More in particular, this classification shows analogies with the indicator typology proposed in the ESPON TPM main report.

For example, indicators related to driving forces or pressures are relevant for Flemish spatial planning policy to follow up and to assess the urgency of policy answers, but cannot be influenced directly within its policy competence. They are related to the both indicator categories mentioned in the TPM main report:

- **Indicators reflecting a situation and its evolution, but on which the territorial level considered – here mostly the regions – has no influence**.
- **Indicators reflecting supra-regional constraints for which the latter may have to implement policies established on a larger scale, sometimes even at the expense of their own short-term interests**.

...since in this approach policies instigated at higher governance level are also considered to be driving forces for spatial change and policy initiatives.

Indicators related to the state (or evolution) of the spatial system as a result of driving forces/pressures are similar to the category

- **Indicators reflecting regional situations on which regional authorities can actually have some influence through their own policies.**

In this context, and especially in the context of spatial planning, it could be more relevant to have spatially differentiated data within the Flemish territory. This is also relevant in the cases where the implantation of policies falls back to local authorities (e.g. municipalities).

Finally, indicators related to policy responses are congruent with the indicator class

- **indicators that do not reflect regional realities, but rather the implementation of policies**

Policy competence, evaluative direction and spatial differentiation

The EU wide benchmarking example and the following discussion on its proposed methodology and indicator set, revealed the need for the following additional information, to be provided by the stakeholders:

- The usefulness of the indicators in Flemish context;
- The required spatial level of aggregation;
- Whether concrete benchmarks exist related to that indicator;
- The direction good-bad;
- The extent in which Flemish / spatial planning policy can deal with these issues.

The initial idea was to discuss this in a workshop with the participants of the core team of the BRV (20th October), but it was agreed to focus on the mind map and discussion about other relevant indicators during the workshop and to answer onto the EU wide benchmark issues by written feedback to be sent to the research team. However, no single input was received, not even after regular reminders.

One explanation is the fact that the core team was focussing at that time onto the direct input for the Groenboek Ruimte (Green Paper of Spatial Planning), and did not have time for the task. Another, additional explanation is that the task was too difficult for the targeted group. A last explanation is the political dimension of some of the issues (assessment of good and bad).

Some of these dimensions should be further discussed, and are not only relevant for the EU wide benchmarking indicators, but for all monitoring /benchmarking systems to be developed. It helps the discussion about a well-founded selection

of indicators. To stress the importance of this discussion, the field “Competence spatial planning region” is added to the indicator tables but left blank.

Without feedback of the stakeholder on these issues, the strategy of this report was to make a proposal of indicators, and to highlight some key indicators, based upon two criteria:

- The presence of a concrete policy benchmark;
- Some typically spatial impacts of spatial consequences of the global challenges.

Each chapter consist of a table with a proposed indicator set. The tables should be read like this:

- Label of the indicator in bold: concrete benchmarks established on different policy levels.
- Yellow highlighted: data source not found
- Field « Indicator »: description of the indicator
- Field « DPSIR »: indicator typology based upon the DPSIR approach
- Field « Category_Flanders »: indicator category (based on mind map)
- Field « EU-benchmark »: “yes” if the indicator is included in the EU-wide benchmark (IGEAT)
- Field « Competence spatial planning region »: « yes » if spatial planning in Flanders has a policy competence. This could be further refined with « the region has a policy competence, but outside spatial planning », »policy competence of local governments/municipalities ».
- Field « Level available »: spatial unit of the available data source.
- Field « Key-indic »: whether it is considered to be a key indicator or not.

Next to the proposed indicator set per theme, each subchapter also provides a “data scheme”, an overview of the most important data sources and indicator systems related to the different aspects of the mind map. A colour code is used to delineate the “main data provider” related to a theme, but in some cases specific subthemes are highlighted in another colour, in the case that a “sub-aspect” is covered by another data provider. Theme boxes that refer to an important benchmarking indicator are also highlighted in the schemes in a specific format. For more detailed information regarding data providers per indicator – if present – reference can also be made to the indicator tables. Larger versions of the data schemes are also available in annex (chapter 9).

For the first challenge – climate change – the discussion about the relationship between the indicator set and the DPSIR model is made more explicit than for the other challenges and serves as an illustration.

Each subchapter ends with an assessment of missing data, based on a confrontation between the mind map and existing datasets/indicator systems.

5.1. Climate change

5.1.1. Climate change: Indicator set

Based upon the mind map in paragraph 6, we propose an indicator set of 23 indicators (cf. Table 1):

- indicators that help to assess the changes in driving forces related to climate change, and to assess the way the performance of Flanders in a EU wide benchmarking – D;
- indicators that monitor evolutions in situational variables, pressures related to the driving forces that are relevant to assess the urgency of spatial planning related measures - P;
- indicators that specifically are used to "benchmark" against established thresholds;
- indicators that are specifically related to spatial impacts.

Driving forces

In chapter 4.1, four sets of driving forces were defined:

- Greenhouse gas emissions;
- Increase in temperature;
- Increase in extreme, but uncertain weather events;
- Change in precipitation patterns.

This indicator group is similar to the one mentioned in the ESPON main report, t.i. "indicators reflecting a situation and its evolution, but on which the territorial level considered has no influence" (Espon and IGEAT 2012). These indicators serve as an encouragement for the development of policies to deal with socio-economic and spatial consequences, but cannot be influenced directly by means of regional policy. This is clearly the case for increase in temperature, increase in extreme, but uncertain weather events and change in precipitation patterns.

Consequently, the main aim of this indicator set is to study the way in which the regional performance changes over time and, if possible, a comparison with other European regions and with the European average. Spatial differentiation within the region is not necessary, and not always useful (except perhaps for the issue of heat islands, cf. further).

The indicator "greenhouse gas emissions" is an exception. This aspect can be seen as a "driving force" of climate change, but as set out in European directives measures can be taken to further "mitigate" the consequences of climate change. In this respect policy on different levels aims to diminish the greenhouse gas emissions, and sets out clear targets for the future (cf. Europe 2020). This means that additional to monitoring its evolution, this indicator could also be compared with this intended benchmark.

Pressures – impacts

A second group of indicators relates to pressures and impacts that are direct results of the driving forces related to climate change. In the mind map health hazard and change in ecosystems were defined as impacts resulting from the increase in temperature, wildfires and heat islands as pressures resulting out of extreme weather events related to heat, and floods, storms, water scarcity and the evolution of ground water level as a result of change in precipitation patterns.

For this group of indicators it is proposed that a spatially differentiated indicator is not necessarily useful, but that the indicator also serves as an encouragement or signal function for the urgency of policy measures. This of course depends upon the strategies and objectives proposed in the Beleidsplan Ruimte Vlaanderen, which are not articulated yet at this stage.

For example, health hazard related to climate change can serve as a signal function for the urgency to develop sectoral and spatial policies against this negative impact of climate change. An example is the development of spatial planning objectives and measures to prevent the heat island effect. Similarly, indicators for the effect of climate on bio systems can be used as an indirect indicator for climate change.

A similar reasoning exists for the amount of storms, floods,..for taking measures for the prevention of building in signal areas, the evolution in water supply and ground water level for the urgency of spatial measures to improve water household in river valleys. In conclusion, the area of Nature 2000 areas can act as a performance indicator on biodiversity, while the yearly loss of nature areas caused by wildfires can be seen as a pressure indicator as a consequence of climate change.

Spatial impacts and "state" of the spatial system

These groups of indicators are meant as a situational analysis of "signal areas" for spatial planning action, either on the regional or local level. As a result, it is interesting and necessary to develop those indicators on a sub regional scale level, e.g. municipalities or even at a more disaggregated level. Examples are indices of soil sealing, indicators for the total hectares of buildings within risk areas for flooding, or, in the context of heat islands, an indicator that relates the elder residential population in a neighbourhood to characteristics of the built environment related to heat island effects. The Ccaspar project states that for the urban areas that the used materials, amount of hardened surfaces, urban morphology (design), urban green and water can influence to a certain extent the UHIE (De Sutter 2011). So it is proposed that the amount of urban green related to the built up area (Urb16) and the water surface related to the built up area (Urb17) could be two interesting indicators for climate adapted urban development. It could even be possible to cross relate those indicators with the share of elderly population, to delineate "areas of risk", where a relative older population lives in relative built up areas.

Table 1 – Climate change: indicator set.

indicator	DPSIR	Category_Flanders	EU benchmark	competence spatial planning region	Level available	Data provider	key_indic
Greenhouse gas emissions in total	D	Emmissions	No		Nuts1	VMM	yes
Greenhouse gas emissions per sector	D	Emmissions	No		Nuts1	VMM	yes
Concentration of particulate matter on surface level, 2009	D	Emmissions	yes		Nuts3	Eurostat	
Ozone exceedance days, 2008	D	Emmissions	yes		Nuts3	Eurostat	
Change in minimum temperature January, 1994 - 2008	D	Temperature	yes		Nuts2	Rerisk	
Change in maximum temperature July, 1994 - 2008	D	Temperature	yes		Nuts2	Rerisk	
Change in mean temperature January, 1994 - 2008	D	Temperature	yes		Nuts2	Rerisk	
Change in mean temperature July, 1994 - 2008	D	Temperature	yes		Nuts2	Rerisk	
storm frequency	I	Precipitation patterns	No		Nuts0	VMM	
flood frequency	I	Precipitation patterns	No		Nuts0	VMM	
Evolution of ground water level	I	Precipitation patterns	No		Nuts1	VMM	yes
NATURA 2000 areas, 2009	I	Biodiversity	yes		Nuts3	Eurostat	yes
Arrival date of migrating birds	I	Biodiversity	No		Nuts1	INBO	yes
Spring index dragonflies	I	Biodiversity	No		Nuts1	INBO	yes
Peak Moment in birch pollen	I	Biodiversity	No		Nuts1	INBO	yes
Trend Southern European dragonfly species	I	Biodiversity	No		Nuts1	INBO	yes
Fragmentation index of nature	I	Biodiversity	No		not yet	In developm	yes
wildfires: number of hectares protected nature area laid waste by natural dis	I	Extreme weather events	No		N.A	N.A	yes
N of casualties in heat waves	I	Health	No		Nuts0	VMM	
N of casualties in respiratory diseases	I	Health	No		to check	???	
Heat islands	I	Health	No		Not yet	CCASPAR	yes
Smog Formation (winter and summer): nr of summer and winter smog days	I	Health	No		Nuts1	VMM (acco	yes
Soil sealing, 2006	P	Environment	yes		Nuts3	5th Cohesio	yes
Agricultural production: crops and cattle	I	Environment	No		Nuts1	Studiediens	yes
Water quality	I	Environment	no		Nuts1	VMM	yes
Evolution of natural and man made heritage	I	Environment	no		Location	Agentschap	yes
Evolution of Tourism	I	Environment	no		Nuts2	Eurostat	yes
CO2 captation capacity trees	R	Mitigation	No		not yet	INBO	yes
Buffer capacity of valleys to retain water	R	Adaptation	No		to check	VMM	yes
Signal Areas: amount of "hard functions" in flooded areas	I	adaptation	No		Location	MerkatorNet	yes
Climate adapted urban development: proportion of green area related to built	R	adaptation	No		Location	based on la	yes
Climate adapted urban development: proportion of water surface related to b	R		No		Location	based on la	yes
Total agriculture area with "beheersovereenkomsten"	R	Adaptation	no		Nuts1	Departemen	yes
Location of high risk zones for flooding	R	Adaptation	no		Location	Merkatornet	yes
Water availability	S	Environment	no		Nuts1	OESO, WL, MOW, VI	

To be able to collect the necessary information regarding spatial characteristics, risks and resilience towards the effects of climate change, scientific research can provide more insights (e.g. CCASPAR, INBO...).

Inset: Impact of climate change to natural and manmade systems according to CCASPAR (Climate Change and Changes in Spatial Structures Research Project)

Climate change adaptation raises some specific spatial issues related to natural systems, landscape, human activities. As far as **natural systems** are concerned, the following elements could be indicative for the impact of climate change:

- Loss of biodiversity -> loss of Natura 2000 areas (Env02);
- Diminution of nature: fragmentation, desiccation and manuring are resulting in a decrease of habitat quality. This has off course negative consequences for biodiversity. According to this an indicator for fragmentation of nature is proposed (Cl01) (in development according to INBO, Natuurindicatoren 2011).
- A next group of described phenomena are developed within the Milieurapport indicators concerning the changing behaviour of some key species (arrival date of migrating birds, spring index dragonflies,....Env33 – Env36.

Effects of the primary driving forces (heat, precipitation, floods, increased CO2) are manifold and research about the specific directions and relative importance still have to be researched (De Sutter 2011). In overall, however, it is assumed that climate change affects:

- Agricultural production (crops and cattle) (Cl02);
- Water quality (e.g. eutrophication) (Cl03);
- Decrease in groundwater reserves (especially in summer) (Env31);
- Loss of natural and manmade heritage (Cl04);
- Tourism: increase in tourism (e.g. coastal tourism) (Cl05).
- Destruction of forests and heath land by extreme weather events (heat and storms) (Env29).

Moreover, higher winter precipitation will cause an increase in river flow, inducing a higher risk for flooding (De Sutter 2011). An important parameter in this respect is the percentage of paved ground (Env01). The higher this percentage, the faster the runoff and the higher the risk for flooding.

Next to this, research in Belgium had given evidence for the so called urban heat island effect (UHIE). The Ccaspar report states that research about this is in progress (Hea03).

Responses

Response indicators can be seen as “indicators that do not reflect regional realities, but rather the implementation of policies tackling problems related to climate change” (Espon and IGEAT 2012), or spatial development targets. A good example is the 60-40 target of residential development within and outside urban cores. One can think of similar examples - targets related to spatial strategies against climate change.

Examples:

A specific example related to climate mitigation strategies, is to assess the relative amount (or area) used for the plantation of trees that are explicitly efficient at CO2-captation (Env32). INBO (Instituut voor Natuur- en Bosonderzoek) is effectuating research on the theme at his moment.

The extra stress of climate change implicates that an adequate spatial connection of the landscape becomes a condition sine qua non for tackling the dispersion problems. After a disturbance, a species’ population recovers more easily in a well-connected spatial landscape (De Sutter 2011). An indicator for spatial connectivity of natural habitats in Flanders is in development (INBO, Natuurindicatoren 2011). (Cl06)

The challenge of flooding could be tackled in different ways. Proposed are:

- Amount of farmers with compensation for water management (Cl07);
- Location of signal areas (“hard” functions in flooded areas);(Urb15)
- Location of high risk zones (where the construction of new buildings become almost insurable, a Federal initiative, cf. Belgian National Adaptation Strategy, p. 24). (Cl08)

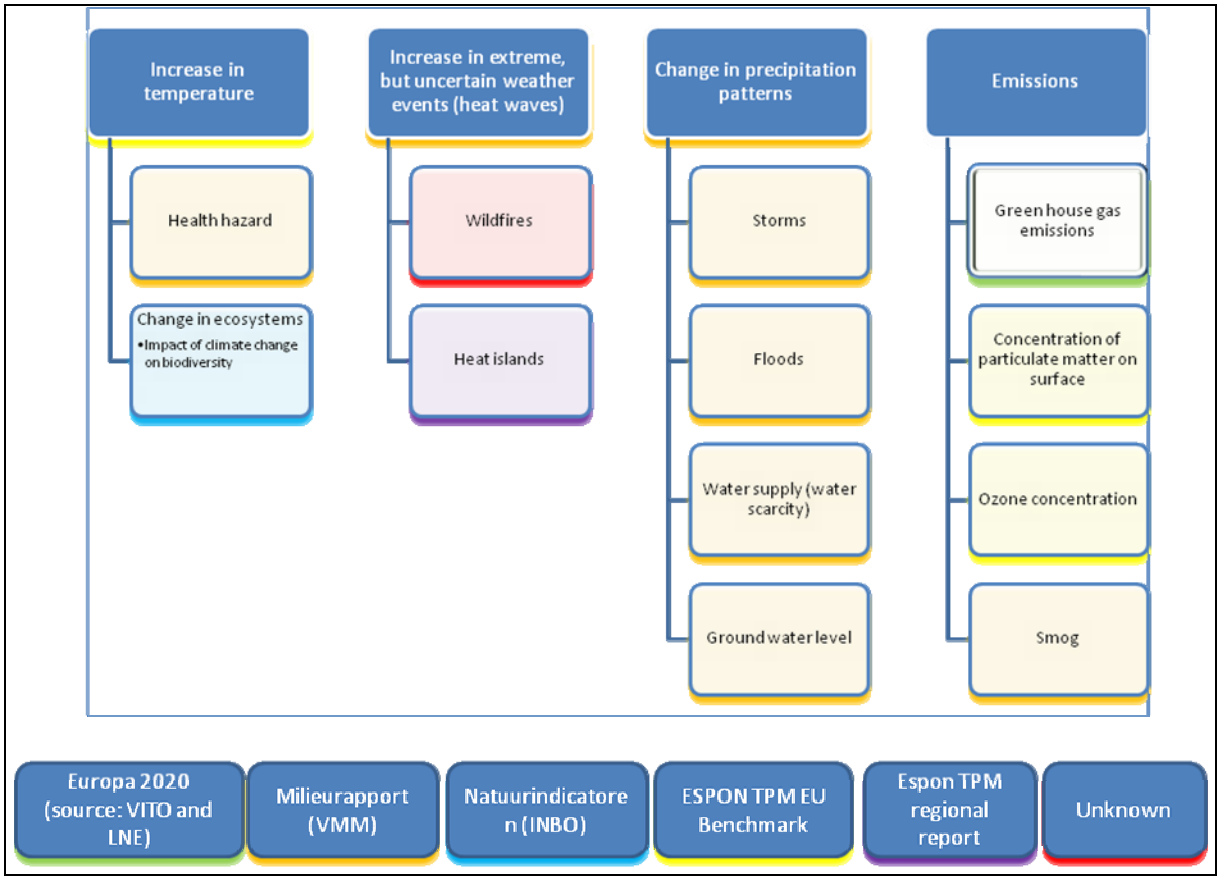
5.1.2. Data availability: assessment

It appears numerous monitoring systems related to climate change are already established. One can think of the Milieurapport (www.milieurapport.be) and the Natuur-indicatoren (www.natuurindicatoren.be), but Europa 2020 is also an important source related to the benchmarking of indicators related to the Europe 2020-strategy (cf. Figure 3). “Europa 2020” is a benchmark developed by the SVR (Studiedienst Vlaamse Regering).

(source: www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2011-01-13-europa2020.aspx). The emission of greenhouse gases, the most important benchmark related to climate change, is recorded as indicator 8 within this indicator system. Data are provided by the Department of LNE (developed by VITO).

The most important indicator system in Flanders, related to climate change, is an initiative of the VMM, www.milieurapport.be. One of the related environmental themes in this monitor is climate change, and provides data on greenhouse gas emissions, evolution of temperature and temperature extremes, precipitation and precipitation extremes (storms and floods), sea level, health effects of climate change, and effects of climate change on the natural environment. The monitor uses the DPSIR approach, and labels each indicator based on this model (Driving force? Pressure? State? Impact? Response?). It also adds information on the evolution with different colour symbols (red, yellow, green, question mark respectively for the categories " negative and alarming ; target not within reach"/"evolution not clear, but not acceptable, (eventual) target not within reach yet"/"positive evolution; acceptable situation, (eventual) target within reach"/"not enough data available".

Figure 16 – Indicator systems and data sources related to climate change: an overview



It is not clear at this point whether indicators related to loss of nature caused by wildfires and storms are available in Flanders. These will have to be investigated further and therefore are categorized as "unknown".

Moreover, a couple of research initiatives are in progress which could lead to new insights related to spatial effects of climate change. Some are mentioned in the former paragraph. In any case, it is worthwhile to consult the final report of the CCaspar project for new insights (http://www.ccaspar.ugent.be/). More in particular, research on heat islands and spatial conditions which reduce the effects of heat island formation could be valuable as a scientific base for policy making, although the development of spatial indicators related to water

management can also be an important attention point for spatial planning (e.g. an indicator measuring the buffer capacity of valleys to retain water, *env30*).

Inset: Health risk of heat islands: a suggestion for indicator development

Spatial unit: statistical neighbourhood

Building blocks:

- Proportion of elder population / total population (e.g.: age group of>80)
- Are of green space and water surface / built up space)

Data sources:

Population per statistical neighbourhood (Rijksregister)

Digitale Topografische Kaart (LANDUSE, STRUCNET)

5.1.3. Missing information

The assessment of data availability shows that indicator systems related to the driving forces and several pressure and impact variables relevant for spatial planning already exist. The example of heat islands suggests that interesting indicators could be developed making use of readily available data within the Flemish and federal governmental landscape. It is assumed that CCaspar will effectuate further research on spatial structures related to climate change and give additional indicator suggestions. The same can be expected of the research within Work package 2 “Resilience” within the Policy Center of Spatial Planning (2012-2015).

Thus, indicators that can be used as encouragement parameters for the urgency for policy issues (driving forces, pressures) are readily available; so are some important GIS data that serve as a base for the development of new indicators related to spatial consequences of climate change. The only exceptions were the number of hectares of nature area laid waste by wildfires, the amount of casualties in respiratory diseases and the buffer capacity of valleys to retain water. These indicators were proposed at the workshop with the stakeholders.

Regarding actual implementation of climate change related policies, it could be worthwhile, however, to collect additional information regarding:

- Local initiatives related to climate change (questionnaire to municipalities);
- The capability of the Flemish government to deal with the challenges of climate change in an adequate way (expert consultation)

A theme which is not easily to quantify, is the proportion of inward migration which is due to climate migration. It is not clear how to quantify this, but this could be effectuated by expert consultation.

5.2. Energy

5.2.1. Energy: indicator set

The mind map and the overview of existing datasets and monitoring systems help with a first assessment on data availability concerning the energy challenge.

Driving forces - pressures

As driving forces for energy related issues, in fact the two most important ones are the societal and economic demand for energy at one hand, and the "drive" for energy efficiency and the need for a share of green energy as put forward by Europe 2020. Some related important aspects which determine the energy balance and the space use / spatial claims for energy, are:

- the energy dependence (what is the import ratio and in how far is Flanders dependent on energy based on its economic structure and mobility?)
- production, energy and storage: how is energy produced and distributed over the Flemish territory.

A specific "driving force" for Flemish regional policy is energy affordability.

The driving forces are intertwined with pressures since the demand for energy by different sectors (households, companies, mobility) result in the necessity to organise energy supply towards the demand. Moreover, European directives require organising this in an energy efficient way and with a considerable stress on renewable energy sources.

A first indicator set was constructed based on these issues, but also on factors related to energy consumption (non-renewables, green energy), energy dependence, energy production, distribution and storage, and affordability as important driving forces (although production, distribution and storage can more be seen a consequence of the energy demand and are rather to be considered as an impact).

This indicator list is seen as a system for EU wide benchmarking – if data are available, or as an encouragement or signal function for the urgency of policy measures. This of course depends upon the strategies and objectives proposed in the BRV, which are not articulated yet at this stage.

Spatial impacts and "state" of the system

Energy production is relevant to spatial planning, since different forms and sectors of energy production require space. Following indicators can be proposed:

- % area used for biomass and capacity (Ene13)
- % area used for wind energy of the spatial location of wind turbines and

capacity (Ene14) and wind energy potential (Ene03);

- % area used for hydro energy and capacity (Ene15)
- % area used for the production of non-renewable energy (Ene23).

Next to the space use of large scale renewable energy forms, decentralised forms of electricity production and recycling can be important for Flemish spatial policy and need localized strategies. In this regard, the following indicators are proposed:

- Re-use of dirty water (Ene24)
- District heating (Ene25).
- Amount of charging/discharging posts for electric cars (Ene20; although this indicator could also be seen as an indication for energy storage possibilities).

Space is also required by **energy distribution infrastructure**. This not also means that information is required regarding space use and spatial connectivity of large scale infrastructures, but also about decentralized systems. The total number and spatial distribution of smart energy meters could be indicative (Ene35).

Another aspect of energy demand is **energy storage facilities** (Ene36). However, further research should be effectuated to assess its space use, since it is most of the time not included in assessment studies of spatial demands for energy.

Although a set of indicators related to **energy consumption** are related to spatial issues, the measures with which to ensure energy efficiency are not related to the spatial planning competency (energy saving construction, promotion of energy friendly modes of transportation / modal split).

A key issue, however, and referred to in the “Beleidsnota Ruimtelijke Ordening 2009-2014”, is to rethink spatial patterns in order to make them more energy efficient. Research effectuated in the Policy Center of Spatial Planning and Housing provides for some interesting proxy indicators for the evaluation of the existing spatial pattern related to energy efficiency (Boussauw 2011). In this research, influencing spatial proximity is proposed as a key aspect of spatial planning competency.

The research proposes some indicators of spatial proximity:

- Work balance (“arbeidsbalans”); (Ene37)
- minimal commuting distance (based on place of residence) (Ene38)
- minimal commuting distance (based upon place of work) (Ene39)
- weighed proximity to facilities with a quasi daily frequency of visits (e.g. Schools, day care, supermarkets, doctors, restaurants, sport facilities,...) (Ene40)

Table 2 – Energy: indicator set

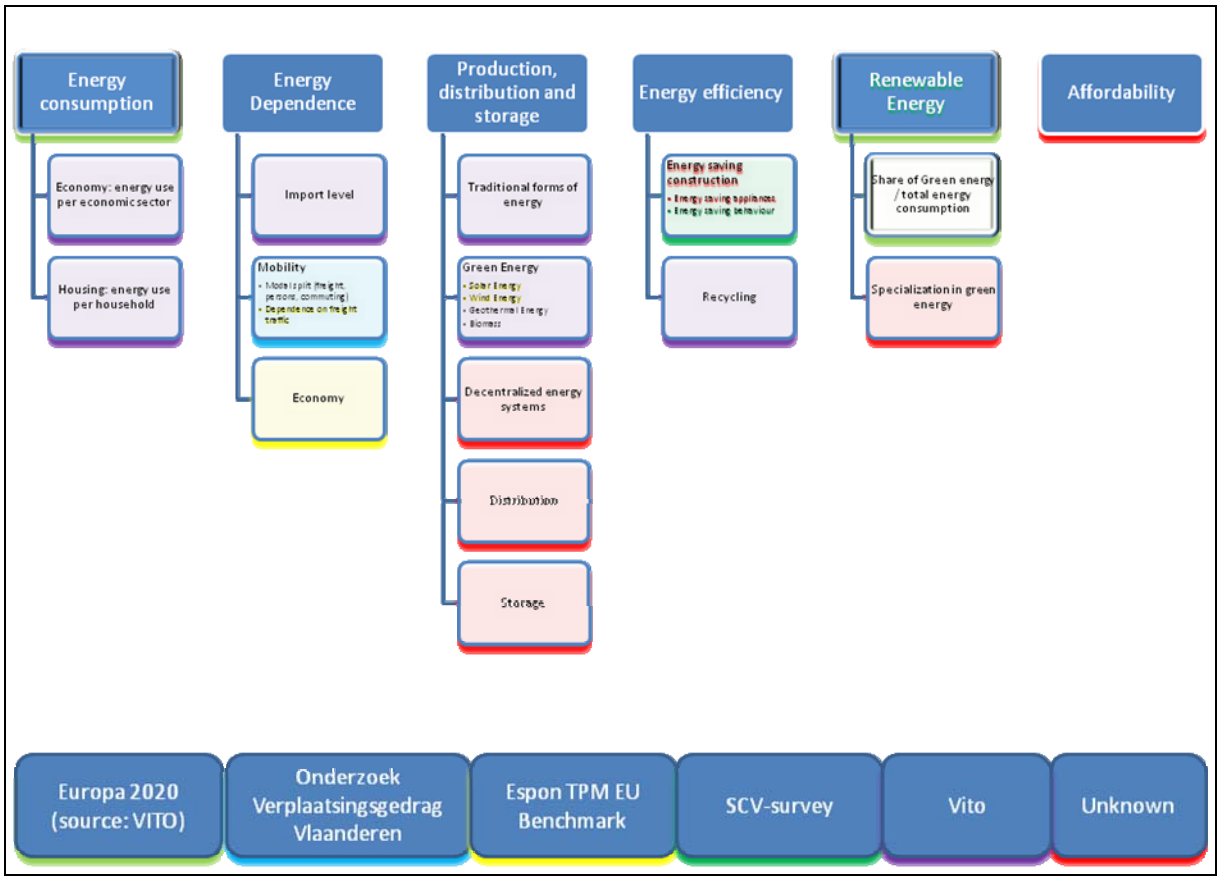
indic_cod	indicator	DPSIR	Category_Flanders	EU Benchmark	competence spatial planning region	Level available	Data provider	key_indic
Ene04	Fuel costs of freight traffic as % of GDP, 2005	D	Energy consumption	yes		Nuts2	Rerisk	
Ene01	Potential energy consumption for heating, 1981-2009	I	Energy consumption	yes		Nuts2	Eurostat	
Ene31	**Share of "green electricity" / total energy consumption**	**R or D**	**Energy Consumptio**	**No**		**Nuts1**	**Studiedien**	**yes**
Ene26	Modal Split (freight)	R or D	Energy Consumption	No		Nuts1	Studiedienst van de Vlaa	
Ene27	Modal Split (persons)	R or D	Energy Consumption	No		Nuts1	Studiedienst van de Vlaa	
Ene28	Modal Split (commuting)	R or D	Energy Consumption	No		Nuts1	Studiedienst van de Vlaa	
Ene18	Energy saving construction	R	Energy Consumption	No		to check	to check	
Ene19	Energy saving appliances	R	Energy Consumption	No		to check	to check	
Ene34	Energy saving behaviour	R	Energy Consumption	No		Nuts1	Studiedienst van de Vlaa	
Ene32	recycling of energy	R	Energy consumption	No		yes	VITO	
Ene33	No, of firms specialized in renewable energy	R	Energy production	No		to check	to check	
Ene02	Solar energy resources, 1981-1990	R	Energy production	yes		Nuts3	5th Cohesion Report	
Ene03	Wind energy potential, 2005	R	Energy production	yes		Nuts3	5th Cohesio	yes
Ene16	Potential and existing renewables: geothermal energy	I	Energy production	No		Nuts1	Studiedienst van de Vlaa	
Ene29	Existing non-renewables: coal, nuclear, gas, oil (share in elektricity production)	I	Energy production	No		Nuts1	Studiedienst van de Vlaa	
Ene13	% area used for biomass	I	Energy production	No		to check	to check	yes
Ene14	% area used for wind energy: amount of winturbines and capacity	I	Energy production	No		location	VEA	yes
Ene15	% area used for hydro energy	I	Energy Production	No		to check	to check	yes
Ene23	% area used for the production of non-renewable energy	I	Energy Production	No		to check	to check	yes
Ene24	Decentralized energy systems: re-use of dirty water	R	Energy production	No		to check	to check	yes
Ene25	Decentralized energy systems: district heating	R	Energy production	No		to check	to check	yes
Ene35	Smart Grids: No, of smart energy meters	R	Energy distribution	No		to check	to check	yes
Ene20	Amount of charging / discharging posts for electric cars	R	Energy Storage	No		to check	to check	yes
Ene36	Amount of hydrogen in storage	I or R	Energy Storage	No		to check	to check	yes
Ene12	Energy intensity (kgoe/1000 EUR BBP)	D	Energy Dependency	No		Nuts1	VITO	
Emp04	Employment in energy intensive industries, 2005	D	Energy dependency	yes		Nuts2	Rerisk	
Ene17	Mobility: commuting	D	Energy dependency	No		Nuts1	Onderzoek Verplaatsings	
Ene21	Import level of energy	D	Energy dependency	No		Nuts1	VITO	
Ene22	Energy affordability	I	Energy Affordability	No		to check	to check	
Ene30	**Total energy consumption and energy consumption per sector**	**D**	**Energy consumptior**	**No**		**Nuts1**	**Studiedien**	**yes**
Ene37	Jobs-housing balance	S	Energy Consumption	No		Stat. Neighb	Boussauw,	yes
Ene38	minimal commuting distance (based on place of residence)	S	Energy Consumption	no		Stat. Neighb	Boussauw,	yes
Ene39	minimal commuting distance (based upon place of work)	S	Energy Consumption	no		Stat. Neighb	Boussauw,	yes
Ene40	weighed proximity to facilities with a quasy daily frequency of visits (bv. Schools, day care	S	Energy Consumption	no		Stat. Neighb	Boussauw,	yes

5.2.2. Data availability: assessment

For the energy challenge, several indicator systems are already in place. As depicted in Figure 17, the benchmark indicators (total energy consumption and share of green electricity / energy consumption) are available in the monitoring system "Europa 2020" (indicators 9 and 10), based on methodologies developed by VITO.

(http://www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2011-01-13-europa2020.aspx).

Figure 17 – Indicator systems and data sources related to energy: an overview



Moreover, VITO collects a set of related data in the Energiebalans (www.energiebalans.be) concerning energy consumption and production, and import level.

www.milieurapport.be contains a chapter on energy and energy related themes. The themes are: energy consumption, energy and carbon intensity of the economy, total transport, production and distribution of energy, green energy, emissions caused by the energy sector, waste productions of the energy sector, nuclear energy and exposure of the population to radiation, environmental cost of energy production, eco efficiency of the energy sector. Indicators are classified according the DPSIR model, but the evolution of the indicators are not evaluated in the same way as for the climate change theme. Most data are produced by VITO, who also develops a monitoring system, the **"Energiebalans"** (http://www.emis.vito.be/energiebalans-vlaanderen). Every year a rapport is created depicting and contextualizing evolutions regarding energy consumption and consumption in Flanders.

Other sources for related areas are "Onderzoek Verplaatsingsgedrag Vlaanderen" (mobility issues and modal split), SCV-survey (energy saving behaviour) and indicators provided in the ESPON EU wide benchmarking related to energy dependency and potentials. However, those systems do not give information concerning the spatial claims / space use of energy.

5.2.3. Missing information

Regarding the driving forces and some measures related to energy efficiency and renewable energy signal indicators are already available. However, no data were found on energy saving construction and energy saving appliances, although it could be possible to devise an indicator for the former based on the number of energy performance certificates handed out per municipality. This "test" gives an EPC-score to a building related to the energetic quality (based on used materials, isolation, and installations for heating, water and ventilation). This certificate is mandatory for new housing estate, and in the case of the purchase of a housing unit. This certificate and the score determine the amount of subsidies to be obtained, for example a reduction of property tax. It is very possible that those data are collected in the administration of energy or through VEA, although if not the case, the data could be collected via questionnaires to municipalities.

Another factor on which no information was found, were indicators for energy affordability and number of firms specialized in green energy (the latter being a suggestion on the workshop). This will also need further investigation.

As far as indicator directly related to the spatial impact of energy are concerned, other data gaps exist. Data related to production of energy are presented in GWH, units of electrical energy instead of space use. The indicators of decentralized energy systems also require further investigation towards data availability.

The exception is, as mentioned above, the mobility related proxy indicators for mobility related energy demand as consequence of the settlement structure (Boussauw 2011) . Some of them are already implemented in the Ruimtemonitor.

5.3. Globalization

5.3.1. Globalization: Indicator set

Driving forces - pressures

As stated in paragraph 4.3, the globalization challenge is characterized by two groups of driving forces: firstly, a change in contextual factors, notably the greater dependence of a region and authorities on global forces, but also other transformations such as an increased mobility, sociocultural change and homogenization of landscapes. Secondly, there is the "policy drive" to respond to this new context through policy by increasing the competitive position of the region and promoting economic growth.

Specific policy "drivers" are European benchmarks, included in the indicator list:

- Employment for 75% of the population between 20-64 years; (Glo31)
- 3% of the EU-BBP to be invested in R&D (tec02);
- Reaching the "20/20/20"-climate and energy targets (cf. climate and energy);
- The school drop-out rates should be lower than 10% and at least 40% of the younger generation (30-34 year olds) should have a degree or diploma (Edu2 and Glo32);
- The number of people, who are poor or socially excluded, should be diminished by 20 million. (www.vlaandereninactie.be)

For specification indicators related to the mind map, the indicator table can be consulted. The Eu wide benchmarking also provided for an array of comparable data on European scale level. Other suggestions are based upon the indicator list proposed in the Inception Report and suggestions of the other regional project partners.

Spatial impacts and "state" of the system

As far as indicators are concerned which relate to spatial aspects of globalization, two crucial aspects were mentioned on the workshop with the stakeholders (20 October 2011): first, the presence of agglomeration economies and specific examples / analysis of location strategies of specific target economies, and aspects of landscape homogenization[3].

Next to this, knowledge of (the evolution) of specialization of economies within

[3] The stakeholders did also think of some indicators related to the "sociocultural openness" towards a global lifestyle. They were included in the indicatore list, but not investigated further since the non-spatial character of the theme.

the Flemish territory, and the spatial distribution within designed areas (industrial terrains) or rather scattered developments, can be worthwhile to monitor.

As far as homogenization of landscapes is concerned, two indicators were proposed, respectively indicative for homogenization of rural and urban areas.

- Glo18 Homogenization of landscapes: disappearance of traditional landscapes
- Glo19 Homogenization of landscapes: scale enlargement in agriculture
- Glo20 Homogenization of buildings and architectural styles
- Glo21 Emergence of artificial places
- Glo22 Homogenization and internationalization in retailing: share of retail belonging to international chains
- Glo23 Homogenization and internationalization in retailing: scale enlargement retailing
- Glo24 Glocalization in retailing: specifically locally rooted retailing

Table 3 – Globalization: indicator set

indic_cod	indicator	DPSIR	Category_Flanders	eu_benchm	competence spatial planning region	Level available	Data provider	key_indic
Eco04	Manufacturing (C)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Eco05	Information, communication (J)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Eco06	Professional, scientific, technical activities (M)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Emp01	Manufacturing (C)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Emp02	Information, communication (J)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Emp03	Professional, scientific, technical activities (M)	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Glo29	Specialization in specific segments of production: coefficients of speci	S	Competition on Global Sales Market	No		Municipality	Ruimtemoni	yes
Edu01	Tertiary education, 2007	S	Competition on Global Sales Market	yes		Nuts2	Edora	
Edu02	**Early school leavers, 2007**	**S**	**Competition on Global Sales Mark**	**yes**		**Nuts2**	**5th Cohesi**	**yes**
Glo32	% of the younger generation (30-34) with a degree	S	Competition on Global Sales Market	no		to check	to check	
Glo01	Costs of production: labor cost per unit	S	Competition on Global Sales Market	No		Nuts1	Eurostat, bewerking Stu	
Glo02	Importance of agglommeration economies: metropolitanisation	D	Competition on Global Sales Market	No				
Con01	Daily population accessible by car, 2004	S	Competition on Global Sales Market	yes		Nuts3	EDORA	
Tec01	Internet access, 2009	S	Competition on Global Sales Market	yes		Nuts2	5th Cohesion Report	
Glo28	Import ratio of Flanders	S	Competition on Global Sales Market	no		Nuts0	INR, in Vlaanderen in cijf	
Glo29	Export ratio of Flanders	S	Competition on Global Sales Market	no		Nuts0	INR, in Vlaanderen in cijf	
Glo03	Productivity: productivity of labour	S	Competition on Global Sales Market	No		Nuts1	Eurostat, bewerking Stu	
Tec02	**Expenditure on R&D, 2007**	**S or R**	**Competition on Global Sales Mark**	**yes**		**Nuts2**	**5th Cohesi**	**yes**
Tec03	Relative number of patents	S	Competition on Global Sales Market	yes		Nuts2	Eurostat	
Glo04	Knowledge spillover	S	Multinational firm networks	No		to check	Foci?	
Glo05	Power and control / dependency on decisions taken elsewhere	D	Multinational firm networks	No		to check	Foci?	
Dem05	Population born outside the EU, 2006	D	Increased mobility	yes		Nuts2	5th Cohesion Report	
Mig02	Migration into NUTS 3 regions	S	Increased Mobility	yes		Nuts3	5th Cohesion Report	
Tou01	Tourism occupancy, 2009	S	Increased Mobility	yes		Nuts2	Eurostat	
Tou02	Tourism non-residents, 2009	S	Increased Mobility	yes		Nuts2	Eurostat	
Glo28	Share of foreign tourists to the total no, of tourists	S	Increased mobility	No		Lau1	FOD Economie	
Con02	Accessibility to passenger flights	D	Increased Mobility	yes		Nuts3	5th Cohesion Report	
Glo06	Increase of international traffic: air	D	Increased mobility	No		to check		
Glo07	Increase of international traffic: TGV	D	Increased mobility	No		to check		
Glo08	Increase in international persons traffic	D	Increased mobility	No		to check		
Glo09	International goods traffic	D	Increased mobility	No		to check		
Unm01	Unemployment rate, 2009	S	Less stability labour market	yes		Nuts3	Eurostat	
Unm02	Change in unemployment rate, 2000-2009	S	Less stability labour market	yes		Nuts3	Eurostat	
Glo10	Unstable employment: amount of failures	S	Less stability labour market	No		Nuts1	Studiedienst Vlaamse R	

Glo31	**Employment rate**		**Less stability labour market**	**no**		**Nuts1**	**Eurostat**	**yes**
Glo11	**Growth: GDP**		**Growth**	**No**		**Nuts1**	**Studiedien**	**yes**
Glo13	**Growth: employment**		**Growth**	**No**		**RESOC**	**WSE**	**yes**
Glo30	Size of companies: structure	S	Growth	no		to check		
Glo14	Amount of "fast growers"		Entrepeneurship	No		Nuts1	Studiedienst Vlaamse R	
Glo14	Investment support in companies		Entrepeneurship	No		Nuts1	Studiedienst Vlaamse R	
Glo15	TEA (total entrepreneurial activity) index		Entrepeneurship	No		Nuts1	The Global Entrepreneur	
Glo16	Poverty: population in poverty or social exlusion according to EU2020-definition		Poverty	No		Nuts1	Armoedemonitor	
Glo33	Poverty of children and elderly population: an European comparison		Poverty	no		Nuts1	Armoedemonitor	
Glo17	Social cohesion - Social Polarization: inkomenskwintielverhouding (S80/S20)		Social Cohesion	No		Nuts1	Armoedemonitor	
Glo18	Homogenization of landscapes: dissapearance of traditional landscapes		Homogenization	No		Location	Agentschap Onroerend E	
Glo19	Homogenization of landscapes: scale enlargment in agriculture		Homogenization	No		Lau1	Landbouwte	yes
Glo20	Homogenization of buildings	S	Homogenization	No		to check		
Glo21	Emergence of artifical places	S	Homogenization	No		to check		
Glo22	Homogenization and internationalization in retailing: share of retail belc	S	Homogenization	No		to check		yes
Glo23	Homogenization and internationalization in retailing: scale enlargment	S	Homogenization	No		location	Locatus	yes
Glo24	Glocalization in retailing: specifically locally rooted retailing	S	Homogenization	No		location	Locatus	yes
Glo25	Tolerance towards an international lifestyle: amount of expats	S	Global citizenship	No		to check		
Glo26	Tolerance towards an international lifestyle: amount of mixed marriage	S	Global citizenship	No		to check		
Glo27	Tolerance towards an international lifestyle: willingness to learn foreign	S	Global citizenship	No		to check		

5.3.2. Data availability: assessment

As illustrated in Figure 18, a mix of datasets is available in Flanders related to the globalization challenge. Moreover, on Flemish scale level a couple of monitoring systems are developed for European benchmarks related to globalization, specific Flemish strategies (Pact 2020) and specific themes (e.g. Global Entrepreneurship Monitor, Armoedemonitor…)

As far the most important benchmarking indicators are concerned, "Europa 2020" (http://www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2011-01-13-europa2020.aspx) is an interesting source (indicator 1 – 7, indicator 11-15). The indicators are related to poverty, employment rate and employment rate in interest groups, quality of local education and lifelong learning, and innovation.

Some other initiatives are the **Global Entrepreneurship Monitor**, developed by Vlerick Entrepreneurial School (http://www.vlerick.be/nl/media/pers/persberichten/14754-VLK.html). The Flemish Research Organization for Entrepreneurship and International Entrepreneurship (STOIO) has as its objective to support the Flemish Government with research and data gathering on several pillars of entrepreneurship: (1) the creation of companies; (2) the growth of companies; and (3) exit and take-over of companies. To this purpose, it relies on a wide array of databases that help it to realize its objectives. It compares Flanders with Belgium, and a set of reference countries. Reference countries are: France, Denmark, Germany, Spain, The Netherlands and the United Kingdom. Another example is the monitoring system "Vlaanderen Internationaal" (http://www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2008-06-vlaanderen-vergeleken.aspx), a yearly benchmark to assess the economic and innovative potential of Flanders yearly towards the 2020 benchmark of VIA (Vlaanderen in Actie): being one of the European top regions. The benchmarking consists of indicators related to economy, labour market and innovation, and compares Flanders with a selection of 15 European regions that are considered to be exemplary.

More related towards the sociocultural consequences of globalization, it is worthwhile to mention the **Armoedemonitor**, a report created by the Studiedienst van de Vlaamse Regering (SVR). The indicator set provides data on the following themes: poverty related to income and income distribution; debts; allowances; employment and unemployment, housing, education, health care, social participation, child poverty and poverty of the elderly. Some indicators that are based on Eurostat data provide for European benchmarks.

The EU wide benchmark also provides for an indicator set, mostly related to the themes of competitiveness, migration and tourism, and cost competitiveness – access to markets.

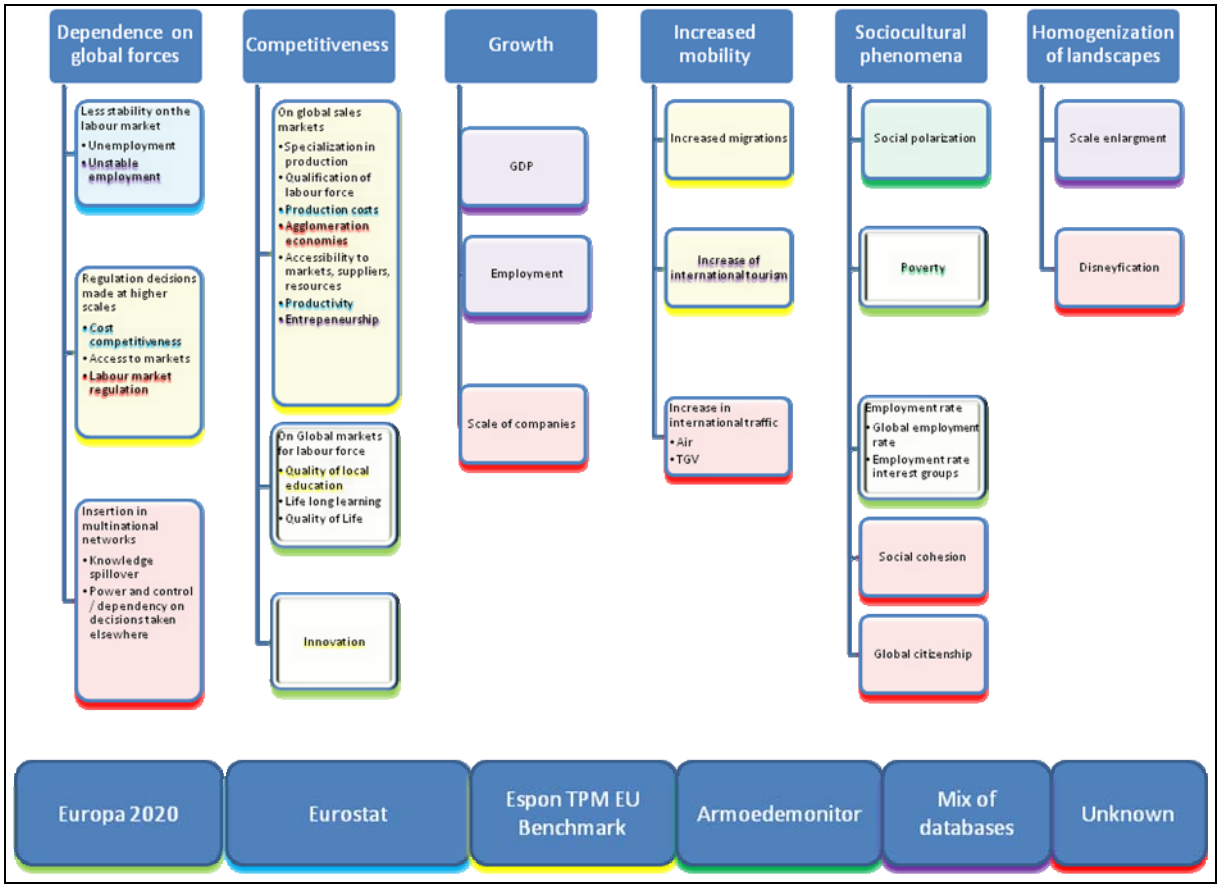
The Policy Center of Spatial Planning and Housing also developed methodologies for indicator development related to the spatial distribution of economy in Flanders (Lievois et al, 2011).

Within a case study analysis, a methodology was proposed to measure economic activity in "rural" areas (Tempels et al. 2012). This methodology could be applied for the whole of Flanders, but a considerable data processing is required in order to perform the analysis.

Related to economic specialization of areas, a methodology was proposed to measure a specialization index of agriculture and forestry, industry and services respectively, but every selection on the basis NACE categories used in the RSZ is possible to measure specialization in a specific economic activity. In www.ruimtemonitor.be, a specialization index of retailing and logistics is proposed, but other combinations of nacecodes are possible.

Data on the occupancy of industrial terrains can be obtained by AO (Agentschap voor Ondernemen). It is possible to develop additional indicators with these dataset.

Figure 18 - Indicator systems and data sources related to globalization: an overview



The proposed indicators on homogenization of rural and urban areas were further investigated towards available data. It is possible to devise indicators for scale enlargement, e.g. the "Landbouwtelling" and "Locatus" provide for data on scale enlargement of farms / retailing respectively. The database of the Agentschap Onroerend Erfgoed on protected monuments and landscapes could be used to measure the "loss" of traditional landscapes.

5.3.3. Missing information

Related to the aspects of the mind map and the different categories, no data or indicator systems were found related to the insertion of Flanders and Flemish companies in multinational networks, increase in international traffic (AIR – TGV), social cohesion and global citizenship, % of the younger generation with a degree, scale of companies and Disneyfication. This however does not mean that data are not available, but since the proposed indicator list on globalization was very extensive – due to the many suggestions put forward in the inception report, it was not possible to do a detailed search for data sources.

Within the Policy Center, methodologies are developed which could lay a foundation for a spatial indicator system related to economic developments.

However, it is quite hard to grasp the notion of agglomeration economies. No data exist on added value, which are geographically fine-grained enough to assess specific agglomeration economies like:

- The relationship university – R&D;
- Logistics – multimodal platforms;
- …

These data will have to be collected making use of other methods / techniques (possible qualitative analysis).

5.4. Demography

5.4.1. Demography: indicator set

According to the mind map, a long list of indicators is proposed. The indicator set is based on the mind map, but regrouped per “driving force”, with the local manifestation or issue linked to the driving force as subsets of the driving force (see also Figure 17).

Driving forces - pressures

Population growth is being considered as the main driving force (dem03), but also households / family composition (Dem08, dem05), age structure (dem06, dem07) and ethnic composition (dem04) as a set of explanatory variables that further explain the specific need for housing and services, but also possible socio-ethnical conflicts. Population growth is seen here as in total (growth of the Flemish population), but also within specific Flemish regions. Quality of life is also considered being a driving force, because possibly explanatory for the attractiveness of Flanders as a whole as a migration destination, but which could also be explanatory for internal migration shifts.

Related, to the demographic aspect, specifically, no benchmarks are provided. Obviously, the provision of job opportunities and welfare (actions against

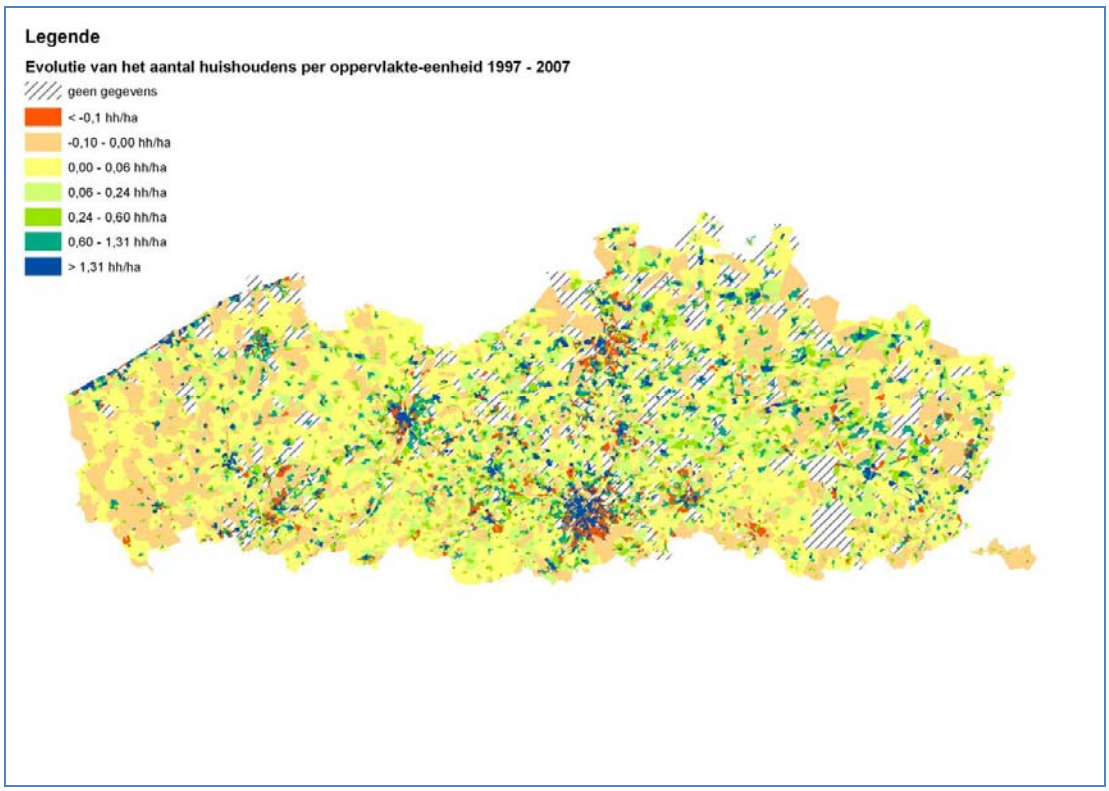
poverty) are demography-related themes, but are momentarily classified within the globalization indicators.

Monitoring the general evolution of population, in Flanders, migration, age structure and ethnicity can be useful to take into account, but considering the fact that demography, migration is a policy area that most in particular demands for a “localized” approach, as far as matching of population and services, accessibility,....is concerned, most variables are interesting to study in a disaggregated way – although the ESPON EU Benchmark provides for some interesting indicators comparable in an European context (population growth, young age and old age dependency ratio,...)

For instance, the Policy Center of Spatial Planning and Housing provides for a set of indicators that relate the demography challenge to aspects of spatial morphology such a **urban sprawl, densification and new types of urban architectures**. Since ESPON methodologies are not adequate to characterize the strongly polycentric Flemish system, it is proposed to look for such indicators on a more detailed scale level.

More in particular, the growth of households per statistical sector has been used as an indicator for residential growth (Dem08), although GIS datasets of built up parcels can be used to construct indicators of the evolution in build up area as well (Dem10). Densification can be measured by the evolution in average parcel size (Dem01). For this indicator reference is made to the work of the Policy Center of Spatial Planning and Housing (cf. www.ruimtemonitor.be, for an example cf. Figure 19).

Figure 19 – Flanders: evolution of households/area, 1997-2007



Source: Rijksregister / Cartography: OSA

Spatial impacts and "state" of the system

As stated earlier, monitoring the evolution of population composition on a more detailed scale level, e.g. ethnic composition (Dem04), no of single households (Dem05), ageing (Dem06) and "greening" (Dem07) is relevant considering the much localized character – in any case, all data are available at municipal level. However, more in particular, a confrontation between population structure and availability and accessibility of services is of special interest. An example is Figure 15: the Child care in Flanders: total capacity / 100 children, but other combinations between target groups/services are possible and could be based upon available data concerning schools....(dem22,dem23, dem24), rest homes (dem32), health care provided at home (dem33),.....(cf.Table 4)

Other aspects related to quality of life which could be related to demographic change, are:

- Environmental quality: Dem12, Dem13, Dem14, Dem15, Dem16
- Cultural and recreational facilities: Dem18, Dem19, Dem20, Dem21;
- Commercial structure: Dem22;

In the "Ruimtemonitor", some accessibility indicators were developed by (Boussauw 2011). The methodology is described in (Lievois et al. 2011):

- Dem26 accessibility: supply of train connections (working day)/population
- Dem27 accessibility: supply of bus and trams (working day)/population
- Dem28 Accessibility: potentially reachable population (methode Vandenbulcke)
- Dem29 Accessibility: difference between car travel time in peak and low moment to important Belgian metropolitan regions.

5.4.2. Data availability: assessment

The assessment of data availability and easiness of access to the data depends upon the spatial level in which the data are required. Is the monitoring system seen as a device to quickly asses the evolution of trends and measures on the scale level of Flanders as a whole, or is it meant as a system which also supports more localized spatial decisions, e.g. indicators as a tool to make decisions on new spatial locations for residential development, commercial, cultural facilities, etc...

Population growth benchmarking against the rest of Europe can be found in the EU-wide monitor system.

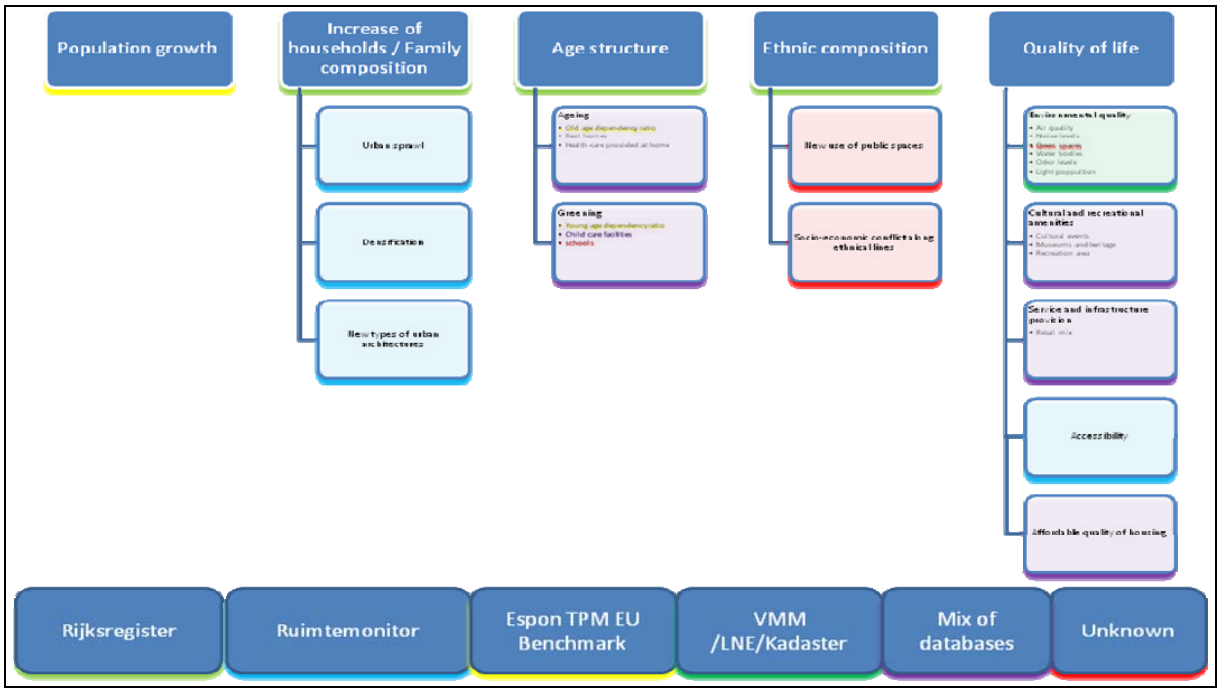
Specific information related to increase of households and relation with the morphological settlement structure, can be found in www.Ruimtemonitor.be.

Table 4 – Demography: an indicator set

indic_cod	indicator	DPSIR	Category-Flanders	EU benchmark	competence spatial planning region	Level available	Data provider
Dem01	Life expectancy, 2004	D	Demography	yes		Nuts2	Demofer
Dem02	Median age, 2008	D	Demography	yes		Nuts2	Eurostat
Dem03	Population growth, 1999-2009	D	Demography	yes		Nuts3	Eurostat
Soc04	Young age dependency ratio, 2009	I	Social structure	yes		Nuts3	Eurostat
Soc05	Old age dependency ratio	I	Social structure	yes		Nuts3	Eurostat
Dem12	Quality of life, environmental quality: air quality (still to assess how air quality will be measured!)	S	Quality of Life	no		Regions	VMM
Dem13	Quality of life, environmental quality: noise levels	S	Quality of Life	no		Nuts1	LNE
Dem14	Quality of life, environmental quality: green spaces (protected?)	S	Quality of Life	no		to check	
Dem15	Quality of life, environmental quality: water bodies	S	Quality of Life	no		Nuts1	administrati
Dem16	Quality of life, environmental quality: odor levels	S	Quality of Life	no		Nuts1	LNE
Dem17	Quality of life, environmental quality: light pollution: amount of participating municipalities to "Nacht van (	S	Quality of Life	no		Nuts1	Bond Beter
Dem18	Cultural and recreational amenities: amount of cultural events	S	Quality of Life	no		Lau1	Uit-Databan
Dem19	Nr of recognized museums and heritage convenants	S	Quality of Life	no		Nuts1	MVG, admir
Dem20	Deelnemers aan activiteiten van Culturele Centra naar soort activiteit v/d initiatiefnemer	S	Quality of Life	no		Nuts1	Agentschap
Dem21	% recreation area	S	Quality of Life	no		Lau1	administrati
Dem22	Service and infrastructure provision: commercial structure and facility level in municipalities	S	Quality of Life	no		Location	Locatus
Dem23	Amount of child care facilities	S	Quality of Life	no		Lau1	Osiris datab
Dem24	Nr of nursery schools / preschoolers	S	Quality of life	no		to check	to check
Dem25	Nr of primary schools / population >6 and <13	S	Quality of life	no		to check	to check
Dem26	accessibility: supply of train connections (working day)/population	S	Quality of Life	no		Lau1	De Lijn (in R
Dem27	accessibility: supply of bus and trams (working day)/population	S	Quality of Life	no		Lau1	De Lijn (in R
Dem28	Accessibility: potentially reachable population (methode Vandenbulcke)	S	Quality of Life	no		Lau1	Vandenbulc
Dem29	Accessibility: difference between car travel time in peak and low moment to important Belgian metropoli	S	Quality of Life	no		Lau1	Vandenbulc
Dem30	affordable quality of housing: average and p75 selling price pf dwelling per type	S	Quality of Life	no		Nuts1	FOD Econo
Dem08	Number of households	D	Residential development	no		Lau1	http://www4
Dem09	Urban sprawl: evolution in built up area	S	Residential development	no		stat sectors	Cadmap or
Dem10	Densification: evolution in average parcel size	S	Residential development	no		Lau1	Ryckewaert
Dem11	New types of urban architectures: evolution of ratio appartments in total housing development	S	Residential development	no		Lau1	www.Ruimte
Dem04	New composition of population: ethnic composition (% of foreign residents)	D	Composition of populatio	no		Lau1	http://www4
Dem05	New composition of population: family composition (no. singe households)	D	Composition of populatio	no		Lau1	http://www4
Dem06	New composition of population: ageing (based upon a dataset of age groups)	D	Composition of populatio	no		Lau1	http://www4
Dem07	New composition of population: "greening" (based upon a dataset of age groups)	D	Composition of populatio	no		Lau1	http://www4
Dem31	Amount of doctors/population (active doctors)	S	Ageing	no		Nuts1	WVG, Agen
Dem32	Amount of rest home beds	S	Ageing	no		to check	
Dem33	Amount of health care provided at home (amount of hours spent on home care)	S	Ageing	no		Lau1	www.zorg-e

As far as age structure is concerned and the need for specific services, data are available in a mix of databases. Moreover, the web portal www.lokalestatistieken.be gives the possibility to download a pdf document per municipality with a vast array of indicators, related to demography (population, population forecasts, foreigners, migration, households and household projections, single households). The document also provides a set of indicators related to quality of life (education, cultural facilities, child care, criminality, traffic accidents). The website also gives the opportunity to make cartographic representations per theme.

Figure 20 - Indicator systems and data sources related to demography: an overview



Other interesting initiatives are the Stadsmonitor (http://www4dar.vlaanderen.be/sites/svr/Monitoring/Pages/2008-06-stadsmonitor.aspx). The “Stadsmonitor” describes trends in 13 Flemish cities, which are the center of attention of Flemish urban policy. In the fourth and most recent edition, 160 indicators are included which are selected in participatory processes. The indicators cover different themes, such as cultural amenities, education, perception on safety, residential environment, mobility related issues, care, social principles (including ethnicity), nature and environmental management,…

Interesting indicators related to urban sprawl are already available in the “Ruimtemonitor”; this is also the case for some accessibility indicators.

For other datasets related to ageing and quality of life which relate to provision of services of general interest, a mix of data sources could be used. Information of services related to the elderly can be obtained from the “Agentschap Zorg en

Gezondheid", child care related data from "Kind en Gezin", information regarding cultural amenities from the ministry of culture and other data providers (cf. "Uit in Vlaanderen").

5.4.3. Missing information

After a first quick scan, aspects of environmental quality are only available at Nuts 1 level. This is also the case for cultural amenities, although further research could shed some insight in possibilities at a more detailed scale level.

For example, it can be expected that, if more detailed indicators of environmental quality are required, those can be obtained in cooperation with the department of LNE. Very detailed indicators concerning commercial structure can be obtained by making use of the Locatus Databank, which is private property of a commercial developer, but efforts are being made to make data agreements for use within the Flemish Government. Debecker and Cant developed GIS tools for the construction of spatial indicators based on the dataset (Deel3: Locatie Detailhandel, in: Verhetsel et al, 2011).

On this moment, it is not clear yet how to obtain data related to the new use of public spaces and socio-economic conflicts along ethnical lines. If source of interest, this should be investigated further. An interesting initiative, however, is the "Lokale Inburgerings- en Integratiemonitor".

At the request of the Flemish Minister of Integration, the "Studiedienst van de Vlaamse Regering" developed the "Local civic and Integration Monitor" (Lokale Inburgerings- en Integratiemonitor LIIM), in order to support regional and municipal integration policies. Firstly, demographic indicators give insight into the size and composition of the target group of local civic integration. Then attention is paid to the social position of this group in terms of employment, education, housing, welfare, poverty and social participation.

6. Resilience of the Planning System

The chapter reflects on the concept of resilience applied to planning system, interpreting how the Flemish planning system is prepared to face spatial challenges and can provide an institutional framework that allows the mobilization of stakeholders, competences, and resources in a suitable way for the region in order to provide in-time and strategic answers adopting a spatial perspective.

The assumption is that that the Flemish planning system should be able to tackle the macro challenges through the assessment of their regional characterizations and consequently through the coordination of (direct and indirect) spatial policies. Hence, a crucial aspect is not only the interpretation of their spatial translation, but also the capacity to set meaningful and feasible strategies, which should be able to adopt flexible measures according to changing spatial configurations and dimension of the phenomena.

These measures should be framed by vertical and horizontal coordination in order to have a coherent multi-scalar and multi-sectoral approach, the decision-making process of which should be also open to the various interested stakeholders and citizens, granting a shared perspective and the resolution of possible raising conflicts. If the spatial strategy is shared among different stakeholders and embedded in a multi-scalar approach it can become a powerful tool to coordinate and to frame sectoral approaches, which are usually the straightforward competent areas in which the macro-challenges receive a policy answer (the economic sectors, the environmental or the social departments, etc.).

The chapter shows that the Flemish planning system is characterized by an interesting combination of strategic attitude and flexible approach to the planning processes, providing a resilient capacity in order to address macro-challenges. However, two main aspects are threatening its extensive capacity of being able to cope with complex spatial dynamics. On the one hand, there is a trend (which can be considered a macro phenomenon characterizing the planning debate in most of European regions) of progressive reduction of ‘collective responsibility’. A more development-oriented approach, the need of pursuing regional competitiveness determine, as a consequent drawback, the reduction of the capacity of adopting decision in the name of collective challenges, e.g. climate change, or energy consumption and provision. Moreover, especially for the Flemish context, this process seems to be combined with a growing individualization/liberalization of spatial development processes, with strong protection of the ownerships rights (e.g. the changes in regulation about building permissions), which hampers the possibility to approach macro-challenges as collective spatial issues.

The rooms for activating processes of investigation on complex issues are becoming rarer, and the general political trend is a plea is for immediate solutions. Moreover, together with this general trend, the search for solutions concerning space are more toward land use regulation that toward complex and integrated policies.

On the other hand, the absence of obligation to update the vision and the regional strategy every certain period of years avoids the possibility to put at stake certain collective challenges in due time. The necessity to reach a political memento in order to activate an updating process may cause some delay and, consequently, a certain rigidity of the system.

Nevertheless, the region has recently activated a wide process of revision of the new structure plan. The intensity of the process and the wider debate related to that are an important opportunity to overcome certain limitations and rigidity, as well as to invert trends of sectorialization providing institutional rooms for putting spatial dynamics at the center of the attentions.

6.1. Strategic capacity of the planning system

6.1.1. Vision

The Flemish spatial planning system includes the making of spatial visions and strategies (spatial structure plans) for the Flemish region and for the 5 provinces (and for the 308 municipalities) since 1996. Some of these visions are also elaborated upon in subregional spatial planning processes.

The visions for the Flemish region (RSV) and provinces (RSP's) and the municipalities have explicit spatial foci. They include sectorial parts but are integrated in the overall vision for spatial development. In principle these visions are comprehensive and inter-sectorial. Most of the plans cover a wide range of sectors, combining different needs. E.g. the RSV of 1997 covers guidelines for a wide range of sectors trying to combine the protection of open areas and the pursue of economic development, natural assets and agricultural activities, etc. The RSV and some of the RSP's have since then been updated, but the overall vision (objectives, spatial concepts and/or policy goals), based on changes in the spatial dynamics of the region or new challenges, have not been completely revised yet.

Since there is no formal obligation in updating the vision (e.g. with a formal lifetime of the plan and/or the vision), the vision can be updated only if there is a political intention. It can be considered a rigidity of the system, due to the political difficulties of activating the process, while the delay between changes in spatial dynamics and updating process might cause some policy incoherencies.
However, different forms of update have contributed de facto to a growing flexibility: first, some plans have been revised partly, with ad hoc changes but without touching the whole plan; second, some spatial development strategies went de facto just sideline the current vision. All in all, thus, the flexibility of the system is still high, but less than was envisioned by the designers of the planning system.

Moreover, the Region is currently involved in the revision of the Structure Plan. The Beleidsnota Ruimtelijke Ordening 2009-2014 stipulates the construction of an update of the RSV, the BRV, within this legislation period. It also holds the ambition of being a part of a circular planning process. The first phase is the construction of a Green Paper (end 2011, but in delay), the next step consists of the construction of a White Paper, and the effective encompassing spatial

planning policy document “Beleidsplan Ruimte Vlaanderen” should be ready at the end of 2014. Aside this process, the spatial dynamics are updated by a document called “Ruimteboekhouding” (Space Balance) in which the aims of the planning documents are translated in land-use quantitative aspects.
Momentarily, the BRV team has effectuated a public consultation process concerning spatial issues, and also a consultation of experts. It is to be expected that harmonization with other policy domains will be crystallized in the core team of the BRV (with representatives of other policy domains).

6.1.2. Objectives

Spatial structure plans contain both visions/objectives and actions. Actions however are limited in their scope to their spatial translation and dimension. Measures are content-wise coherent with the general vision, in the case of the RSV and the RSP’s. Due to recent partial revisions the plans however frictions between general visions and measures have started to appear. Among the causes, later revisions of the planning policies have shifted objectives from the protection of collective properties (e.g. water system and natural areas and the containment of the urban sprawl) toward a stronger focus on economic development.

The RSV had a 15 year time horizon. The new RSV which is now prepared seems to have a double horizon of 10 years and 40 years. There is no form of prioritization in the time plan and in the organization of the objectives; prioritization is done in (yearly) operational programmes and decisions following the spatial structure plans. Budgets are allocated not in the spatial structure plans but in the operational programmes.

As far as stakeholder involvement is concerned, both in the RSV and in the RSP’s, public actors of different policy levels were involved in the definition and actuation of the policy objectives, as well as main (semi)civil socio-political organisations (employers, unions, different sectors). Some coordinative bodies took the tasks of coordinating policies aside spatial planning.

However, some changes have occurred around the beginning of 2000, with new political configuration in relation to the previous decade. In that occasion the focus on space as a tool for integration moved to other sectors, with consequent dispersion of the integrative capacities in sectorial competences and autonomies, while the gap between spatial issues and social & economic issues is growing in a structural way.

6.1.3. Monitoring

Policy impact analyses are rather structural, while more processual and socio-political evaluations are rarer and done on ad-hoc basis.
Actually there are three types of monitoring and analysis:

- impact analyses, in particular the ex-ante analyses, which are widely spread;

- the Bookkeeping', a quantitative monitoring tool (although a regular updating process seems not fixed yet);
- The Policy Centre, an inter-university cooperation focusing on spatial dynamics and trends.

In particular the first mandate of a Policy Centre of Spatial Planning and Housing (2007-2011) had an important role in monitoring spatial dynamics, and it assisted the department of Spatial Planning in the construction of the "Ruimtemonitor", a conceptual framework for a structural monitoring system. Moreover, in the light of restructuration of the department, a separate working group was established to outline the policy evaluative aspects of the monitoring system.

However, two drawbacks can be highlighted concerning the previous mandate of the Policy Center. First, during the last years there was no consensus on its role, and it has not been embedded in the planning system, due to its embryonic level of its construction. Second, as a general consideration, it is often difficult to make evaluation of policy measures, since it raises the fear of a political assessment.

Nevertheless, in the next generation of the Policy Center (Policy Center of Spatial Planning 2012-2015), the monitoring role has been made more explicit with the establishment of the research line "Monitoring and evaluation". This gives the opportunity to embed monitoring and policy evaluation in a more structural way in the planning process. Whether this assessment process will have the capacity to influence policy makers through feedbacks, will have to be seen in the future.

6.2. Horizontal coordination / integration of policies and instruments (and stakeholders)

In principle the spatial planning system is capable of enabling horizontal integration in concrete planning processes. At the same time, it should be also perfectly possible for the planning system to provide answers combining different sectoral measures and coordinating the activities of different stakeholders.

In practice this integrative capacity is affected by the rising focus on individual property rights, the institutionalisation of planning processes in strict procedures, the reduction of planning to purely spatial/physical issues (e.g. making of land use plans) and thus the current limited link to socio-economic and social issues and debates. These elements tend to highlight a weaker socio-political position of planning system in Flanders, due to a more market-oriented societal shift in comparison with the second decade of the 1990s.

However, the relationships between different fields (spatial planning, sectorial competences/directives, and developing strategies) and the predominance in terms of planning dynamics are not fixed but have shifted and will shift again in time. At the end of the 1990s Flemish spatial planning succeeded in contributing to and spatially expressing some major compromises between conflicting sectoral spatial claims. In the 2000s however spatial planning (on the Flemish level) was less and less seen as capable of contributing to spatial compromises while

sectoral claims and developing strategies predominate over spatial planning, although this varies over different planning processes.

Al in all, the general trend shows a need of stronger emphasis on strategic approaches and horizontal coordination between sectors (and their societal positions and spatial claims), which includes spatial planning in the construction of this coordination focusing on space as shared stake.

6.3. Vertical coordination / integration of policies and instruments (and stakeholders)

The spatial planning system obliges the Flemish government, the provinces and the municipalities to make spatial structure plans. This creates planning expertise on different policy levels, and ways of cooperation between these levels. Also, spatial planning processes for the RSV and RSP's have initiated numerous subregional spatial planning processes, in which the different policy levels do cooperate.

There are no national spatial planning competences, though. At this moment sub-regional planning processes sometimes touch upon supra-regional issues (especially spatial planning in areas around the Brussels region). It sometimes leads to partial integration between perspectives of the Flemish and the Brussels region, but not on a structural basis. In general, however, the capacity to activate cross-border cooperation is affected by the exacerbated division of competences between regions (Flanders, Brussels region and Wallonia).

6.4. Communication

6.4.1. General communication regarding visions of spatial planning

When the planning system was changed in the mid 1990's, it was subject of debate among political and semi-political actors, but not really in the media. The RSV was also quite widely debated and efforts were made to also bring it in the media. In the 2000s, though, criticism towards planning as a constraint to economic activity and individual property development has been publicly debated and gained widespread support.

Actually, the BRV is giving attention to the aspect of stakeholder consultation and involvement of the broader audience through different initiatives. This is a reaction to a societal process of an alienation of the general public from the necessity of structural planning and collective interests. Processes for the RSV and RSP's have been quite efficient. Included actors are mostly institutionalised political actors and socio-political organisations, but less evident stakeholders are less involved.

However, the efficiency of the actual consultation process will still have to be assessed, while the debate concerning the strategic challenges of spatial planning are rather specialist matter.

6.4.2. Public-Private partnerships and cooperation

There are no specific concepts, regulations, guidelines on including PPP in spatial planning. Frames on PPP are included in other specific legislation, fora, policy documents, etc. Through the support of urban projects by the Flemish government and the condition to include PPP's in these projects, PPP was introduced in design-oriented spatial strategies and strategic projects.

As far as the capacity to shareholding with public and/or private stakeholders the general vision and the specific objectives and privileged interlocutors, the planning system of RSV and RSP's is in principle rather process-oriented and enables development of shared visions and objectives. In practice today, many societal influences push planning processes to be rather product-oriented, thus constraining the capacity of planning to construct compromises between different stakes and shared goals.

6.4.3. NGO's cooperation and citizens participation

In principle the planning system does not put any constraints on the cooperation with NGO's and other stakeholders in case of specific aspects of spatial challenges, and formal planning procedures guarantee a minimum input of citizens in planning processes. Informally, however, a much larger input is possible and often pursued. These cases vary from a public-relation orientation, aiming at gaining support for predefined strategic options, to input-seeking approaches, being part of open-ended planning processes.

7. Effectiveness of Policy Bundles

This chapter deals with the diversity of policy bundles that are set out in Flanders to deal with the macro challenges. The ambition is not only to mention spatial planning related issues and competences, but also the coordinative strategies between the different Flemish policy domains. The reason this approach was used, is because the effectiveness of spatial planning policy bundles and the ability to steer certain developments, should not only be seen in its isolation, but in relationship with policy bundles that are set out in other policy spearheads. Another reason is to make an assessment based on policy strategies outside of spatial planning and to set out some examples how monitoring systems are embedded in the policy planning process. Eventually, two out of the four global challenges – climate challenge and energy - were not included in the RSV yet. The Green Paper of the BRV, its successor, in which the challenges are placed within their spatial context, was not finished on the moment the policy analysis was carried out. The White paper, the translation of the challenges and vision in concrete policy bundles, will be laid down in late 2013. This means it was at the stage of project not possible to look at specific spatial planning policy bundles.

Each challenge and the way it is translated into policies, will be assessed on the following points:

- The different policy bundles in the region and the way coordination is organised between them;
- The way they are embedded in different scales of governance;
- The specific position of spatial planning;
- Strategic capacity of the policy bundles and coherence;
- The way monitoring systems and forecasts are embedded in the planning process.

7.1. Climate Change

7.1.1. An overview of the policy bundles and governance structure

Several policy plans (Flemish, federal, spatial planning, sectoral, general development strategies) deal with the problematics of climate change.

Relevant documents and policy plans are:
On European level:
- Europe 2020;
- Green and white papers on adaptation

On federal level:
- National climate policy plan (which deals mostly with mitigation).
- Belgian National Climate Change Adaptation Strategy (adaptation)

On regional level:

- Climate policy plans which deal mostly with mitigation (in a cyclical process): Klimaatbeleidsplan 2000-2005; Klimaatbeleidsplan 2006-2012; Klimaatbeleidsplan 2013-2020 (due 2012)
- The Flemish Adaptation Plan (due 2012)
- Policy document Spatial Planning (2009-2014). The BRV is in stage of preparation;
- Sectoral policy plans, most notably :
    - Mobility;
    - Housing;
    - Economy;
    - Agriculture.

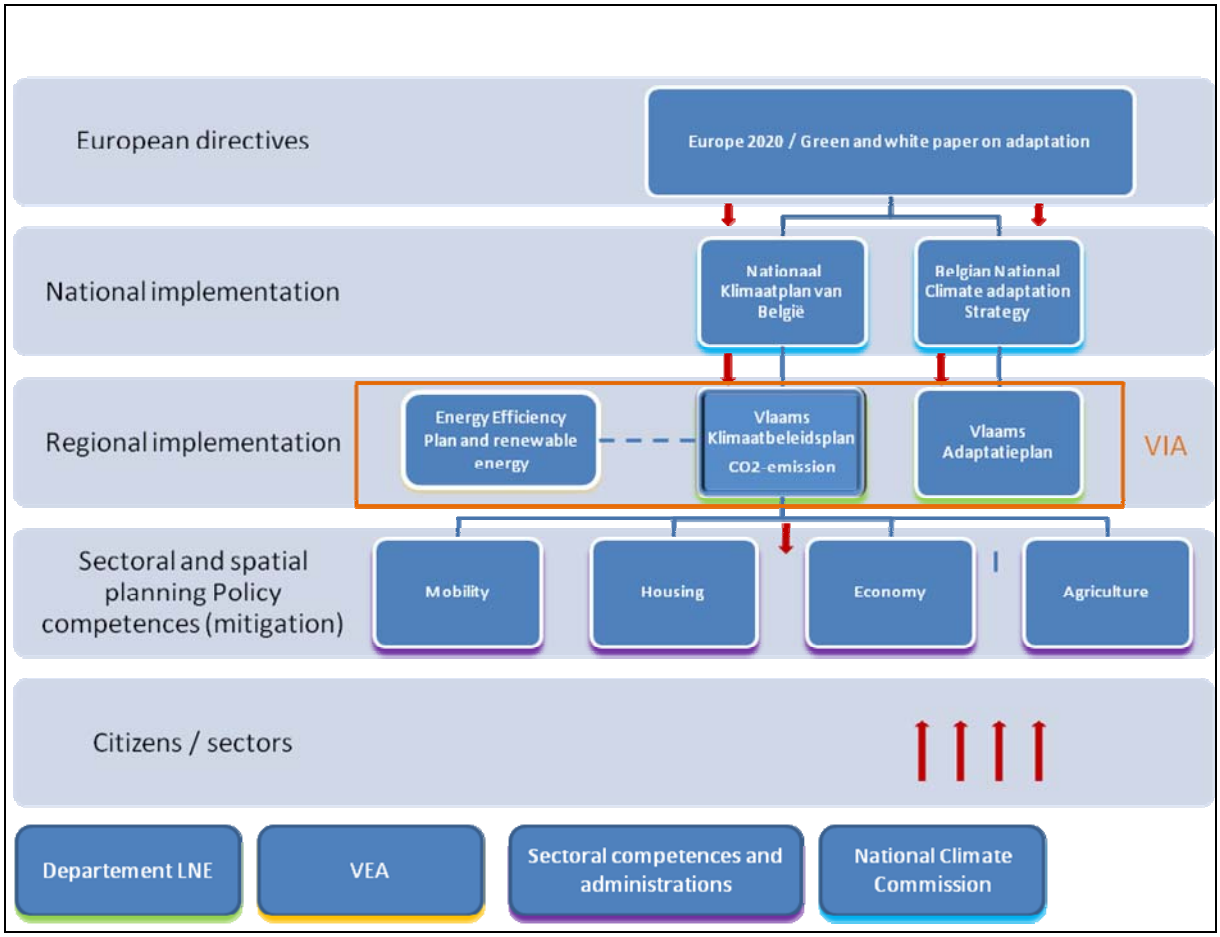
A special mention also goes to the Flemish Energy Efficiency Plan and policies on renewable energy, since they are thematically closely linked to climate mitigation. However, they will be dealt with in detail in the next section about the energy challenge.

The theme of climate change is also present in the encompassing development strategy "Vlaanderen in Actie" (VIA Pact 2020), which stated that in 2020, Flanders should be one of the best performing European regions as far as ecology and energy is concerned. The pact responds to the Europe 20-20-20-strategy. The vision put forward in VIA, should be translated in the different policy documents of the actual Flemish Government (2009-2014).

The modes of cooperation and logical coherence between the policy bundles are schematized in Figure 3Figure 21.
The two most important and central plans on the regional policy level, are the Climate Policy plans on mitigation – with the Klimaatsbeleidsplan 2013-2020 as the most recent - and the Vlaams Adaptatieplan. Both are now in stage of development, due 2012. Different strategies are being worked out for mitigation and adaptation, since the perceived time frame for necessary action is different and different thematic scope (and stakeholders involved), different approach (mitigation: top down, adaptation: bottom-up).

The actual challenge of the Flemish **mitigation strategy** is to reach the European targets considering GHG emissions, which are fixed per year until 2020; and in this respect the following-up of indicators *Env25 and Env26* are crucial. As such it implements a European *top down* policy in the regional context of Flanders. The department LNE has a coordinating role in formulating objectives for the sectoral themes and also providing research (effectuated by VITO) to propose reduction paths per sector, with a concrete time frame of reduction achievements. This is only for those sectors who are not concerned with emissions trading regulations, which is regulated by Europe (economic sectors). Harmonization with related policy plans such as the "Vlaams Toewijzingsplan Verhandelbare Emissierechten 2008-2012" is however necessary. The plan also includes the Flemish Vision for the preparation of climate regime after 2012. (Departement Leefmilieu Natuur en Energie 2006)

Figure 21 – Climate change: an overview of the policy bundles and interrelationships at different scale levels



As far as collaboration with other policy domains is concerned, the Klimaatbeleidsplan 2006-2012 follows a set of sectoral and a process dimensions, as such:
10 different objectives: 5 sectoral objectives with targets for "sustainable and climate friendly mobility", "rational energy use", sustainable and low-carbon energy provision, industry and sustainable agriculture and forestry. 5 horizontal, supporting objectives are research and innovation, sensibilization, flexibility mechanisms, the exemplary role of the government, and adaptation strategies to climate change (Departement Leefmilieu Natuur en Energie 2006). Flemish mitigation strategies should also be closely linked to Flemish energy efficiency plans and strategies for renewable energy.

In Belgium a substantial part of the necessary **adaptation** to the climate change has already been initiated from the *bottom up,* with a starting initiative by the competence of "water policy". Both on local level as on sector specific level, the sense of urgency has inspired many people to take action in fields as diverse as health, tourism, agriculture, forestry, biodiversity, ecosystems, water, coastal, marine and tidal areas, production systems and physical infrastructure. To cope with the climatic changes, they started to construct monitoring schemes, to build physical barriers and to induce changes in people's behaviour. For these areas a quick overview of the effects of climate change and the adaptation measures

already taken, have been included. It is interesting to note that the actions in these fields are not only based on the defence against threats, but also on finding new possibilities and capitalising on favourable changes. (National Adaptation Strategy, p. 6). An intensive consultation process should uncover possible synergies and conflicts, although a lot of those conflicts (e.g. provision of potable water) should be tackled by the CIW (Commissie Integraal Waterbeheer).

One concrete example of operational policies partly related to climate change is "The Watertoets": The "watertoets" is an instrument for the government to advice and decide upon a permit, plan or program which assesses the impact on water household. The result of the "watertoets" is a mandatory paragraph in the permit or approval of the plan or program. Since 1 march 2012, it is mandatory to perform a "watertoets". It is not clear yet whether this policy is explicitly linked to the climate challenge.

Flemish Adaptation Policy also provide a "Bouwstenenstudie" (commissioned by LNE), a supporting manual for other competences to address the adaptation challenges in their respective policy competences.
As such, both plans are coordinating the policy options for the other Flemish competences, and giving recommendations for an effective policy implementation.

Obviously, cooperation exists between both plans. This is because of the necessity of non-mutually-conflicting strategies, and the opportunity to find measures that are synergistic to both problems. Thus the approach is coherent in the sense that they work together, and both give support to other involved sectoral competencies, to address the global challenge in their policy domains.

The approach is coherent in Flemish policy, in the sense that everyone is aware of the necessity and urgency of a **mitigation** policy: the diminution of greenhouse gas emissions. The theme is also present in the encompassing Vision for Flanders (VIA). The plan also mentions the vision of a circular economy and the implementation of an adaptation policy. As far as **adaptation** is concerned, there seems to be a smaller sense of urgency on political agendas. It is to be expected that the "Vlaamse Adapatieplan" (due 2012) will propose policy measures.
For the moment, the Adaptatieplan and the Klimaatbeleidsplan are in the stage of preparation. Both have their own steering committee, with mutual representatives and also of other policy competencies. Also here mutual synergies and conflicts have to be uncovered in a process of intensive consultation.

One could note that both initiatives could be bundled in a mutual alliance in a combined approach to the problem. This is not been done yet since the different policy domains and the proposition that more research is needed towards possible synergies/conflicts.

As previously mentioned, **mitigation** should be very closely linked to the theme and policy competence of energy. This is not evident, since both competences

have a different minister with a different political ideology. The feeling exists that climate policy was only involved in the energy efficiency plan in a very late stage. VEA and LNE work together, however, considering the forecasts.

As far as stakeholder involvement is concerned: during the construction of the former Klimaatbeleidsplan 2006-2012, a Task Force Climate Policy Flanders" was founded. This involved representatives of administrations and cabinets, for the implementation of a joint climate policy. This worked for a while but was not efficient. Now this group only communicates by email. In 2005 there was also Climate conference, and a very broad consultation process with different working groups. The stakeholders were very satisfied with the process, but it was not considered enough on political level. This caused some demoralization.

Drawing on the experience of the past, in this moment a more restricted task force is operational as an overarching organ and to review the possibilities on different policy levels. When a more specific theme is addressed, a more elaborated group of affected stakeholders is consulted.

This collaboration is e.g. very good eg with the policy domains of agriculture and fishery: last year cooperation was focused on mitigation and this year on adaptation.

Another initiative is the working Group Climate Roadmap 2050. This aims to translate the European strategies on the regional level of Flanders. (http://ec.europa.eu/clima/policies/roadmap/index_en.htm)

Political instructions sometimes cause a delay in the consultation processes, which can pose a problem.

As far as **adaptation** is concerned, it is easier to persuade politics, since the fact that it is not so urgent on the political agenda. But is it not the fact in the management of flood risks? Adaptation and climate policy sees this more as a result of a bad spatial planning in the past, and also see this as a task of spatial planning. However, adaptation and mitigation could work other combined strategies to construct energy-poor and adaptive neighbourhoods. Selecting the locations is the responsibility of spatial planning.

On 25th may 2011, a Climate Conference was organized focusing on the theme of adaptation.
(http://www.lne.be/themas/klimaatverandering/adaptatie/evementen/vlaamse-klimaatconferentie-adaptatie)

7.1.2.Climate change: focus on spatial planning

For the moment, spatial planning strategies related to climate change, and most notably adaptation, are in the process of effectuation. However, the "Bouwstenenstudie" gives an interesting overview of the challenges related to spatial planning (IMDC 2010):

“Climate change will affect the future land use along with various other socio-economic impacts. In fact, both will interact. Caused by climate change, land suitability for specific land uses will change in the future, but will also affect space demand of certain sectors. A spatial policy adapted to climate change must integrate all these interactions. Momentarily there is better knowledge concerning spatial implications of flooding and responsive policy measures (e.g. designation of floodplains), but space claims or spatial vision related to other problems such as drought, heat island effects are open questions. The EU policy on spatial planning was formerly quite limited (the Member States retained their autonomy). Through the Treaty of Lisbon (territorial cohesion), the term "poly-centrality" concept is introduced, which is consistent with the concept of "green city region" (Groenstedengewest) that is used in Flemish policy making and the discussion of the BRV.

Through this concept of "Green City Region" (compared to the former concept of urban-rural divide), the idea of a climate-proof spatial planning can take effect. This approach will certainly be included in the future revision of the RSV. Besides the quantitative story (including the Space Balance, cf. Chapter 6), a couple of related themes (biodiversity, climate change...) should be discussed in a different way.

For climate change long term vision (2050) is certainly useful, in addition to concrete actions in the shorter term. There is currently no structured dialogue about climate between the Flemish regions and the cities, but several cities are already very active in this area (more green spaces, water bodies...). There are "Atriums" (discussion groups of municipalities, either administrative or political) in which climate change could constitute a new topic.

The development of a climate-proof spatial planning should also aim to achieve a durable and flexible balance with neither over-adaptation nor by under-adaptation of the spatial structure (UKCIP, 2003).
Further emphasis should be laid on the policy message that policy measures will have to deal with and respond to the inherent uncertainty associated with climate change, and linear thinking should be aborted. In addition, cooperation in the development of concrete measures (integration of ideas) is extremely important. This can prove to be of much greater value than the traditional approach through licensing, mandatory advice,”

The uncertainty about the impact of climate change on specific sectors is also mentioned in the policy memo of Spatial Planning (2009-2014). Knowledge on the effects of climate change in Belgium (and Flanders) is rather limited, especially when a quantitative evaluation is aimed at. It is therefore difficult to assess and compare the vulnerability of different sectors, without additional detailed examination of each sector and taking into account the evolution of all relevant climate related and non climate related factors. The first steps in that direction have already been made in specific sectors such as agriculture and nature. For a number of other areas, additional efforts are needed, also as far as adaptation measures are concerned. This will be integrated in the Flemish adaptation plan, as provided in the Flemish climate policy plan 2006-2012. More in particular, the effects of changing climate lead to new functions for open space. Flood protection and water buffering and the use of alternative energy

facilities have a clear spatial impact. The planting of forests, limiting erosion and maintaining groundwater supplies are important challenges.

7.1.3. Strategic capacity of the policy bundles and efficiency: an assessment

The policy bundles are strategic in the sense that the priority of a climate policy was not sensed in earlier policy documents (e.g. Environmental Plans, Ruimtelijk Structuurplan Vlaanderen). Now it is part of an overarching vision plan (VIA) and is coordinated by the Klimaatbeleidsplan en Adaptatieplan.

The Klimaatbeleidsplan is a good example of a cyclical policy process, in which visioning, strategies and implantation of policy objectives is regularly updated. Since climate policy planning is effectuated in policy plans every 5 years, and a possibility of a yearly update of operational measures in the Progress Reports, it is possible to embed new strategies. An example: CO2-captation, a new theme in climate planning and suggested by European policy, was not present yet in the actual "Klimaatbeleidsplan 2006-2012", but will be included in the next one. Research about this theme is actually being effectuated by the INBO (*Env32*).

Within the planning period of the Klimaatbeleidsplan (2006-2012), there is no prioritization; everything has to be effectuated now since the time frame is very short (2020). For the preparation of the following period (2012 --), a time framework was set out. It can be expected that a similar strategy will be followed in the next Klimaatbeleidpslan 2013-2020. The department of LNE is actually preparing this stage by following the Climate Road Maps (European Commission) and commission research on possible reduction paths per sector (VITO).

The mitigation planning is also evidence based in the sense that the evolutions in some very important indicators are closely followed (cf. http://www.milieurapport.be/nl/feitencijfers/MIRA-T/milieuthemas/klimaatverandering/) and the Klimaatbeleidsplan also has special attention to indicators in order to follow up the effects of the measures which have to contribute to the general goal and specific objectives (Departement Leefmilieu Natuur en Energie 2006). The "Broeikasgasinventaris" is another tool for the monitoring of green gas emissions.

VITO (Vlaams Instituut voor Technologisch Onderzoek) develops an inventory of concrete measures related to mitigation strategy (Nationaal Klimaatplan), which can be consulted at **http://wwwb.vito.be/klimaatplan/database/database.aspx?lang=EN#**. It is possible to select on regional policy level (federal, Flanders, Wallonia, Brussels), whether measures are related to specific groups of green house gases, on target group (households, industry, mobility,) and relationship with European directives. The database also consists of indicators to follow-up progress related to the policy goals.

Measures considering adaptation will be included in the Flemish Adaptation Plan; for now reference is made to the Belgian National Climate Change Adaptation

Strategy. In any case, cooperation with the spatial planning competence level will be crucial.

Whether the measures of mitigation and adaptation are mutually coherent, is too early to tell. Coherence, synergies and conflicts will be analyzed in de steering committees of both plans.

7.1.4. Use of forecasts / monitoring

Mitigation vs. adaptation policies are using different forecast/scenarios and scenario methodologies. This can be explained by the different time perspective of both policy plans:

- Mitigation: meeting the 20-20-20 targets, but also setting out longer term strategies
- Adaptation: exploring different strategies to adapt to sea level rise towards 2100.

The "Milieuverkenning 2030"[4] (Van Steertegem 2009) includes forecasts concerning:

- Energy consumption and greenhouse gases;
- Climate change and soil hydrology.

Adaptation policy follows these forecasts (until 2100), and especially the predictions considering sea rise level.

The department of "Leefmilieu, Natuur en Energie" (LNE), which is responsible for mitigation policy, develops mitigation forecasts which require conformity with European standards calculating greenhouse emissions. They are calculated every two years by VITO (Vlaams Instituut voor Technologisch Onderzoek) and following a different methodology than "Milieuverkenning 2030", since data collection happens at different time intervals and uses different parameters). The forecasts are using the perspective of 2050, but wit incremental steps 2013-2020. This is necessary since the European Commission sets out yearly standards until 2020.

The time frame for European targets concerning greenhouse gas emissions (mitigation) is very stringent, with a benchmark for each year. In the cyclical "Klimaatbeleidsplannen" (2000-2005; 2006-2012, 2013-2020) strategic aims are presented, but in the yearly progress reports operational objectives are formulated. New measures are possible each year.

The forecast activity is embedded in a cyclic monitoring activity, as far as mitigation is concerned (VITO). As far as mobility and agriculture is concerned, greenhouse gas emissions are monitored via the "Broeikasgasinventaris", and a biennial report is submitted to forecast until 2020, with two scenarios (one with measures scenario and one with additional measures scenario).

[4] "Milieuverkenning 2030" is effectuated in an intensive sharing process with stakeholders. It is based on international models such as IPCC.

To explore possible climate change scenario's for Flanders, global gas emissions scenarios are used – which come from the 4th Assessment Report of IPCC (2007). This leads to 3 climate scenarios for Flanders, which outline the boundaries of the climate in Flanders by the end of this century (2100). They include both the possible differences in greenhouse gas emissions as the uncertainties, related to each climate model used, and lead to a wet, moderate and dry climate scenario (Van Steertegem 2009)[5].

7.1.5. Some conclusions

Predominance and the first initiative in policy coordination lie with department (LNE) for the moment, together with agriculture and fishery. A representative of spatial planning is also involved in the drawing up of the climate policy plans. There should also be cooperation with the competence of energy for energy efficiency on one hand, and cooperation between adaptation strategies and spatial planning on the other hand.

Climate mitigation is an interesting example of an embedded policy process, closely supported by a regularly updated monitoring system. The sense of urgency of the reduction of green house gases and meeting up with European standards is an important explanatory factor, but also the strong awareness of the challenges in specialized and public debates.

As far as vertical integration is concerned, LNE has the main competence, but there are national initiatives concerning climate policy (adaptation and mitigation), with which the Flemish level has to coordinate and harmonize. Cooperation with European levels seems to be rather top down (at least for mitigation).

Working out a joint strategy between different policy competences proves opportunities to integrate policy measures and avoiding conflicts between those policy measures. In general, harmonization of policy is not always easy and can pose some risks, caused by:

- Competence of different ministers;
- The possible lack of political courage to take unpopular measures (e.g. road pricing, investing in an expansion of the energy grid necessary for a better connection with green energy plants, which call for big infrastructure projects).

In conclusion, also a societal mentality change and societal transition is required to tackle the problematics of climate change and to reach the mitigation targets of reduced greenhouse gas emission.

[5] 284-286

7.2. Energy

7.2.1. An overview of the policy bundles

Several policy plans (Flemish, federal, spatial planning, sectoral, general development strategies) deal with the energy challenge.

Relevant documents and policy plans are:
On European level:
- Europe 2020;

On federal level:
- Nationaal Actieplan voor hernieuwbare Energie

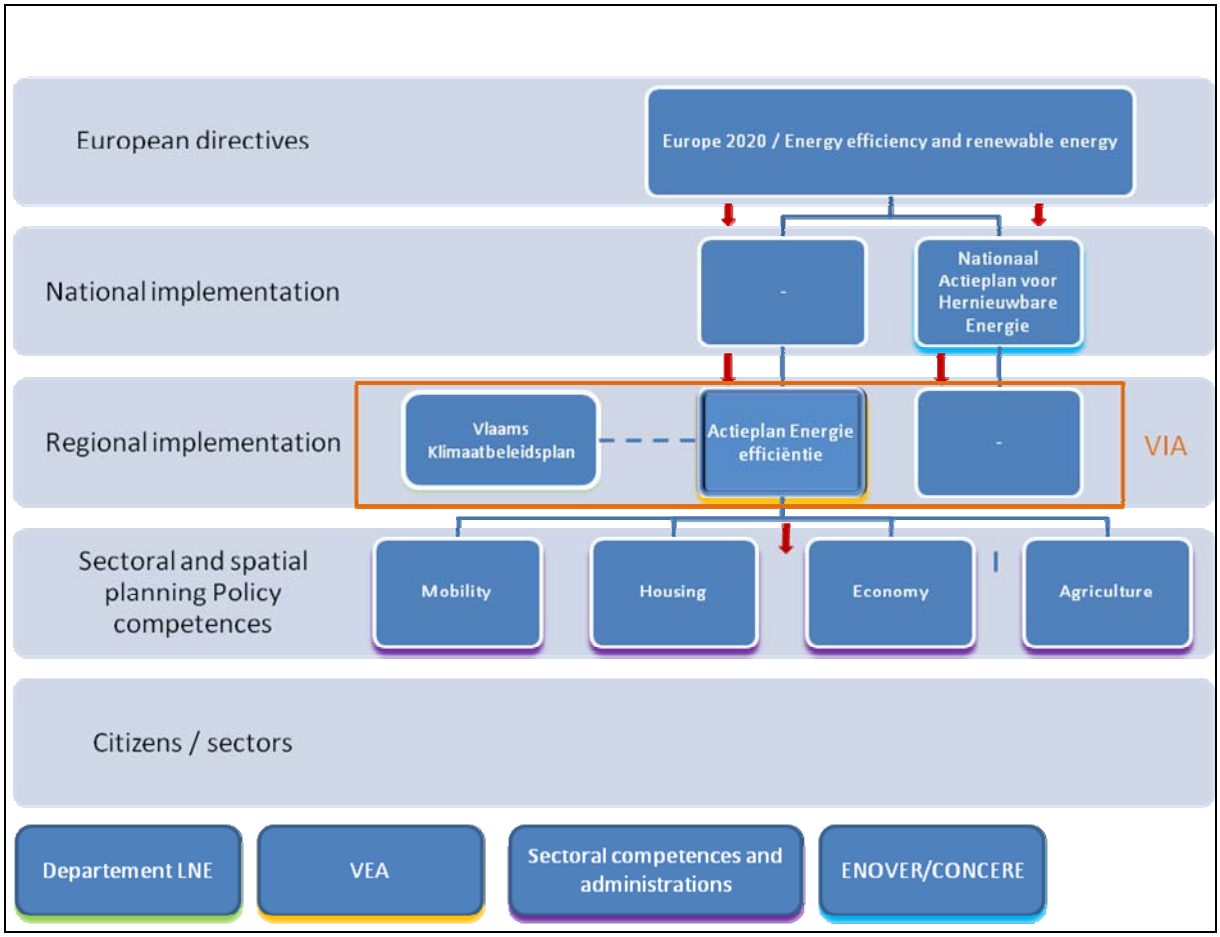
On regional level:
- The energy efficiency plan (2008-2010; the next plan with a following up for the progress made will be ready at the end of June 2011, next one 2014; a 3-4 yearly process)
- Policy document Spatial Planning (2009-2014). The BRV is in stage of preparation;
- Sectoral policy plans, most notably :
    - Mobility;
    - Housing;
    - Agriculture.

The question concerning the proportion of green energy is primarily a responsibility of the Ministry of Energy and the VEA (Vlaams Energie Agentschap), so is the coordination at the Flemish level, of measures related to the reduction of energy consumption (Van den Bossche 2009a).

The two most important overarching documents to respond to Europe 2020 concerning energy are:
- The energy efficiency plan (Flemish policy level) (Actieplan Energie Efficiëntie)
- The plan renewable energy (federal policy level). (Nationaal Actieplan Hernieuwbare Energie, 2010).

It is coherent on a strategic level in the sense that the vision is present in the overarching development strategy “Vlaanderen in Actie”, more in particular answering to Europe 2020. Moreover, explicit mention is made of an expansion of production capacity for electricity, in which there is a considerable share of renewable energy and qualitative cogeneration. The power grid will be internationally interconnected and smart, on which decentralized production-units and new applications can be linked up. (Vlaanderen in Actie 2009)

Figure 22 - Energy: an overview of the policy bundles and interrelationships at different scale levels



Concerning the interrelation of the 3 themes of Europe 2020 (greenhouse gas emissions, energy efficiency, and renewable energy) a coherent approach can be noted in the sense that there is a separated plan for the three related themes, with mutual cooperation. The energy efficiency plan and the renewable energy plan is effectuated by the same institute (Vlaams Energie Agentschap), and the Klimaatbeleidsplan by a separate administration (LNE). Cooperation between VEA and LNE takes place primary in a joint use of forecasting techniques (performed by VITO). The statement was heard that the cooperation between both institutes could be improved.

For Belgium, the aim is 13% **renewable energy** in 2020. However, there is no agreement yet on the way in which the different regions (Flanders, Wallonia, and Brussels) have to contribute to this percentage. In the Flemish Action Plan energy efficiency (2008-2010), the Flemish benchmark for energy reduction has been determined: 9% of the final domestic energy use, this means in concrete: 16958 GWh final. For the determination of the intermediate aim in 2010, one opted for a proportional distribution over the years, during the term of the directive. Concretely this means an energy saving of 1% per year, and 5653 GWh final (Vlaams Energieagentschap 2007).

Concerning **energy efficiency**, European and decretal aims have to be effectuated, and the necessary actions will be taken to maintain the decline of energy use and energy intensity since 2005 (Van den Bossche 2009a).

Before effectuating a more detailed analysis of both policy processes, it should be noted that some of the competences on energy are federal matter. This is caused by the technical and economic indivisibility, which requires an equal treatment over the regions, which are:

- The national equipment program in the electricity sector;
- The nuclear fuel cycle;
- The large infrastructures for storage, transport and energy production;
- Rates.

(Van den Bossche 2009a)

This division of competences also means that Flanders cannot propose an integrated approach for renewable energy or energy efficiency on its own. This has resulted, for example, in a postponement of the division of targets between the Belgian regions, but also uncovers the need for a national answer onto a very crucial issue to the discussion, t.i. a position statement towards the future of nuclear energy. The consultation process has been aborted since the fall of the federal government. The current status of negotiations is unknown.

This results for example in national actions plans concerning energy, such as the National Action Plan Renewable Energy (ENOVER/CONCERE 2010).

The theme is also addressed by “sectoral” competence levels, such as:

- Housing policy (with special reference to the economization of energy in new building projects, renovation, social housing,,…) (Ene18, Ene19, Ene34)
- Mobility policy;
- Agriculture policy.

….which are the most important sectors in which measures can be taken.

The only “sector” and policy competence that is not involved, is economy, at least not as far as the regulation of emission rights is concerned. This can be explained since emission rights policy is regulated on European level. The theme is presented, however, in the strategy of focussing on spearhead innovative economic sectors, in which energy plays a very important role.

7.2.2.Energy: focus on spatial planning

The energy theme was not present in the RSV, but will be in the BRV. Spatial planning can contribute by thinking about spatial constellations, settlement systems which contribute most to an energy efficient policy. Next to the provision of energy economizing residential developments, the theme of new, large scale industry parks or office developments which can be connected to the transport network in a sustainable way (Vlaanderen in Actie 2009), is also an attention point for spatial planning. Spatial Planning is also looking into the theme of smart grids, which is also a clear policy guideline/objective in the “Beleidsnota Energie” (Ene35). Obviously, providing space for renewable energy is an important focus of attention, and especially since much is expected from

decentralized forms of energy provision, ensuring connectivity with the energy distribution grid is an important focus of attention.

The energy discussion, how to provide for an efficient spatial strategy in the development of renewable energy and the way and scale level to organise this in the territory, forces spatial planning out of its comfort zone, in which a purely national (or regional) strategy for energy supply is considered to be neither wise nor feasible. The North Sea Super Ring of wind farms, for example, a project to connect all wind farms in the North Sea, can be established only through European-wide cooperation. Thus, the energy question also requires a supranational perspective, where spatial planners have an important role to play. (Cabus 2011)

7.2.3. Strategic capacity of the policy bundles and efficiency: an assessment

However, a new government can express its specific accents within energy policy, e.g. a socialist competence has more attention to the problem of affordability of energy. Possibly these aim can be conflictual with the former; a good example is the vivid discussion in Flemish policy and societal context on the evolutions of energy prices – which are said to be the direct result of green investments of energy providers.

The vision is also updated in the sense that it was not present in former policy documents (90's) (e.g. former Milieubeleidsplannen, RSV).

The development of the plans asks for a continuous stakeholder consultation process, although, since the energy efficiency plan monitors the results of already established policies in relation to the forecasts, stakeholder consultation is less necessary (or less extensive). For this, consultation with representative boards like the SERV (Sociaal-economische Raad van Vlaanderen) together with MINAraad (environment and nature) is effectuated, in which all important federations are already included. In the context of the plan for renewable energy, the consultation process is broader, since here the renewable sectors are also important stakeholders.

There is a vast array of measures-competences, in the coordinating plans but also in sectoral competences relevant to the energy problem (mobility, housing, agriculture…). In the "Nationaal Actieplan Hernieuwbare Energie" there is a clear listing of policy measures within the different competences and competence level (regional, federal…) (ENOVER/CONCERE 2010). Whether all measures are mutually coherent, requires a more thorough analysis.

Within every policy plan a prioritization exists of visions and actions, but this is short term (5 years). For other themes there does not exist a real prioritization, since the time frame to achieve the 20-20_20 goals is short term. All policy measures have to be effectuated now.

Concerning **energy efficiency**, the main goal is the continuation of existing policies and closely monitoring results and changes in forecasts. There is one new related measure, t.i. the reform of the mobility taxation system.

The approach as far as **renewable energy** and reduction of greenhouse gases is concerned, is similar, with a "bottom-up" approach, which means an adding up of the regional strategies and monitoring whether the targets are reached. New policy measures will then be added in the policy memos.

On longer term, the attention is drawn to Roadmaps on Energy and Climate Change (set out by the European Commission)

The planning process is evidence based in the sense that the evolutions in some very important indicators are closely followed, also in the sense that new trends are closely followed, and that a lot of attention is been given to the relationship between monitoring and forecasting. Monitoring is effectuated by VITO and updated yearly (http://www.emis.vito.be/energiebalans-vlaanderen (production - consumption) Data on renewable energy and energy productions are available on the website of the "Studiedienst van de Vlaamse Regering" (delivered by VEA) and on and http://www.emis.vito.be/inventaris-duurzame-energie.

The policy plan also gives an overview of the policy effects per strategic objective and related indicators to monitor (Van den Bossche 2009a).

Possibly there will be a need of yearly monitoring of a set of other indicators between 2011 and 2014, but these are top down indicators (by which is meant that the standards and technology is completely set out by the European Commission). Indicators developed in the regions and nations itself, have to be laid down and motivated before the Commission.
The **energy efficiency plan** is very transversal in nature. This needs horizontal integration and cooperation. Vertical cooperation is also required, since the federal policy competences. Cooperation with the spatial planning competence, however, is not well elaborated yet. The only theme on which cooperation exists is the provision of space for wind energy.

7.2.4. Use of forecasts / monitoring

"Energy projections for Belgium are a tool for decision making. They are coherent and detailed projections of the Belgian energy system (website of the Federal Planning Bureau). They attempt a quantitative assessment of the likely range of the energy future of Belgium. Those ranges vary depending on the assumptions regarding key variables such as economic growth, energy prices, technological developments and policy options. The energy forecasts of the Federaal Planbureau are concerned with long term (20 to 30 years) and medium term (5 to 10 years). The long-term projections concern both energy supply and energy demand, while the medium-term only focuses on energy demand.

The "Federaal Planbureau" bases its projections on the PRIMES energy model, which is not available at the FPB since its implementation is held by the Technical University of Athens (NTUA), the main designer of the model. The FPB does provide for the collection of a portion of the data, analyzing results and preparing the reports, and designing alternative scenarios (either itself or proposed by the government or the federal administration, in collaboration with the FPB)."
(Website Federaal Planbureau, www.plan.be).

Besides, forecasts are also developed for the **energy efficiency plan** (until 2020). The same projections are used for agriculture and mobility and are developed by VITO since 2006 (Bau and Bau + scenario). For projections concerning dwellings and buildings, VEA does not work with the same projections as the LNE does for the "Klimaatbeleidsplan Vlaanderen" since these are top down and VEA uses bottom up calculations, according to the methods developed by the European Commission, and has developed its own forecast model by VITO. Here various parameters are used, such as projections for construction of new buildings, demolition, renovation… The model is also adapted to decisions of the cabinet concerning the standards for parameters, new policy options, granting, renovations….and then further elaborated.

There are not yet agreements on the distribution of diminution of energy consumption among Flanders, Wallonia and Brussels, so the energy efficiency plan is not using the separate forecasts for the different regions yet. Instead, national forecasts (Federaal Planbureau) are used, concerning energy, economic growth, although those projections are for the whole of Belgium and one can assume big differences between Flanders and Wallonia concerning some economic sectors, since there overall economic structure shows big differences.

For projections concerning potentials for **renewable energy**, Europe only requires them until 2016, but VITO develops forecasts until 2020, since 2006. Here, the same projections are used for agriculture and mobility. The forecasts are updated constantly by intensive stakeholder consultation processes. This is also the case for the forecasts in the energy efficiency plan.

The time frame for meeting European targets for energy efficiency, renewable energy and greenhouse gas reduction is ultimately short. Forecasts are made on a very frequent time pace, and a flexible readjustment of measures will be necessary if the targets are not reached. Constant monitoring is therefore needed. Considering energy efficiency: there is momentarily no need for additional measures since forecasts indicate being on schedule.

7.2.5.Some conclusions

Much attention has been given to the issue in public debates, media and scientific platforms. A think tank of mobility for example, which consists of a delegation of scientists, recently criticized mobility for setting out wrong priorities. According to them, "road-pricing" is a stronger and urgently needed policy measure to reduce greenhouse gases and improving of energy efficiency compared to the actual stress on electricity based forms of mobility. In the Energy policy plan, a feasibility study is mentioned concerning the former, but no concrete policy measures are put forward yet (Van den Bossche 2009a).

Secondly strong protest exists of some renewable energy sectors, since fiscal measures concerning the placement of solar energy were recently aborted.

Another media discourse focused on the effects of actions taken by the energy distributors to foster green energy, but results in higher energy prices for the consumer.

Finally, a documentary of Flemish national television criticized the absence of big investments in the national power grid, which results in a less than effective linking up of renewable energy resources (e.g. in Zeebrugge). It also laid emphasis on the abortion of some large scale initiatives of foreign investments of gas- en coal based power installations, e.g. in the harbour of Antwerp. This results out of differences in opinion between the Flemish and federal ministers of energy (Flemish government focuses on renewable, while the competence on traditional forms of energy lies with the federal government).

Facing the energy problem in regionalized policies is considerable, but some crucial elements within the discussion – urgency of road pricing, abolishment of nuclear energy, are area where Flanders does not have full competence on. They have to be coordinated, discussed with the federal government or, in the case of road-pricing, has to be dealt with transnationally. Areas, in which Flemish policy competences do have leverage, will need coordination with different sectoral policies, but also with localized initiatives of decentralized modes of renewable energy production.

7.3. Globalization

7.3.1. An overview of the policy bundles

The most important “policy bundles” and related documents are:

<u>On European Level:</u>

- Europe 2020;

<u>On federal level:</u>

- Het Nationaal Hervormingsprogramma;

<u>On regional level, integrative policies:</u>

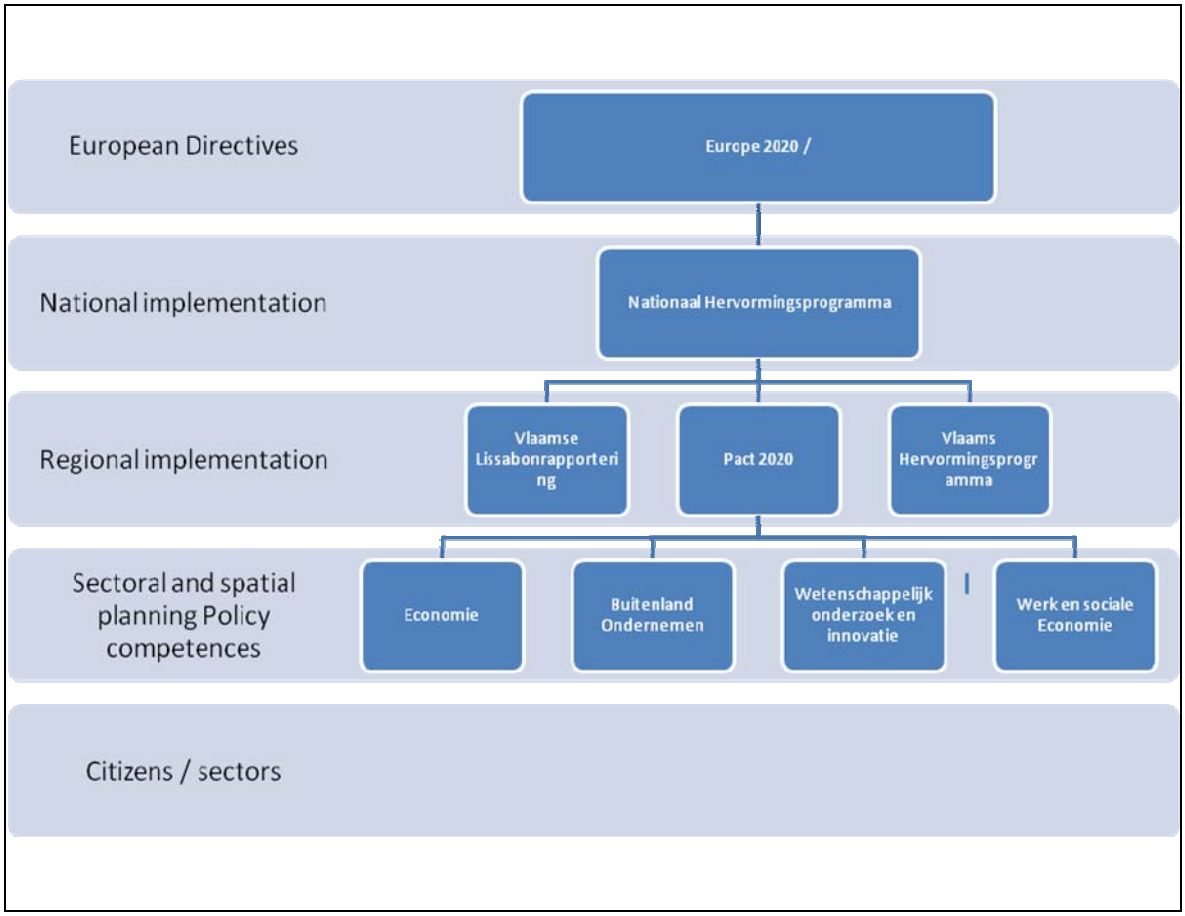
- Vlaamse Lissabonrapportering;
- VIA (Vlaanderen in actie):
- Het Vlaams Hervormingsprogramma;
- Beleidsnota Ruimtelijke Ordening.

<u>Sectoral policies related to economy and innovation.</u>

- Beleidsnota Economie (de Open ondernemer)
- Beleidsnota Buitenlands beleid, internationaal ondernemen en ontwikkelingssamenwerking
- Beleidsnota Werk en Sociale Economie
- Beleidsnota Wetenschappelijk Onderzoek en Innovatie

This is an overview, however, that stresses the economic dimension of globalization (cf. Figure 23).

Figure 23 - Globalization: an overview of the policy bundles and interrelationships at different scale levels (with focus on economic dimension on globalization).



The Annual Growth Survey (AGS) brings together the different actions which are essential to strengthen the recovery in the short-term, to keep pace with our main competitors and prepare the EU to move towards its Europe 2020 objectives. Given the urgency, the Commission has chosen to present 10 priority actions, as part of an integrated approach to recovery encompassing three main areas:

- The need for rigorous fiscal consolidation for enhancing macroeconomic stability;
- Labour market reforms for higher employment;
- Growth enhancing measures.

(http://ec.europa.eu/economy_finance/articles/eu_economic_situation/2011-01-annual-growth-survey_en.htm)

In the document « Vlaamse Lissabonrapportering 2009" (Vlaamse Overheid and Vlaanderen in Actie 2009), statements are made on how to deal with globalization challenges in Flemish context. This means in concretu that:

- Focus is laid upon the development of creative and knowledge economies (Eco05, Eco06, Emp02, Emp03);
- Economic growth and employment are important benchmarks (Glo11, Glo12).

More concrete strategies are:

- Investments in creative and knowledge economy;

- Unlocking entrepreneurial capacities;
- Job opportunities for the precedential categories;
- European energy policy (cf. supra).

The "Vlaamse Hervormingsprogramma" consists of concrete strategies to be followed with concrete benchmarks. It also sets out directives as an answer to the aims of the Annual Growth Survey and the Euro Pact (former name: Pact of Competitiveness). The stress in this reform programme is also laid on innovation, enhancing entrepreneurial activity, job creation and a good quality of life (Vlaamse Regering 2010).

As far as specialization in economic activities is concerned, past practice was to pursue and stress economic development in specific sectors and activities. This is less the case nowadays, but on account of the location of Flanders and the European emphasis on a knowledge-driven and innovative economy, these sectors are now being mentioned frequently in policy memorandums. In innovative economies the VIA plan suggests pursuing mainly:

- logistics and transport;
- ICT in healthcare;
- food and health;
- new materials and nanotechnology;
- energy and the environment (Vlaanderen in Actie 2009).

The policy documents of the new Flemish Government (2009), which were constructed before the Vlaams Hervormingsprogramma (2010), do not seem to be updated to the new aims:

- The "Beleidsnota Werk" aims at an employment rate of 70% (according to VIA), but the Vlaams Hervormingsprogramma speaks about 76%.
- The "Beleidsnota Onderwijs" does not mention the new benchmark for school dropout rates of 5,2%. It still mentions the European benchmark 10%, which is met in Flanders. It is not updated to the new benchmarks yet, neither concerning the aims for 47,8% of young adults having a diploma or degree.
- The "Beleidsnota Wetenschap en Innovatie" mentions the aim of 3% of the BBP in Research and Innovation, which corresponds to the benchmark in the Vlaams Hervormingsprogramma.
- Concerning poverty, every five years a "Vlaams Actieplan Armoedebstrijding" is laid out as a coordinating document between the related competences. (Departement Welzijn, Volksgezondheid en Gezin).

7.3.2. Globalization: focus on spatial planning

The most important challenge for spatial planning, at least if the challenge is seen in its economic challenge of promoting growth and focussing on innovation and knowledge economy, the question is what this means in spatial respect. Firstly, it is necessary to consider how the present economic structure (i.e. cities + ports, airports, multimodal platforms and similar) is usable to respond to the challenge of globalisation, but also respond to this changed globalised context. Will they continue to function as gateways or, just like the cities, will they need to look for mutual coalitions or mutual complementarities such as exists between the ports? (Vermoesen, Mertens).

A second meta-level question concerns the types of macro-areas that should be pursued for economic developments. In the cities it is easier to grow the potentials of knowledge and an innovative economy because they are an attractive setting for establishing operations on account of the proximity of facilities, cultural amenities and so on. In other words, they are attractive for the right group of employers (legacy of R. Florida). But it debatable whether the labour potential is findable mainly in cities - especially in a context where there is a pursuit of an innovative and high-tech economy – or that the cities outside of the largest Flemish gateways will be the most attractive as a place for establishing business activities. How can Flanders put itself on the global map? Are the rurban – rural areas most attractive since their higher environmental quality? Or should it be confined to cities with high-profile names that have already established themselves on the map but not yet prominently enough? What will yield most? (Mertens).

Another question is what kind of agglomeration economies exist and should be pursued? (Glo2) In this respect the Flemish stakeholder is mostly interested in harvesting knowledge concerning the spatial conditions of successful agglomeration economies.

An attempt could be made to give priority to strategic places in areas with high dynamics and to direct funding towards places where the image of Flanders can be beefed up. This discussion is not being conducted at present.

In any case, one of the most important challenges will be the guaranteeing of a good accessibility of the economic core- and development areas.

Another specific question is how Flanders should valorise its central position within Northwest-Europe in a sustainable way. The seaports, international airport, infrastructure and economic concentrations of Flanders are centrally located within the transportation network of north-western Europe which is an asset. On the other hand looms the threat of Flanders as a 'transit country'. A 'smart' logistics development in Flanders should take into account the impact on congestion, environment and additional buildings and infrastructure. This can mean for example a lesser focus on large scale initiatives and greater focus on small scale developments with a high return on investment and a lesser dependence on heavy logistics and transit traffic (Steunpunt Ruimte en Wonen and RWO 2009).

7.3.3. Strategic capacity of the policy bundles and efficiency: an assessment

It is difficult to assess the coherence of Flemish Policy concerning globalization. The fragmentation within competences in relationship to aforementioned strategies is big: different ministers and competences for economy and entrepreneurship (Peeters), Science and Innovation (Lieten), foreign policy and international entrepreneurship (Peeters) and employment (Muyters). While there may appear to be coherence at first sight, the numerous themes and different

policy levels require a study in their own right. In any case; coherence will have to be reached by means of the overarching VIA and the “Vlaams Hervormingsprogramma”. Although, policy will still have to be updated according to those policy objectives.

The predominant governmental competence on this issue is unclear. The policy competences are as previously stated fragmented, in addition within the AO (t.i. an Agency within the Flemish Policy Department of Economy that deals with spatial aspects), the feeling exists that an integrated strategy is necessary, which could be obtained within the new BRV.

The fragmentation is not only on present on Flemish governmental level, but also on lower levels. Every municipality, area and level has and looks for its own investments. The Spatial Planning opinion is that there should be thinking in terms of an urban network, a network in economic gateways and similar, but there is far too little thinking in this direction at present.

As far as prioritization of measures is concerned, there is none. As is the case with some climate and energy targets, this is explainable by the relatively short horizon of 2020 put forward in European policy, but another explanation could be the lack of coordination between the affected policy domains.

A clear cut budgeting is not present, at least not in the policy documents or the Vlaams Hervormingsprogramma. The interview (Koen Vermoesen and Geert Mertens) also showed some scepticism around the multitude of issues to deal with but no corresponding appropriate budgets. A more strategic approach would be appropriate to make some strategic choices and avoid budgetary fragmentation. As such, budget could be bundled on a couple of themes which allows for a more efficient policy (e.g. brownfield policy). However, for the moment there is no answer to the fragmentation of budgets, and this may be linked to the fact with the sense of urgency does not exist.

A very important platform for stakeholder consultation is the SERV (Sociaal-Economische Raad van Vlaanderen). It formulates recommendations on Flemish policy documents and reform programs, and represents a broad spectrum of stakeholders.

7.3.4. Use of forecasts / monitoring

A fair amount of economic forecasts are drawn out by the Centraal Planbureau and can be consulted on their website (www.plan.be). Collaboration also exists between federal and the regional governments. The projections are on short term, medium and long term (dependent on the type of phenomenon being forecast)

In order to prospect developments within the international economy, the Federaal Planbureau makes use of the “NIME Outlook for the World Economy: Medium-Term Prospects for the World Economy [24/08/2010]” model: The NIME medium term projection for the global economy provides a macroeconomic scenario for the main areas of the world economy. The scenario is based on data from the AMECO database of the European Commission (November 2009)

included as an appendix to its Economic Forecasts, autumn 2009. Based on all available information up to December 24, 2009 the NIME medium-term projection gives a new scenario for the global economy. Medium-term prospects of the FPB for the Belgian economy are based on an international economic scenario which was derived from the medium-term perspectives of various international institutions such as the OECD and the European Commission. The methodological choices underlying the forecasts and projections for Belgium from the FPB are completely separate from the international economic scenarios. It also uses the model Nemesis (New Econometric Model for Environmental and Sustainable Development and Implementation Strategies), a macrosectoral econometric model. (www.plan.be)

The forecasts of the Federaal Planbureau are updated according to changes in conditions, not spatial dynamics. (cf. www.plan.be)

Economic projections of the Federaal Planbureau were also used to make an estimate of spatial needs for economical developments by the Spatial Planning Agency, at least for those developments for which specific areal zones have to be delineated (IBM, How-To).
Momentarily, within the Spatial Planning Agency, the necessity to delineate large surface areas for economic development is under discussion. A specific attention point within the BRV is how strong the focus will be put on quantification and assign hectares to different space users. The question should be rather on new methodologies do deal with space, more based on multifunctionality, mixed land use… However, one expects that quantification will remain a demand of the political agents.

The IBM-research was effectuated in collaboration between RWO and AO, together with a delegation of scientific experts.

The aforementioned aims will also be monitored by the “Indicatorenboek VIA”, but it is not clear whether those will be compared with forecasts.

Clearly a lot of indicators and indicator sets (different sources) are constructed and used to base policy upon (see also chapter 3). Indicators are put forward by VIA, de Vlaamse Hervormingsprogramma, the Further analysis will have to be conducted to analyze the consistency between those indicator sets.

(Sources: website of EWI and WSE, Steunpunt Werk en Sociale Economie:
http://www.ewi-vlaanderen.be/
http://www.steunpuntwse.be/view/nl/18767

Within the policy documents benchmarking is been effectuated. (E.g. Beleidsnota Economie, Vlaamse Hervormingsprogramma).

7.3.5. Some conclusions

As said above, in spite of the ambitious programme to answer onto Europe 2020 and objectives of innovation and knowledge economy, entrepreneurship, the vision lacks strategic power cause by the variety and fragmentation of policy

objectives, but lack of priorities or budget to back it up. Another problem is of course the essence of the globalization issue and the perceived “uncontrollability” of the phenomena and actors (mostly economic) involved. This however doe not mean that choices cannot be made, e.g. related to spatial economic development and assessment of the effects of economic developments on social and environmental issues.

In fact, in order to address the challenge of globalization, ministers of economy, science and innovation and spatial planning should work out a joint thematic and spatial elaboration of the challenge and make some strategic choices.

7.4. Demography

7.4.1. An overview of the policy bundles and governance structure

The governance structure of demography is different from the other challenges because no European policy objectives exist facing the challenge of demography. The challenges of provision of jobs and fighting poverty, which are obviously related to the demography issue, were discussed in the globalization section.

Based on the above major challenges, relevant policy competences can be determined as follows:

- Housing, including affordability of housing: housing policy (Minister Van Den Bossche)
- Transport Policy: mobility policy (Minister Crevits);
- Environment: environmental quality (air quality, noise levels, green spaces) (Schauvlieghe Joke)
- Health, wellbeing and family (Jo Vandeurzen)
- Culture (Schauvlieghe)
- Media and tourism (Bourgeois)
- Spatial Planning (Muyters)
- Economics: retail trade (Peeters)

Also in the 2020 Pact and VIA relevant guidelines are formulated:

- Quality of life of a high standard;
- Future-oriented help and care;
- Social inclusion and social participation;
- Healthy and pleasant living environment.

However, there is no overarching plan dealing with demography (in comparison e.g. with the climate plan and energy efficiency plan that integrates and coordinates between policy competences). There is no "minister of demographics", but this is viewed as a crosscutting theme in which any policy competence is responsible for the necessary measures. Spatial Planning and Urban Policy, for example, are to be considered as transversal policy domains, since the obligation to synthesize thematic policy within a spatial context. Regarding spatial planning, the new “Beleidsplan Ruimte” is a very important flagship project since it is strongly related to the implementation of one important VIA-breakthrough: “Vlaanderen Groen Stedengewest”.

The challenge is also interpreted as a reactive policy on concrete population forecasts. Different policy competences base their policy plans (and are updating it) on the most recent population projections. This means that policy is evidence based, but based on a business as usual scenario.

Within **housing policy**, the most relevant targets are the activation of land (allotments) and properties, and the further development of the land and property decree right. The focus lies on the realization of modest housing (lots up to 500m ² (Van den Bossche 2009b)), in order to promote affordable housing in Flanders. Other themes include expanding the range of housing and promote living in their own region. Construction of sustainable and qualitative new housing construction is also related to the climate and energy issue, but is also pursued in the light of the objectives that a greater proportion of the population should live in quality housing. The operational objective of equitable access to affordable and quality accommodation is in line with the focus on a warm and social community, contributes to a social cohesive society.

Mobility policy competence ensures an optimal use of existing road networks and plans to invest in dynamic traffic management, and also to diminish the impact of transport on people and the global environment (such as noise and light pollution, the promotion of green transport). There will also be invested in some "missing links" in the transport network, in order to improve the accessibility of some regions. Major flow of traffic on “lower category roads”, along residential cores is seriously hampering safety and liveability. By creating fully-fledged alternative routes, a number of bottlenecks in the higher category road network will be eliminated, with less structural congestion as a result.

The provision of an adequate **education** supply is not an explicit strategic objective of the Ministry of Education, although the minister recently announced 1,300 extra teachers in nursery and primary education (20-07-2011). Within the education network it is feared that these will be at the expense of smaller schools in rural areas, but the lack of schooling in urban areas is very obvious. It has been stated that urgent measures are necessary in urban areas to respond to projected population sizes. By 2018, 43,000 infants will be between 0 and 4 years, and including also 30,000 children between 5 and 9 years of which 17,000 will reside in cities. Spatial Planning promotes the creation of new educational facilities particularly in urban areas. A need is observed there, as opposed to the more rural (distant) communities where it is observed that schools systematically close. But ultimately, the Minister of Education decides what is happening, through his grant scheme.

The policy memo **“Health and Family Welfare”** stresses the following relevant objective: “to develop assistance and services in that way to be sufficiently available and accessible and tailored to needs”, with amongst others:

- Investing in the supply and structure of child care amenities to ensure it delivers up to its social, economic and educational function;
- Youth Assistance as a spearhead and policy priority: investing in expansion, innovation and coordination within an integrated approach,
- We invest in an adequate range of health care to be able to provide for tailored-up services;

- Accessible and available service with attention to peculiarities of the living conditions and care needs of specific audiences.

The healthcare infrastructure is further described as qualitative, sustainable, and accessible. Enhancement of the voluntary sector is also mentioned as an engine for a caring and participative society. Finally, and relevant to the problematic of an ageing population, the policy domain aims to research the advantages and disadvantages of organizing residential care by public, private social profit and private commercial care providers.

During the interview the important role of the private sector in providing concepts of housing-care combinations was stressed. Solutions are sought to provide care in the home environment, in such a way that people living in the neighbourhood can also benefit from those services. Very often, PPP's are constructed with the involvement of local authorities and private partners. This also happens in contexts where existing homes no longer appear to meet today's quality and safety standards, and renovation or complete replacement is appropriate.

The policy domain of wellbeing mentions cooperation with all relevant partners at local, provincial, regional, national and international level, so that wellbeing and health is harmonized and improved. Setting up a spatial strategy, together with Spatial Planning could be a point of attention, certainly since both adopt different space logic for the placement of new rest home beds (dispersal vs. pooling in urban areas).

The development of **retail** seems to be an absentee in active policy. Although European directives exist (Bolkestein directive which intends to realize a break through by concentrating retail in occupied areas, local governments sometimes think otherwise. A spatial policy on retail trade seems to be strongly needed. Currently, RWO is preparing a circular concerning a characterization of retail stores and where they can be localized. But no policies exist which deal with the spatial structure of retailing within Flanders. The policy domain of economy does not set out directions either.

The policy competence **environment** refers to the Pact Vlaanderen 2020 and VIA breakthrough 'Green and dynamic urban region ", which states that Flanders in 2020, will have to score as well as other top economic regions in terms of water and air quality, biodiversity, soil and noise pollution. If Flanders does not succeed in reaching the goals with the measures imposed by European Government, additional targeted measures will be taken. Another aim is to foster quality of life, so that the risk of damage to the environment, climate and human health is reduced to a minimum. This takes into account the most vulnerable groups in society. This aim also lays the foundation for an enhanced overall quality of life, so that Flanders is a good place to live, to live and work.

The social **economy policy** is responsible for the development of a local service economy.

The policy area of **culture** has a strategic objective "sectoral policies, socio-cultural adult work and local culture".

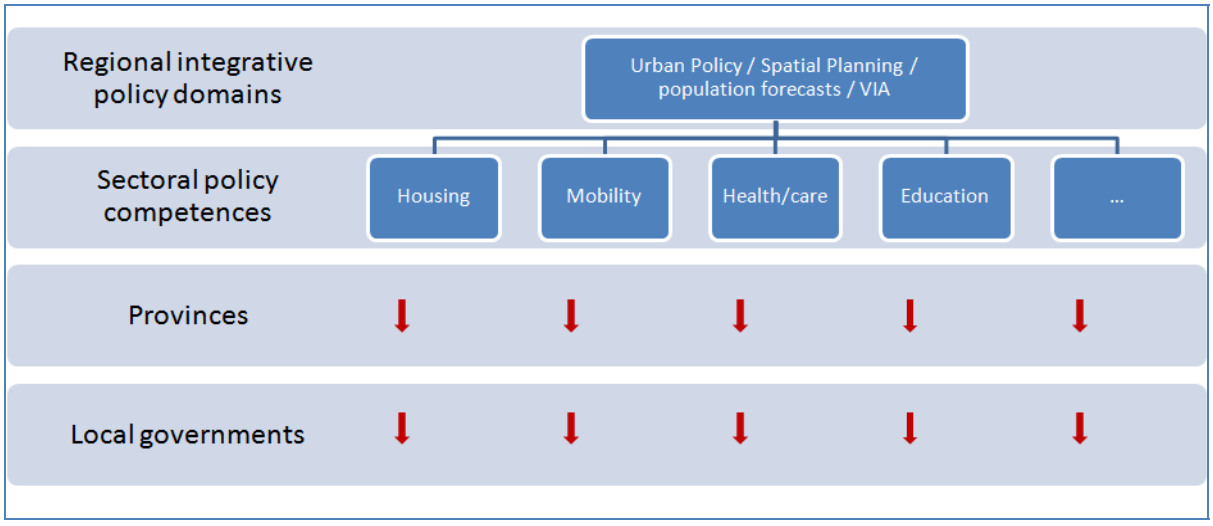
The policy area of **sports** mentions the aim to increase sports supply with all actors and on all levels, and the conduction of a systematic sports and infrastructure policy.

The coherency of the approach is difficult to assess because of the large variety of themes involved; the consistency should be explored in a more thorough study. In all respects, each thematic policy is responsible for the implementation of demographic trends and projections in its own policies (education for the provision of schools, welfare care and child care, mobility,), but the sense of urgency is not clear in all policy domains.

7.4.2. Demography: focus on spatial planning

Spatial Planning sets out guidelines for the location of services of general interest. One of the Visions of the "Ruimtelijk Structuurplan Vlaanderen" was "Vlaanderen Open en Stedelijk" (Flanders open and urban). An implementation of this vision was a delineation of settlement areas which were designated as areas for residential and centrum based functions or the so-called "high dynamic developments" (such as housing, commercial structure, services of general interest). Outside of them, these new developments are discouraged. The policy competence of Flemish Spatial Planning policy level is also to set out the amount of needed housing based on population forecasts and fixes the amount to be constructed within "stedelijk gebied" and buitengebied" (urban – rural area). Within those packages, provinces start to differentiate and give directions to the municipalities (cf. Figure 24).

Figure 24 - Demography: an overview of the policy bundles and interrelationships at different scale levels



With regard to housing provision in particular, the Grond- en Pandendecreet provides a toolbox for local governments to increase the affordability of housing. A local action programme has to delineate the areas which will be developed for housing in the next 10 years. A quarter of the overall area will have to be designated to social housing. In 2020, 43000 social rent dwellings, 21000 private property social housing units and 1000 social allotments will have to be created

extra. The needed supply per municipality is assigned a ratio of the no. of present households, by binding social objective.

However, opinions are divided considering the successfulness of the policy. Moreover, this spatial policy gets in conflict with location policies of other policy competences (e.g. wellbeing, the location of rest homes and hospitals).

For future reference, all Flemish policy competences are bound to Pact 2020 “Vlaanderen in Actie”, and it can be assumed that the intended breakthrough "Flanders Green Cities Region" (Vlaanderen Groen Stedengewest) will have a crucial and comprehensive role with regard to everything relating to the further expansion of the settlements system as it determines the spatial configuration in which living, working, mobility and services will be grafted. In addition, it can be assumed that the VIA goals for poverty reduction, help and care, healthy and pleasant living environment ... are also reflected in the policy documents of the various competencies. This means that the BRV is a very important flagship project of Flemish policy since it is strongly related to the implementation of this breakthrough. In the Groenboek Ruimte, visions for the development of Flanders are put forward and the Witboek (2013) will provide for policy guidelines. It can be expected that those guidelines will be discussed in a participatory process with the relevant policy domains.

The spatial planning competence has worked on an inventory of trends related to demography in the context of the “Groenboek Ruimte”, in which all relating themes (effects on additional schools, additional child care, nursing homes, housing typologies…) are covered. Also, within the spatial planning department discussions are vivid about how to deal with the settlements system, and how to deal with the duality "town and country".

Some of the specific challenges related to demography are also to be found in the policy memo of Spatial Planning: Family dilution and aging are seen as key demographic challenges. This vision is translated into an element "the development of creative cities and vital rural areas”, in which a mix would be created of young adults, young families with children, elderly people, with affordable housing and an interesting array of amenities. Other operationalizations in the policy memo are:

- To provide space for urban amenities;
- Adapting homes to elderly or disabled people;
- Ensuring an adequate supply by renovating the existing housing supply;
- Working on a targeted urban policy which makes it possible to condense certain areas and thin out others;
- Ensuring urban green areas;
- Spatial policy as an answer to differential housing needs and increased polarization due to external and selective migration patterns;
- To ensure space and to pursue an active policy to foster qualitative investments.

Spatial Planning will also think about management models for housing and settlement structure (Muyters 2009).

7.4.3. Strategic capacity of the policy bundles and efficiency: an assessment

The Flemish policy approach is correctly framing regional dynamics in the wider territorial perspective, although population growth has so far been underestimated. The 2011 population forecast is based on a population of 6.6 million inhabitants in Flanders, or an increase from 2008 of 7%. Experts from the Centre for Spatial Planning and Housing however, argue that external migration forecasts are severely underestimated.

After an initial screening of the operational objectives, they seem to be consistent. Spatial Planning will lead the discussion about the settlement system and the government of the housing supply, and it can be expected that the consultation process with other policy areas will intensify in response to the "Beleidsplan Ruimte". The VIA consultation process and the partnership model (BRV) provides extra opportunities for fine-tuning and consultation with stakeholders.

As far as vertical integration is concerned and the predominance of certain field, there seems to be no predominant actor in charge of the implementation of policy strategies concerning demography. The "Studiedienst van de Vlaamse regering" has a supporting role in analysis and forecasting, but policy is established by the different competences. "Stedenbeleid " and spatial planning face the challenge of being inclusive, but the ministers have the decision power in the various sectoral policy competences.

Vertical integration with upper levels seems less relevant for the European policy level (since no direct policy measures are instructed from top down), and the national level. However, integration with national policy does not seem to exist.

7.4.4. Use of forecasts / monitoring

On federal level

The Federal Planning Bureau constructs population projections for Belgium and the Regions (Flanders, Brussels, and Wallonia) (For more information: www.plan.be). The latest projection dates from 2008. The main parameters that determine the population are be carefully examined: fertility, mortality, the decision to migrate within the country, to go abroad or return to Belgium. The time frame is 2007 – 2060.

The Federaal Planbureau has a long tradition of following-up the work of Belgian and foreign demographers and other scientists about possible influences on the development of the population: it pays particular attention to the preparation of population projections, in cooperation with the Statistics and Economic Information (formerly NIS, now ADSEI) and a group of experts (demographers, geographers, sociologists, economists, public health experts and various users of that perspective).

The Federaal Planbureau participates in meetings and activities of international organizations on the subject (population projections prepared by Eurostat, Working Group on Ageing of the European Commission, the UN Commission on Population and Development, UN Summits on aging and their follow-up).

On regional level (Flanders)

The "Studiedienst voor de Vlaamse Regering" carries out projections of population and number of households on municipal level, to be used by Flemish and local policy.
The first municipal population projections, the so-called MIRA projections for the Environment and Nature Report Flanders (Milieu- en Natuurrapport Vlaanderen), published in 1994. A first update was made in 2000, followed by updated projections in 2005 and 2011. Results can be consulted at http://www4.vlaanderen.be/dar/svr/Pages/2011-01-24-studiedag-projecties.aspx.
The advantage of the Flemish local projections on population and households is that they are based on local parameters in the prognosis assessment. Moreover, the method allows for a better distinction between urban and rural phenomena. Moreover, the projections also consist of an estimate of the number of households. The projections use a time frame of 2009 – 2030, with the side note that the figures are deemed to be fairly accurate until 2018, after that uncertainty grows.

The projections of the Studiedienst van de Vlaamse Regering are made up by a team of specialists on demography. They are mainly an extrapolation of existing trends and policies and do not take into account policy objectives. The results of the predictions are widely discussed, e.g. in the Flemish Parliament. Together with the departments (administrations of Flemish policy competences) they discuss about the implications of the projections for policy. In March a public seminar was held (concerned to find a translation of the figures or to policy. The new projections were also presented in a public seminar in March, and a next seminar is planned in October, in which the focus will be on the implications for Flemish cities ("centrumsteden")

Relationships between forecasts and the declared measures

As mentioned earlier, demographic projections are needed for the signalization of themes / challenges to be placed on the policy (political) agenda, but they remain only projections. Needed interventions with regard to housing and elderly care / childcare / schools can already be deducted from current trends.

As mentioned earlier, results of the projections are discussed through bilateral contacts with concerned administrations, and used by the policy competences to shape their policies. This is e.g. the case in "Gezin, Welzijn en Gezondheid", mobility, spatial planning. In this last case the most recent projections will be used in a cyclical planning process. How will be discussed in the next paragraph (policy effectiveness)

Another example of the use of projections in Flemish Policy, is the use of population and household forecasts in the estimation of the required types of

housing (family homes, apartments,…), which in turn is used by spatial planning for an estimation of space needed (with a different coefficient for homes and apartments). These guidelines are then passed on to local authorities.

In any case, the mere use of projections and estimation of housing required in different municipalities can be problematic since based upon trend scenarios. Proactive elements in local policy, e.g. the efforts of the “large” cities to attract families with children and counter the suburbanization process, are then not reflected.

Another remark can be made concerning the differential projections stated above (before and after 2018). It is acknowledged that projections after 2018 are less accurate, but it then is dangerous to place policy objectives on the agenda which make use of differences of trends before and after 2018. The discussion now seems to be how to provide for a changing demand for provisions in a flexible manner, account for the growth until 2018 but taking into account a downfall of growth after 2018. If the matter is not the case, the policy objective will have to be updated.

Much more than before, constant monitoring is effectuated on the existing demographic trends and parameters, which is being closely followed and used as input for the forecasts.

7.4.5. Some conclusions

As stated above, an integrated approach or plan related to the demographic challenge does not exist. This is not to say that a strong coordinative power needs to exist in order to formulate effective and coherent policies, but it could endanger the formulation of a clear encompassing vision and sense of urgency.

Momentarily, policy also seems to be very reactive on concrete population forecasts and based on a business as usual scenario. Policy could also follow a proactive approach, e.g. take into account active policies trying to tackle existing trends (e.g. urban policy). In any case, great efforts are needed to be able to provide enough provisions for a growing population, and for certain age groups within the population, if only to respond to the projections until 2018.

In some policy bundles, however, there seems to be an ad hoc approach (e.g. education), which is not affordable given the urgency of the challenge. For individual policies a prioritization framework exists, but not for a comprehensive and coherent approach to the demographic problem.

The VIA flagship “Vlaanderen Groen Stedengewest” certainly could be the encompassing vision under which the demographic challenge could be dealt with in an integrative way.

8. Conclusions and recommendations

8.1. Data collection and indicator development

The analysis of available data showed that many data sources are readily available to establish an integrated monitoring system related to the global challenges and the relationship with spatial planning. We do not only refer to existing, well developed monitoring systems such as Europe 2020, Milieurapport, Natuurindicatoren,....but also reference is made to present data sets that, when combined in a GIS environment, may give rise to interesting new spatial information relating to the challenges.

It is important to determine which indicators are interesting and/or possible in a comparative European perspective - The EU-wide benchmarking brings relevant indicators to which pan-European datasets are available - which are necessary in a benchmarking perspective (comparison over time or confrontation with a preconceived goal). To make an additional assessment on the necessity of indicators, it is a matter to determine whether the region in general or spatial planning in itself has the policy competence to steer the phenomena, or if the indicators are needed any way to measure non influencable driving forces which assess the urgency of certain policy measures and act as an encouragement. In any case, the steering competence of spatial planning in particular, will be easier to assess when the BRV (Beleidsplan Ruimte Vlaanderen) is finished.

However, based on the assessment of missing information, together with some inspirational examples of the other regional reports in the ESPON TPM project, some extra data and alternative modes of data collection are recommended.

A first issue is the way global challenges are tackled in municipalities, since in the Flemish situation the subsidiarity principle implies that the policy implementation happens at the local level. Examples are local initiatives of climate adaptation, energy efficient and carbon friendly housing projects, water management, on which information could be gathered on municipal level. A good example of a questionnaire is to be found in the GDA (Greater Dublin area) regional report.

Another example is to be found in the NRW regional report. Staff of all the six regional planning authorities in NRW participated in a survey about the regional effects of demographic change. The response rate amounts to eight completed questionnaires. Even though all of the regional planning authorities are represented, due to the small response rate the assessment of the survey was problematic. The questionnaire is included in the report.

The Navarra regional report pointed out that additional questionnaires or interviews also prove their worth to find new data sources.

For some types of information, experts will have to be consulted. The involved experts could be selected on the base of the potential contribution that can come from their specific knowledge. As stated in the inception report on methodologies, three types of knowledge can be distinguished (not mutually exclusive).

- Technical knowledge
- Process Knowledge
- Explanatory knowledge

The first refers to a very specific knowledge in the field, concerning details on operations, strategies, laws, etc. The second refers to knowledge on routines, specific interactions, processes and relationships between institutions. Usually experts are directly involved as actors of the processes themselves. The third refers to actors who have subjective interpretations of relevance, rules, and beliefs. They can focus on ideas, ideologies and their inconsistencies. In this project, the choice was made to focus on the expertise of the policy actors themselves, and not on scientific experts. However, their feedback can be useful to identify additional spatial impacts affected by the driving forces related to the global challenges. On the other hand, they can give insight in the way space functions of how this evolves through time. An example of the latter is agglomeration economies. To gather information on strategic spatial alliances between economic sectors, the combination universities / R&D for example, expert consultation could prove useful to analyze the situation and detect strengths / weaknesses.

Experts do not need to be confined to policy makers and scientific experts. Research in the Policy Center of Spatial Planning and Housing, for example, gave some interesting insights concerning the economic viability of ecosystem services in the agricultural sector (Bomans 2011) and about issues related to the economic viability of “green logistics” (De Smedt and Verhetsel 2009). The information was given by farmers and economic actors respectively.

One could even opt for a combination of questionnaire and expert consultation methodology. An example related to climate change is a questionnaire to detect local initiatives related to climate change (questionnaire to municipalities); and expert interviews on the capability of the Flemish government to deal with the challenges of climate change in an adequate way (expert consultation). For the latter, the analysis of the policy bundles in itself can be the base of the qualitative monitoring system (for a methodological discussion, we refer to the ESPON TPM inception report and annexes. In this report the analysis was conceived based upon a desktop analysis, interviews and a workshop, but the analysis could also become more standardized, with appraisal questions posed to experts. However, the whole analysis does not need to be repeated with the same cyclicity (Figure 25).

The effectiveness of the policy bundles could have a short-term updating cycle, in order to grasp differences in terms of adoption of new policies and/or also of new measures and governance processes.

Figure 25 – Cyclical update of the qualitative appraisal questions

1. Awareness of the macro challenges [to be compiled per each macro-challenge]	**Medium-term cycle** (2 years)
2. Resilience of the planning system	**Long-term cycle** (4 years and in sensible contexts – e.g. 1 year after a new government and related institutional/governance changes)
3. Effectiveness of policy bundles [to be compiled per each macro-challenge]	**Short-term cycle** (1 year)
4. Future threats/opportunities of the macro challenges [to be compiled per each macro-challenge]	**Medium-term cycle** (2 years)

The awareness of the macro challenges and the perception of future threats and opportunities are correlated. Their update follows a medium-term cycle because of the progress in the raising of changes and their perception.

The resilience of the planning system is affected by more long-term changes and consequently the appraisal process should be set in a long-term updating cycle. However, important changes may take place in occasion of the setting of a new government. In this case, a year later could be a proper time to investigate the progresses and the changes influenced by new competences and institutional and governance changes.

In the main report, an interesting suggestion is made for the long term methodological development of a monitoring system:

Long-term commitment to the monitoring process, allowing to build up a pool of interested stakeholders and experts that can contribute / permanent fora of contact with relevant experts in order to be informed of relevant new studies, documents or research projects, possibly in the form of regular focus groups on defined challenges (Espon and IGEAT 2012).

A last observation linked to indicator development, and shown by some examples from this analysis, is that ample consideration and care should be given to the specific methodology used for indicator development, so that they really give a realistic indication of the monitored phenomena. The European directives / manuals for indicator development for the benchmarking of Europe 2020 related objectives are a good example (cf. Paragraph 7.2.3). Obviously, in the case of quantitative assessment, strategic policy objectives should also be translated in concrete operationalisations, so that it is possible to quantify them. In any case, it can be worthwhile to consult experts to contextualize the results.

8.2. Technical and organization embeddeness of monitoring systems

It is observed that the mind map consists of a mixed list of driving forces and related sectoral themes – which could be interesting for comparison with other

European regions and are relevant for EU wide benchmarking, but by trying to find a list of indicators for all those areas, one risks to end up with a long list of indicators that do not relate to specifically spatial issues or cannot be influenced by spatial planning alone. Due to the fragmentation of policy competences within Flanders, the monitoring system could risk becoming unclear and unworkable. This is even more the case since a vastness of Flemish monitoring systems is already in place, sometimes based upon the specific challenges separately, and in other cases related to the Flemish comprehensive vision plans as an answer to global challenges and the European directives in particular.

In that respect, the challenges lies in bringing together the necessary indicators of driving forces, pressures…that are available in other sources, and on the other hand develop a selection of a core set of indicators which provide for the necessary information on spatial impact – if necessary spatially differentiated within the region. Integration of existing data sources in the systems developed within Spatial Planning could be done in different ways. The Ruimtemonitor could provide links to other indicator systems, for example, for the selection of which chapter 3 of this report can be reviewed. Another method is the direct transfer of the data to the Ruimtemonitor and update them from the moment new time series are available. The latter implies, of course, that the Ruimtemonitor is a long term process in itself and is structurally supported[6].

But, embeddedness does not only mean technical embeddedness. As stated in the main report, an important part is obviously whether regions are capable and willing to integrate monitoring into their overall policymaking procedures. Monitoring does not make any sense if it is not embedded in a continuous process with policy-making and guided by a vision of policy objectives. We highlight one of the conditions listed in the main report (the ones that were not mentioned before in this conclusion), which have to be met in order to have an effective regional, territorial performance monitoring tool and link them to explicit examples of existing monitoring tools in Flanders:

Integration of the monitoring system into a clear vision of the region concerning its goals and objectives and the most important priorities / clearly defined procedures on how to react to findings of the monitoring system (from frequent adaptation of regional visions based on monitoring results up to automatic revision of priorities if certain thresholds are exceeded)(Espon and IGEAT 2012)

All Flemish indicator systems that function as benchmarking tools are good examples of this; evolutions in greenhouse gas emissions and energy use are constantly updated and forecasted; the Policy Plans are updated each 5 years to adopt new visions and strategic objectives; yearly progress reports give room for

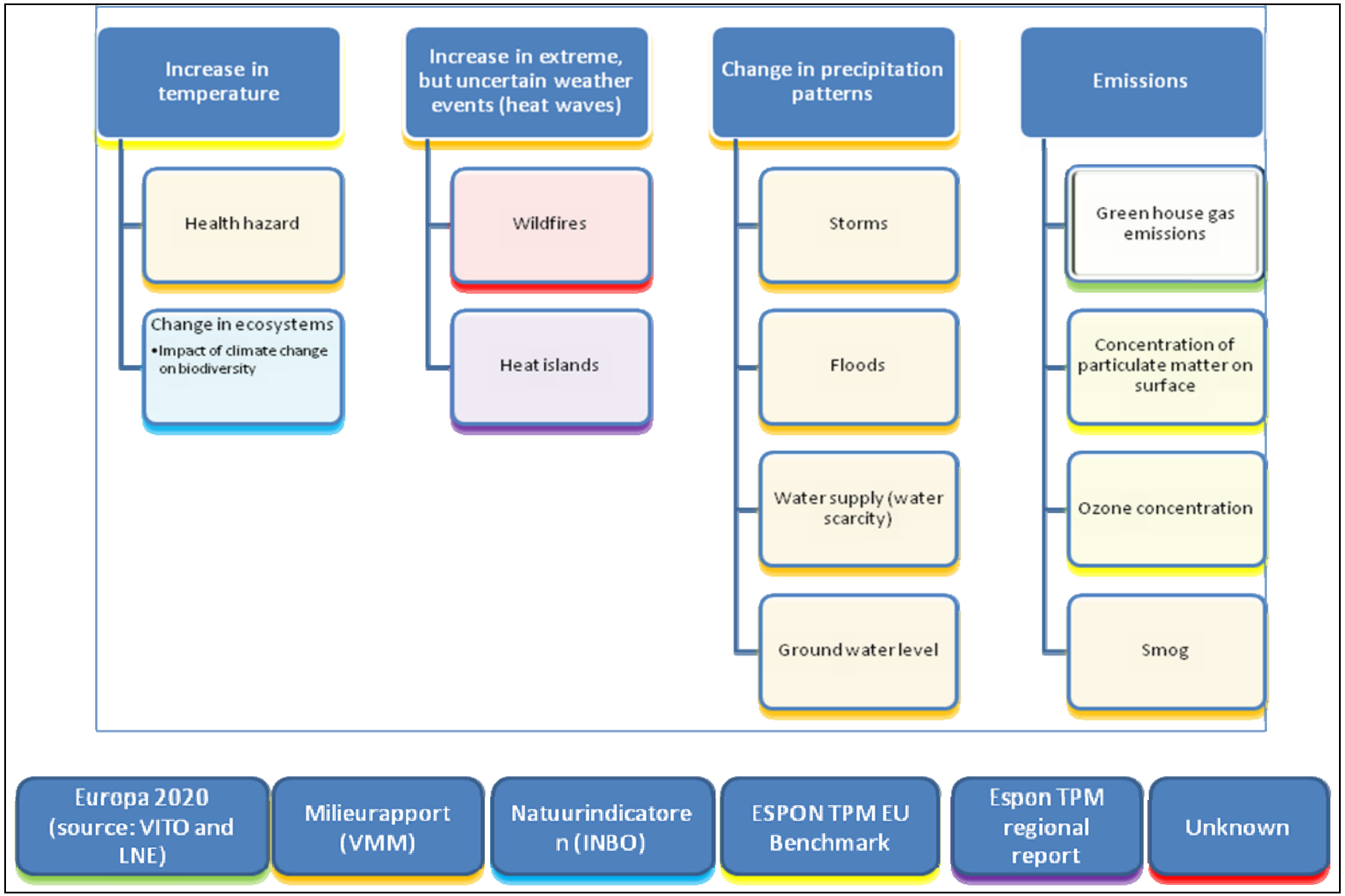
[6] This remark is related to two conditions for a regional monitoring system highlighted in the main repport: sufficient resources for continuous update and maintenance, i.e. the monitoring system has to be seen as an integral and necessary part of regional territorial governance and not as a luxury item / shared ownership, or at least shared profit from the monitoring system with other administrations (sectoral) and lower governance levels, especially when information is needed from these institutions (Espon & IGEAT. 2012. TPM Territorial Performance Monitoring: Targeted Analysis 2013/02/13 Draft Final Report. 48 p.)

the formulation of new operational objectives. Obviously meeting European directives and the concrete and rather short term time frame obliges them to do so and makes the theme an indisputable item on the policy agenda.

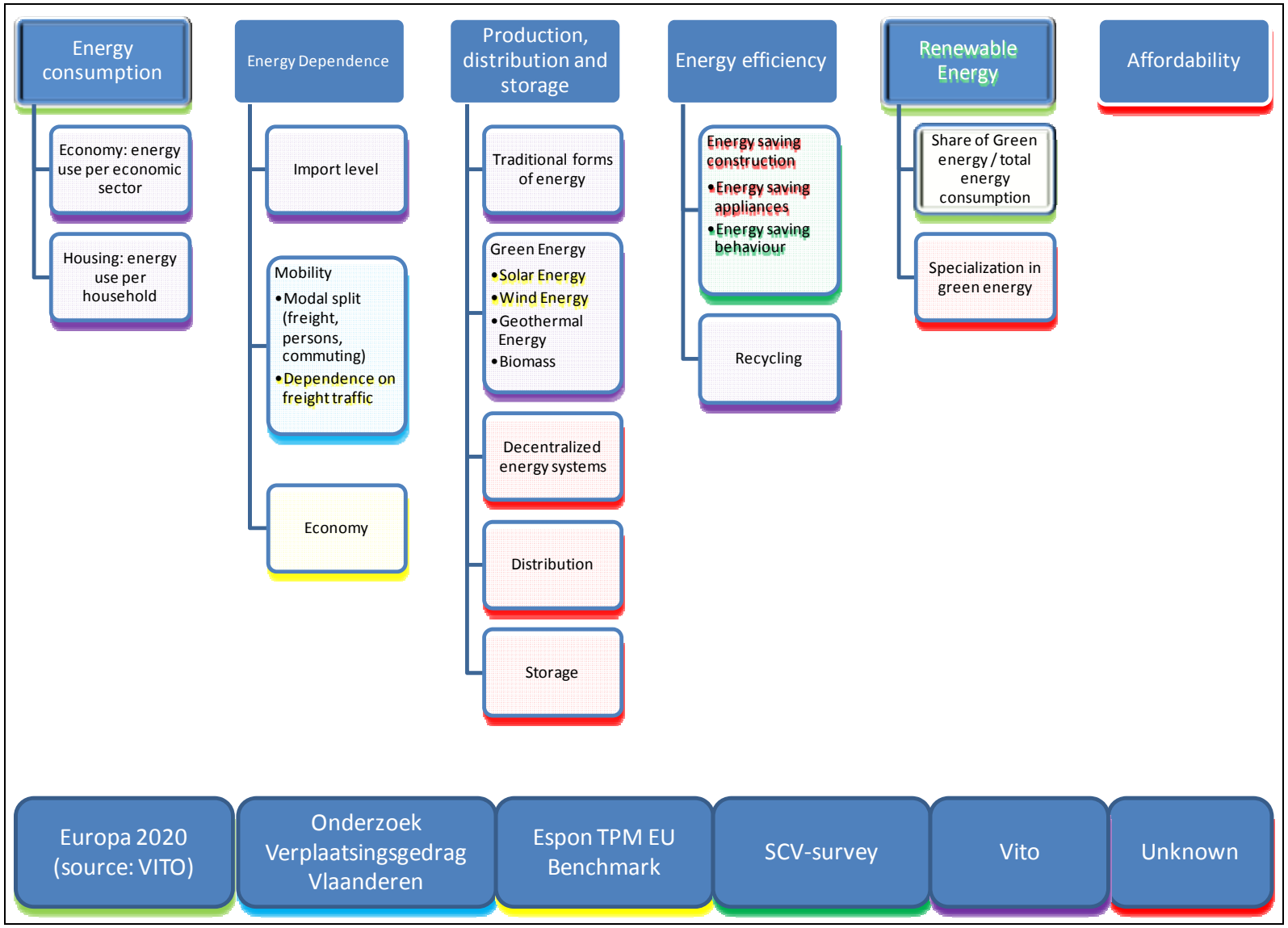
A fortiori it is a challenge to develop a political and societal consensus on visions and strategies related to the local and spatial implementation of global policies as an answer to the themes of climate change, energy, globalization and demography, but also to persuade stakeholders and political partners of the necessity of a shared vision on the need for spatial planning and new modes of spatial organisation. These should go beyond the notion that new challenges require new absolute area claims, or the definition of areas were certain kinds of land use should be completely allowed / restricted. In a region such as Flanders, in which space is limited, this approach will be necessary.

9. Data availability schemes

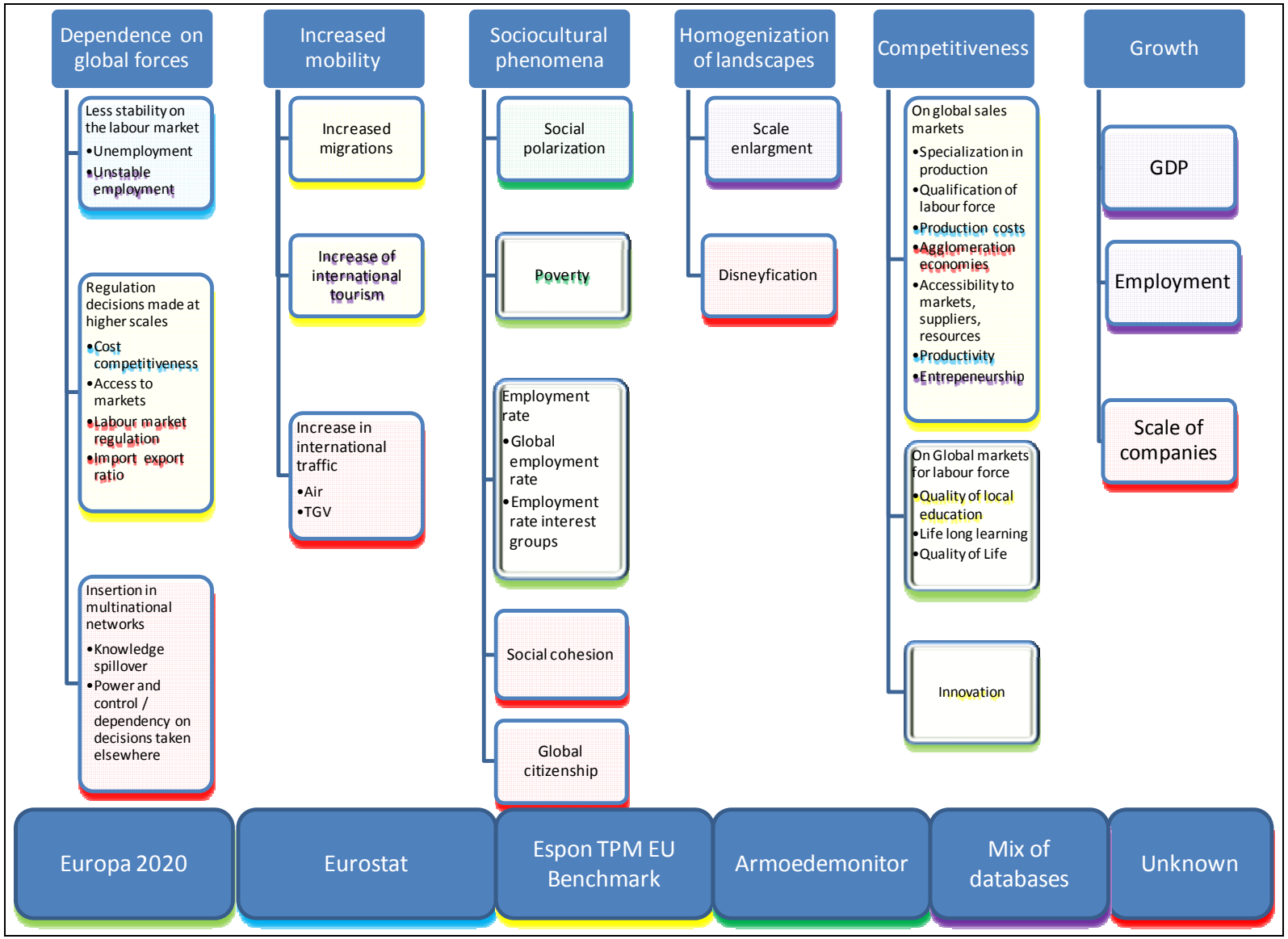
9.1. Climate Change



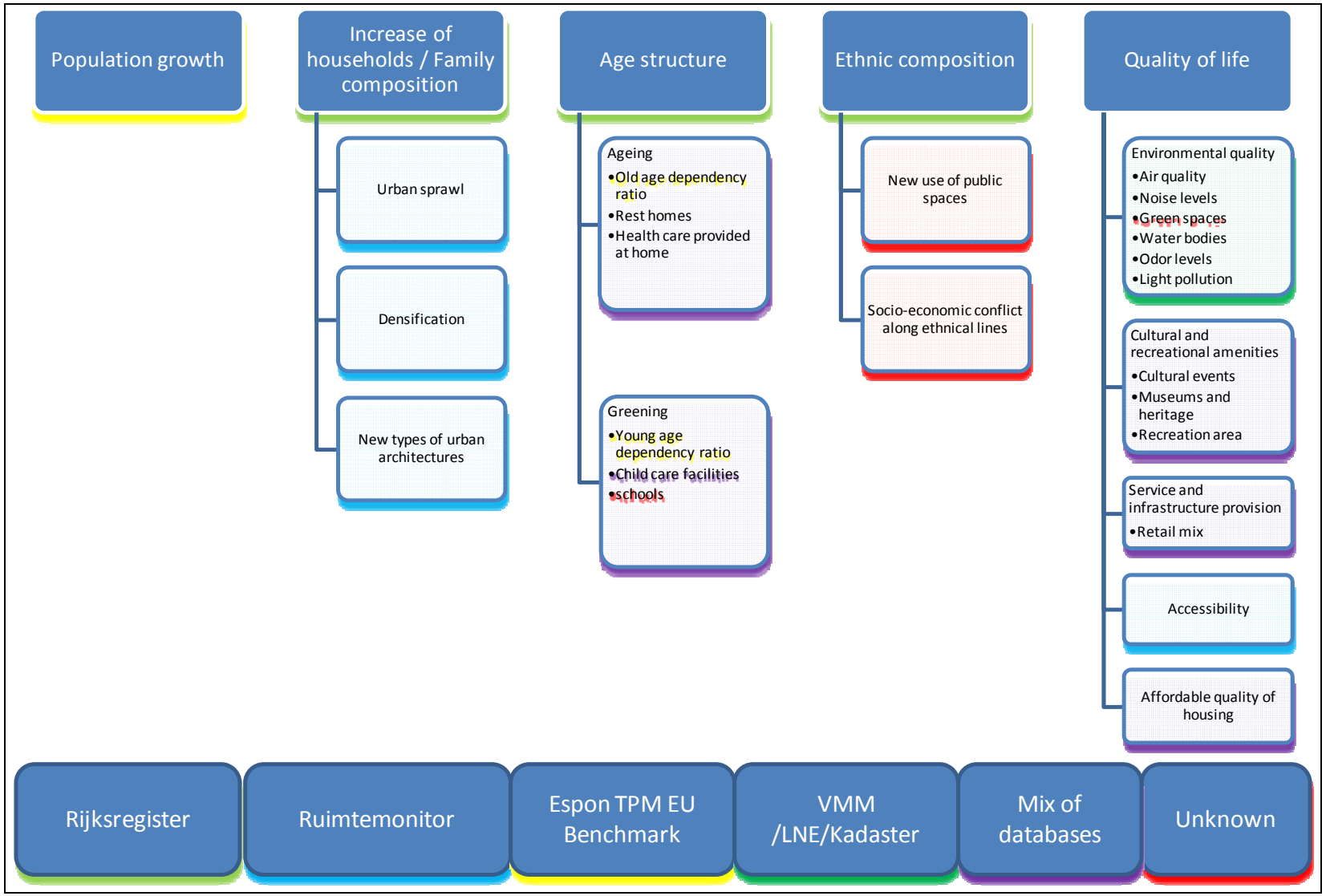
9.2. Energy


Energy consumption
Economy: energy use per economic sector
Housing: energy use per household
Energy Dependence
Import level
Mobility
•Modal split (freight, persons, commuting)
•Dependence on freight traffic
Economy
Production, distribution and storage
Traditional forms of energy
Green Energy
•Solar Energy
•Wind Energy
•Geothermal Energy
•Biomass
Decentralized energy systems
Distribution
Storage
Energy efficiency
Energy saving construction
•Energy saving appliances
•Energy saving behaviour
Recycling
Renewable Energy
Share of Green energy / total energy consumption
Specialization in green energy
Affordability
Europa 2020 (source: VITO)
Onderzoek Verplaatsingsgedrag Vlaanderen
Espon TPM EU Benchmark
SCV-survey
Vito
Unknown

9.3. Globalization



9.4. Demography



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