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More information? See the project's website: www.interregeurope.eu/prospERA/

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1. Objectives of the PROSPERA synthesis report

This report was developed within the PROSPERA project, PROMoting Sustainable development and regional attractiveness through PERi-urban Areas, funded by Interreg Europe. The project's overall objective is to improve regional policies on protection and promotion of natural heritage in peri-urban areas threatened by urban sprawl. In particular, PROSPERA wants to prevent biodiversity loss, soil consumption and further degradation of natural assets, by in parallel leveraging on those challenges as a way to favor regional attractiveness and economic sustainable development. **Section 2 of this report provides a brief review of the term peri-urbanity and situates the five peri-urban areas that are part of PROSPERA.**

To achieve its objective the PROSPERA project establishes an interregional knowledge exchange on the governance of peri-urban areas. This process of co-production was designed by ILVO, the Flanders' Research Institute for Agriculture, Fisheries and Food. A prerequisite for knowledge exchange between different nationalities is a proper and shared understanding of the diverging contexts. In other words, the success of an interregional process of co-production greatly depends on the ability of each participant to understand the differences and the similarities between all participants. Therefore, the PROSPERA project started with a cross-case analysis to identify common challenges (CC). **This report describes the result of this cross-case analysis and lists all of the common challenges in sections 4 to 6.** The CC's were grouped according to themes and the overarching topics. All CC's related to population and built environment can be found in section 4 of this report, which focuses on the general context of the peri-urban areas. Section 5 of this report focuses on the economic development of the peri-urban area and lists the CC's related to economy, food production, tourism and mobility. Section 6 of this report addresses the natural heritage of the peri-urban area including the themes of natural heritage, cultural heritage, environment and climate change.

In addition, the PROSPERA project requires clarity about each partners' goals in order to organize a process of co-production that entices all partners. Throughout the PROSPERA regions, however, this objective is interpreted in varying ways. What is more, PROSPERA partners have diverging priorities due to their local peri-urban context. **Section 7 explains how these regional differences are scoped and elucidates key results.**

A shared understanding of the participants' diverging contexts goes beyond an understanding of the physical space. Also differences in governance context need to be taken into account. An interregional knowledge exchange on policymaking demands for an adequate understanding of the regions' institutional context. When comparing the government and the governance in five different European regions, there is a high risk of confusion and, as a result, the knowledge exchange gets lost in translation. **To that extent ILVO developed a framework that elucidates the governmental context of the five PROSPERA regions, see section 8 of this report.**

The identification of common challenges (CC) throughout the PROSPERA regions as well as a good understanding of the differences in governance contexts, lies down the groundwork for the subsequent field visits and action plans. So, this report is one step in the interregional knowledge exchange in the PROSPERA project.

2. PROSPERA's peri-urban areas

2.1 What is peri-urbanity?

Today many areas are neither urban nor rural (Antrop, 2004; European Environment Agency, 2006; Kasanko *et al.*, 2006). In the 20th century, rapid socio-economic growth and the advent of the train and the car brought about leapfrog urbanization, and subsequently, generated a scattered territory. The resulting landscape is a complex composition of built-up and non-built-up land uses. Around the globe different terms have been coined to grasp its diffuse character; e.g. 'Rurbanisation' (Bauer and Roux, 1976), 'Tapijmetropool' (Neutelings, 1990), 'Desakota' (McGee, 1991), 'Middle Landscape' (Rowe, 1991) and 'Zwischenstadt' (Sieverts, 2003). Although these terms arise from local explorations, they all ascribe a similar fragmented condition. Within the PROSPERA research, we will consistently apply the term 'peri-urban'.

Peri-urban areas consist of seemingly incompatible components that have diverse origins. Firstly, there are the historical remnants of past rural areas: castle domains, monastery properties, forests and wetland areas. In addition the peri-urban areas comprises agricultural spaces. A great part of the peri-urban territories are used for agriculture and local agricultural production is usually high (Imhoff *et al.*, 1997; Döös, 2002; Houston, 2005). Moreover, peri-urban areas are characterized by rapid ongoing urbanization, and subsequently, urban components such as housing, industry and roads are widespread. Finally, the process of urbanization often goes together with the process of counter-urbanization (Primdahl *et al.*, 2013; Rogge and Kerselaers, 2013). The newly-arrived urbanites buy farmland and convert it to recreational spaces, including private gardens, horse pastures and areas for hobby farming (Bomans, Dewaelheyns and Gulinck, 2011; Zasada *et al.*, 2013; Dewaelheyns, Rogge and Gulinck, 2014). Together these various components create a 'messy' space (Scott *et al.*, 2013).

2.2 Location of the PROSPERA peri-urban areas

The PROSPERA project involves five European peri-urban areas:

- The municipality of Varberg (region A in figure 2.1), located in the western Sweden
Locally, peri-urban areas area called *Stadsnära område*, which translates as 'area near the city' in English.
- The city of Ghent (region B in figure 2.1), located in the north of Belgium
Locally, peri-urban areas area called *Nevelstad*, which translates as 'nebular city' in English.
- The city of Debrecen (region C in figure 2.1), located in the east of Hungary
Locally, peri-urban areas area called *Városperemi*, which translates as 'peri-urban' in English.
- The municipality of Reggio Emilia (region D in figure 2.1), located in the north of Italy
Locally, peri-urban areas area called *Città diffusa*, which translates as 'diffuse city' in English.
- The municipality of Aristoteli (region E in figure 2.1), located in the north of Greece
Locally, peri-urban areas area called *Περιοαστικός*, which translates as 'suburban' in English.

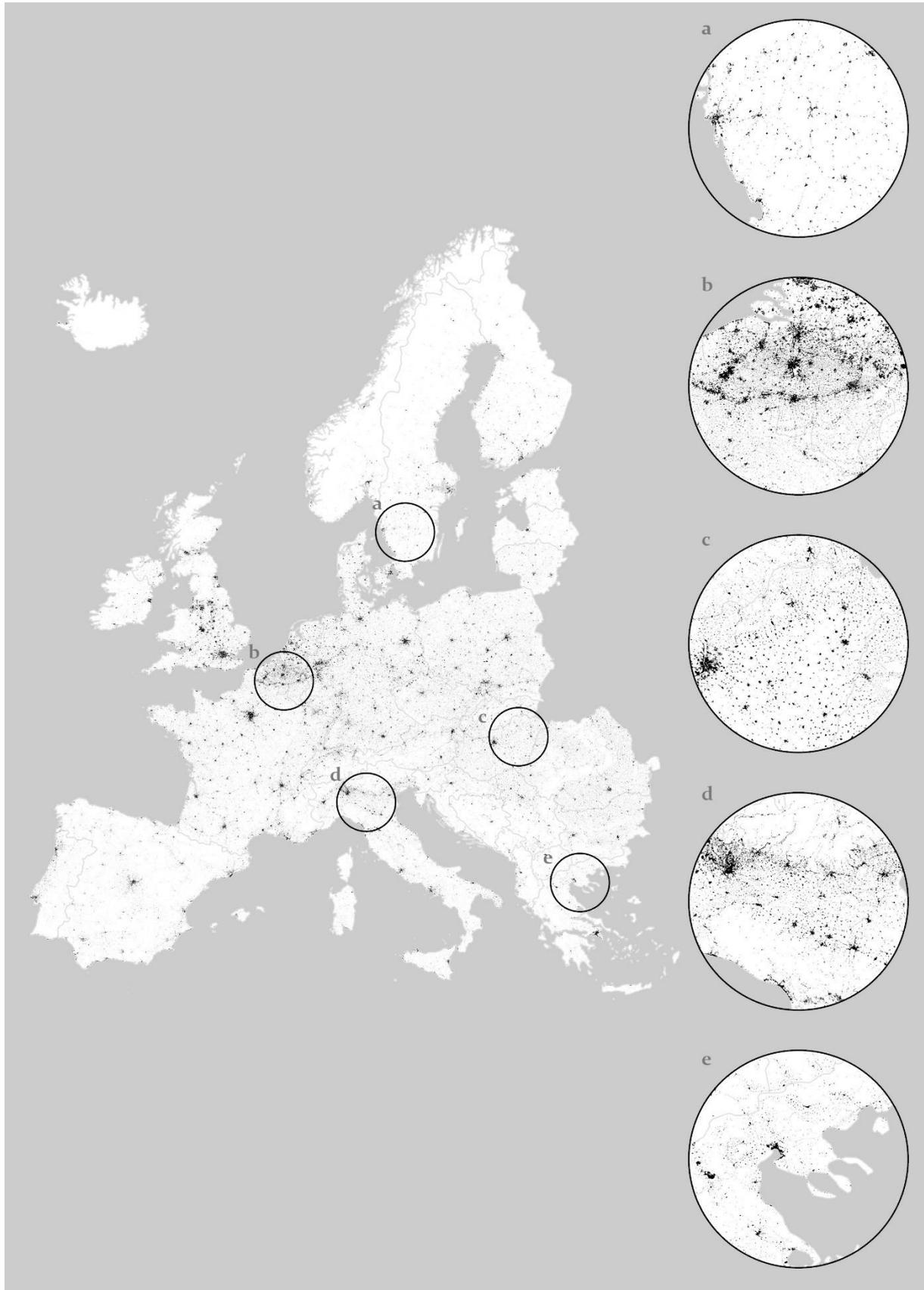


Figure 2.1: Geographical location of the PROSPERA peri-urban regions

2.3 Fifty shades of peri-urban

The orthophotos below (Figure 2.2) zoom in on the peri-urban area of the five PROSPERA regions. Each orthophoto reveals a ‘messy’ mixture of different components including arable land, roads, residential areas, solitary buildings and forests. This messiness typifies the peri-urban landscape, yet there are clear differences within one peri-urban area as well as between two peri-urban areas. To clarify, all of these orthophotos are made at the same scale. What is clear is that the degree of urbanization in these PROSPERA regions differs along the urban-rural continuum.



Figure 2.2: From left to right the peri-urban areas that are part of PROSPERA: Aristoteli (Greece), Varberg (Sweden), Reggio Emilia (Italy), Debrecen (Hungary) and Ghent (Flanders). [Aerial pictures retrieved from googlemaps, fixed scale]

In fact, there is not such thing as a well-defined peri-urban landscape but rather ‘fifty shades of peri-urbanity’. So far, there is no fixed method nor international standard to delineate the world’s peri-urban areas¹. The great divergence in criteria applied in national definitions of rural and urban areas poses serious challenges to cross-country comparisons (ILO 2018)². In cases where comparable data are missing, the process of comparing requires a structured dialogue that contextualizes regional data. For this reason, the PROSPERA project puts a lot of effort into setting-up a process that facilitates interregional comparison despite the widely diverging contexts. Frequently, the PROSPERA partners were invited to share the details on characteristics and challenges in their specific peri-urban area. For more information about these moments see sections 3 and 6.

¹ <https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/DDN-20200316-1>. Promising is the new method the United Nations Statistical Commission officially endorsed in its 51st session held in March 2020, called ‘the degree of urbanisation’ (DEGURBA), to classify the entire territory of a country.

² International Labour Office (ILO), 2018. Rural-urban labour statistics. Geneva <https://unstats.un.org/unsd/demographic-social/meetings/2019/newyork-egm-statmeth/docs/bd01-ILO.pdf>

2.4 Sustainable development in peri-urban areas

The 'messy', fragmented peri-urban landscape challenges the rural-urban dichotomy. Traditionally, the scholarly debate and policy work on space is clustered into two distinct and opposing realms: the rural space versus the urban space (Davoudi and Stead, 2002). The peri-urban territories, however, classify as 'rural and urban' or 'neither rural nor urban'. Hence, multiple authors within the field of urbanism and spatial planning call for innovative spatial policies (Gallent & Shaw 2007; Gallent et al. 2006; Allen 2003; Scott et al. 2013). They stress the need to break with the rural-urban dichotomy and call for spatial policies that are tailored to the peri-urban territories (Piorr et al. 2011; Iancu & Drescher, 2017). Gallent et al. (2006), for example, rally for a changed attitude towards the rural-urban spaces and an 'outside the box' re-conception of spatial planning in peri-urban territories. Likewise, the PLUREL project on peri-urban land-use relations in the Europe Union (Piorr et al. 2011) concluded that a better balanced and more sustainable development requires more policy attention at the regional level and the urban-rural interface. Piorr et al. (2011) express the need for a more holistic, territorially integrated perspective to shape future EU Cohesion Policy, especially where it concerns economic development, social inclusion, transport, agriculture, environment and landscape. The premise of the PROSPERA project aligns with this recommendation. The project sets up an interregional learning exchange to reveal common challenges of and opportunities for peri-urbanisation and to provide recommendations for targeted policies and new concepts of urban-rural linkages.

3. Methodology

3.1 Learning in co-production

Learning in co-production is at the heart of the PROSPERA project. Hence, the central questions are: *How to establish a learning process across borders? And how to enhance knowledge exchange?* This section provides a brief description of the methods that were used to facilitate interregional learning in the PROSPERA project. The learning process is designed and moderated by the Flanders Research Institute for Agriculture, Fisheries and Food (ILVO). The interregional knowledge exchange consists of deliberate sequens of different steps, each step building on the previous one. Figure 3.1 visualizes the co-production process.

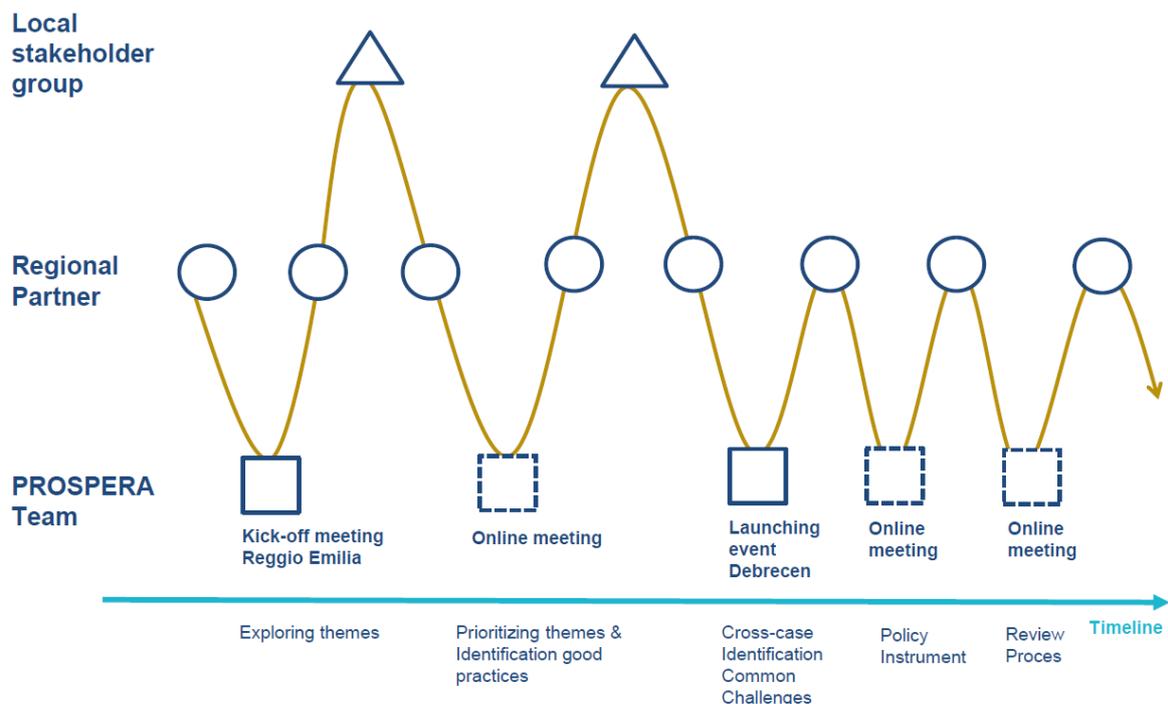


Figure 3.1 –Design of the process for learning in co-production in PROSPERA.
[the X axis depicts a timeline, the Y axis defines different levels of the process]

Based on ‘who is learning’ we distinguish three different levels in the process:

- Regional Partner (circle)** – At the level of the PROSPERA regions each partner is requested to collect and structure data in order to characterize the local peri-urban context and policy instrument. The main involves desktop research. ILVO provided guidelines and surveys to support this local process of data gathering.
- Local Stakeholder Groups (triangle)** – In addition to the desktop research each partner of the PROSPERA project organizes Local Stakeholders Groups. At these Local Stakeholder Groups,

the regional partners and their local stakeholders collectively explore the challenges for the peri-urban area in a process of co-production. ILVO provided guidelines and different tools to support these Local Stakeholder Groups.

PROSPERA- team (square) – At the level of the PROSPERA consortium all partners bring in their local knowledge and share experience. These moments of intensive cross-border collaboration are used for a cross-case analysis to identify common challenges. What is more, these collective brainstorming sessions double as moments of inspiration and learning. Collective brainstorming and field visits are the main methods at this level of the process.

The X-axis represents a timeline, from the start of the first semester (September 2019) until the end of the second semester (July 2020) of the PROSPERA project. Hence, figure 3.1 provides a chronological overview of the various meetings throughout the process of interregional learning. Each step in this process defined a specific goal and ILVO provide a method to achieve that goal. In other words, each of the triangles, circles or squares in figure 3.1 represents a specific action of the learning process. In order to provide maximum methodological support, ILVO presented the method for each step, e.g. surveys, to all PROSPERA partners during the meetings of the PROSPERA-team (squares). Subsequently, partners use the provided tools to collect information individually (circles) or in co-production with their local stakeholder group (triangles).

3.2 Identifying common challenges

In the first phase, each partner of the PROSPERA project gathered data about ten different themes to get a better understanding of the major interests and concerns of his/her peri-urban region. Together with the local stakeholder group challenges were identified and themes were prioritized. All this information was collected in a survey. The second phase consisted of a cross-case analysis in order to identify common challenges among the PROSPERA partners.



During the launching event in Debrecen ILVO moderated a workshop where the consortium mapped common challenges. During this workshop, each partner presented their challenges for the peri-urban area based on the results of the survey from phase one. Participants were asked to shoutout 'Bingo!' whenever another partner recognized a challenge, i.e. this challenge was also relevant to their own peri-urban context. After a quick check of and discussion about the common challenge, the 'bingo' was added to a visual summary of the workshop (see figure 3.3). This visual summary and the accompanying notes were the basis for this report on common challenges.

Figure 3.2 - Identifying common challenges. The method increased the ability of each partner to understand the differences and the similarities between the various peri-urban regions.



Figure 3.3 - Visual summary of the workshop 'Cross-identification of ambitions and challenges' in Debrecen (February 2020)

4. General context

4.1 Demographics



Figures are provided as detailed as possible, yet most of them are related to the administrative border of the municipalities. Therefore, differences between the city centre and the peri-urban area are under represented in these figures. The common challenges described below, however, are all identified as a major challenge in the peri-urban areas

CC.01 - Aging population

Aristoteli, Debrecen, Reggio Emilia and Varberg are characterized by an aging population. The ratio of the population over 65 years is increasing, whereas the birthrate and the fertility rate are decreasing. This is reported as a demographic challenge and requires policy attention.

- **Aristoteli:** The cross-fertility indicator is lower in Chalkidiki (at 1,26) compared to the national average (at 1,33). Births are fewer in Chalkidiki than in the rest of the country. What is more, birth rates are lower in regions where the GDP per capita is lower compared to the national average, as is the case in Aristoteli. This results from the fact that most of the births are planned and occur in private hospitals in Thessaloniki.
- **Debrecen:** The ratio of the population over 65 years was 14,4% in 2008, whereas in 2018 this ratio augmented to 18,1%.
- **Reggio Emilia:** Today 20,7% of the population is over 65 years and estimates indicate that one third of the populations will be over 65 years in 2050.
- **Varberg:** The population in Varberg is also aging: 23,5 % of the population is over 65 years old. The average age is estimated to increase from 43,1 to 43,3 year from 2018-2033. The population of Varberg are older than the national average of 41,2 year and the Region Halland 42,2. The birth rate remains high.
- **NOT Ghent:** In Ghent the ratio of inhabitants over 65 years is not increasing. Although the number of elder people is growing, within the overall growth of the city's population, the share of elder people within the population as a whole does not increase. Therefore, an aging population is not (yet) a major demographic challenge in Ghent.

CC.02 - Emigration of youth

The issue of the emigration of youth, the so called 'brain-drain', is another concern shared by the Greek, Hungarian and Italian partners. Many young, well-trained and educated people leave the region to search for better job opportunities. The socio-economic impact is important and the negative effects are: labour/skills shortages, limited capacity to innovate and adopt more advanced technologies, labour market changes (e.g. reduction of wages), fiscal consequences (e.g. reduction of tax income),

market-size (e.g. reduction of consumption), reduced economic growth, reduced productivity, higher costs of public goods, and the loss of investment in human capital formation³.

- **Aristoteli:** From 2009 (start of the economic crisis) to 2017, an estimated 450.000 Greek citizens left their country. This brain drain influences the country to a great extent, especially areas outside the main urban centres of Athens and Thessaloniki. The Municipality of Aristoteli is also influenced by this trend.
- **Debrecen:** There are no figures on the brain-drain, however, it is assumed that there is a brain drain since the percentage of the population aged 15-39 is decreasing.
- **Reggio Emilia:** The impact of the brain drain is experienced as a limited capacity to innovate and adopt more advanced solutions and technologies. In the whole province of Reggio Emilia, the number of citizens' transfers abroad increased constantly from 2010 to 2018. In 2010 there were 2255 transfers, while in 2018 there were about 5020 transfers. 46,1% of foreign transfer are in the 18-39 age range. (source: ISTAT)
- **NOT Ghent:** Ghent has a university and is characterized by an immigration of youth, students from around the country. What is more, Ghent becomes younger and more colourful with 1 to 3 habitants with a background in migration and over 150 different nationalities.
- **NOT Varberg:** Although Varberg has no university and young people move away to study, nearly all of them come back to Varberg. Hence, brain drain is not a big problem.

CC.03 - Population growth

The world's population is growing fast, especially in the developing countries where it poses great challenge. In the developed countries there is also rapid population growth in many peri-urban areas. It is important to underline that such rapid population growth acts as a multiplier of other existing challenges⁴.

- **Debrecen:** Although the overall population on the municipality level is quite stable, a significant growth is noted in the enclosed gardens in the peri-urban area of Debrecen. Enclosed gardens are "gardens" located in the peri-urban area. This land structure started to develop from the 1950's. The owners of these gardens were inhabitants who lived in the inner urban land. These gardens functioned as weekend gardens for gardening activities and for pleasure. After the fall of communism, a lot of inhabitants who could not afford to live in the inner urban areas moved out to these gardens.
- **Ghent:** In Ghent the growth is high, with an estimated annual growth of 1000 people for the next 10 years.
- **Varberg:** The municipality of Varberg is characterized by a high population growth (approx. 1-1,5 %). Varberg is estimating to be 80 000 people 2030, which corresponds to an increase by 1200-1500 people per year.

³ <https://cor.europa.eu/en/engage/studies/Documents/addressing-brain-drain/addressing-brain-drain.pdf>

⁴ https://oecdobserver.org/news/archivestory.php/aid/39/Population_growth:_facing_the_challenge.html

4.2 Built environment of peri-urban area



Today, the European areas classified as ‘peri-urban’ have the same amount of built-up land as urban areas, but are only half as populated (Piorr et al., 2011). There is a real risk of increasing urban sprawl: the growth of built development of peri-urban areas will be up to 3.7 times as high as in urban areas. If such trends continue the total built development in peri-urban areas could double between 2040 and 2060.

CC.04 – Renovation need

The need to renovate the existing buildings is a common challenge in the peri-urban areas of Reggio Emilia, Aristoteli and Debrecen. The old, worn-out buildings aren’t cost-effective and sustainable in terms of energy management and they need technological modernization. This need is also related to the ambition to promote a more sustainable built environment, where existing houses are renovated rather than building new ones.

- **Aristoteli:** About 55% of the urban buildings in Greece were built before 1980. Aristoteli is also confronted with an over-supply of often old houses that nobody wants or is able to buy. In addition, real estate transactions are complicated by difficult administrative procedures for ownership.
- **Debrecen:** The enclosed gardens (see section population growth) are characterized by a renovation need. After the fall of communism, a lot of inhabitants who could not afford to live in the inner urban areas moved out to these gardens. Nowadays about 5-6% of the city’s population lives in this peri-urban area.
- **Ghent:** In 2017, about 25% of CO² emissions in Ghent were caused by houses. Reducing the energy use of houses is therefore a crucial factor for reducing CO₂ emissions and realizing targets set for climate mitigation. This can be implemented through small improvements such as better isolation, of thorough renovation. Several policy instruments exist to stimulate this innovation.
- **Reggio Emilia:** Urban regeneration through public- private partnership, including within the peri-urban areas, is a major policy challenge. Many policies instruments based on taxation bonus are used to stimulate renovation at national level (‘seismic’ bonus, deduction for property’s renovation, ‘facades’ bonuses). With the support of the “facades” bonus, 33 facades of protected buildings have been redeveloped in the inner city. The non-repayable contribution from the Municipality was about 300.000 Euros in the 2019.

CC.05 – Illegal functions and constructions

Peri-urban areas are characterized by farms and other buildings that have lost their original function. Although these buildings were legally built, the reuse of these buildings often does not conform to the planning legislation and, as a result, they typify as “illegal functions”. In addition, there are illegal constructions. Illegal constructions differ from illegal functions since they were already in violation of planning legislation at the moment of construction.

- **Aristoteli:** Illegal constructions are widespread. Over 1 million (1,5) of illegitimate square meters were legalized in Chalkidiki during the past decade. The Greek government promised to legalize illegitimate property in exchange for payments. Initially, the programme ran until the February of 2011 but eventually it was prolonged until June of 2011.
- **Debrecen:** Illegal constructions appear in the enclosed gardens (see section population growth). Some houses were built without permit. Nowadays about 5-6% of the city's population lives permanently in the enclosed gardens.
- **Ghent:** Particularly in the agricultural designated areas, there is illegal reuse of existing buildings, old farmsteads to be precise.

CC.06 – Affordability and sufficient supply of housing

The affordability of housing is another common challenge and is closely related to the challenge of a sufficient supply of housing. Price-to-income ratio measures the ratio of average house prices to average income, and can be used to summarise the regional disparities in housing cost affordability.

- **Aristoteli:** Although Aristoteli is characterized by an oversupply of mostly old buildings, there is a need for affordable housing of good quality.
- **Debrecen:** According to the calculations of the National Central Bank of Hungary, the price-to-income ratio in Debrecen is higher than in Budapest. In other words, housing is more expensive in Debrecen, which puts pressure on peri-urban areas (inhabitants to move out from inner-urban areas).
- **Ghent:** Also in Ghent, affordable housing is a challenge, with a long waiting list for social housing. What is more, changing family composition (the average household is getting smaller) leads to changing housing demands.
- **Varberg:** A sufficient supply of affordable housing is a challenge, mainly due to the high population growth.

CC.07 – Insufficient public infrastructure and services

Access to services and infrastructure in peri-urban areas is a big challenge. The fast or temporarily changing composition of peri-urban areas has an impact on the sufficiency and the availability of public infrastructure and services.

- **Aristoteli:** The peri-urban area of Aristoteli is characterized by a lack of services and infrastructure.

- **Debrecen:** In some part of the peri-urban area there is not enough space to establish public utilities and infrastructure. Especially in the enclosed gardens, the municipality needs to build basic infrastructures like roads, utilities, public lighting etc.
- **Ghent:** In some peri-urban boroughs of Ghent there is a lack of services such as education, employment, green areas, public transport, ...
- **Varberg:** In some peri-urban areas along the coast, some services like shops, but also some public services, are only in place during tourist season. A certain number of people is necessary to make these services viable. Local inhabitants request, however, for an all year round availability of all services.

4.3 Summary of common challenges for the general context

		 Aristoteli	 Debrecen	 Ghent	 Reggio Emilia	 Varberg
THEME 1 – DEMOGRAPHICS						
01	Ageing population	X	X		X	X
02	Emigration of youth	X	X		X	
03	Population growth	X	X	X		X
THEME 2 – BUILT ENVIRONMENT						
04	Renovation need	X	X	X	X	
05	Illegal functions and constructions	X	X	X		
06	Affordability and sufficient supply of housing	X	X	X		X
07	Insufficient public infrastructure and services	X	X	X		X

5. Economic development of the peri-urban region

5.1 Economy (industry, offices, retail, etcetera)



In peri-urban areas, urbanization and economic development are driven by economic growth and restructuring, new employment opportunities, as well as a decline of traditional rural economies. This generates differences and similarities within the peri-urban area as well as between peri-urban regions. Note: challenges related to tensions between the economic development and the natural heritage are described in part 6 of this report.

CC.08 – Negotiating with (new) big (branch) plants

Peri-urban areas are frequently a preferred location for new (big) businesses and commercial centres because of the easy access to markets and the high profit with less investment. The arrival of these new economic activities offer extra opportunities for regions, but equally confront local authorities with some major challenges.

- **Aristoteli:** The mining industry is a dominant economic activity in Aristoteli. One of the major challenges in this municipality is to manage the social and political conflicts that are caused by these mines.
- **Debrecen:** In the recent years there was a massive “boom” in the economy. More than 6000 new jobs have been created in four industrial areas, located in the peri-urban area of Debrecen. A sustainable management of the economic growth of the city is a major challenge.
- **Ghent:** Ghent has a harbor. The big plants, mainly in the harbor, are also often energy-intensive, with a high CO₂ emission. Opportunities for using residual heat, renewable energy, alternative fuel sources and new technologies are being investigated. The location of these industrial areas leads sometimes to conflict with other land uses (conflict with neighbouring functions due loss of land when industrial area enlarges, air quality, impact on landscape, mobility etc.).

CC.09 - The SME economy

Besides the arrival of new big (branch) plants, the peri-urban economy transforms as the local small and medium enterprises are developing. Just as their large-scale counterparts, SME's are confronted with multiple challenges. What is more, local governments have the ambition to steer these SME's towards a more sustainable economy.

Debrecen: The Municipality recently announced to create an SME Industrial Park in total 5 ha (with a site of min. 0,5 ha/SME). It was a very important decision because some of the SMEs could not afford to rent offices/sites in the inner-urban areas due to the high prices and, as a result, they are using low-cost sites that are located in the peri-urban areas.

- **Ghent:** Ghent's economy continues to diversify and innovate. There is need to create enough space for existing businesses and to facilitate the development of new businesses in growth sectors. In this context, innovation is strategically embedded within the city's administrations through support for innovation, focus on (future) strengths, close cooperation between government, education, businesses, and external users and positioning within an international context. One of the main challenges for businesses is finding a suitable place to establish a business. Therefore, the City of Ghent tries to keep an overview of available locations and offers help to entrepreneurs for finding a suitable location. Another challenge is to employ talented and skillful employees (war for talent).
- **Reggio Emilia:** The economical tissue of Reggio Emilia is based on SMES with focus of business owned and managed by the family. To implement networking among SMEs is crucial to overcome the barrier represented by their size, that negatively affects their capability in terms of innovation and growth towards internationalization. Nowadays, especially in some sectors, the dimension of these companies represents a constraint for making these companies highly competitive at international and national level.
- **Varberg:** Varbergs economy is based on SME's. The local businesses innovate and diversify. Many of the new areas planned for businesses are former farmlands. The Municipality work closely with the local businesses on issues of sustainable development and circular economy!

CC.10 – Matching job offers and job seekers

The changing economy demands a new type of workforce. Often there is a misfit between the newly available jobs and the skills of the local inhabitants. Although peri-urban regions are characterized by economic growth, the unemployment rate can be high. Hence matching job offers and job seekers is a major challenge.

- **Aristoteli:** The region's (Central Macedonia) unemployment rate is greater (almost 23%) compared to the national average (19%). This results from the seasonality of the tourism, which is the major economic activity in the region. The local workforce can't cover the demand for workers in the touristic sector during the high season. Hence, workers come from other regions within Greece and from foreign countries to the region to work in the touristic sector during high season.
- **Debrecen:** Although several big new branch plants came to Debrecen, the unemployment is currently higher than the national average. Creating adequate workforce is a major challenge which is also related to deal with the emigration of the youth population.
- **Ghent:** As a consequence of the changing economy, jobs in the lower and middle segments are disappearing. In contrast there is high demand for highly educated people, particularly in technical areas. In the city of Ghent a lot of jobs are created, yet the mismatch between job offers and job seekers leads to a higher unemployment than the national average.

- **Reggio Emilia:** Even though in Reggio Emilia there is less unemployment than the national average, still there is need to create a better match between the available workforce and the demand for skills. In 2017, 29,8% of the hirings envisaged by the Reggio Emilia-based companies were considered difficult to accomplish. This figure is almost five and a half percentage points higher than Emilia-Romagna figure (24.4%) and by more than eight points the national one, which is 21.5%. (source: Chamber of Commerce). Some industries are more affected than others for this issues (mechanics, mechatronics, agriculture).
- **Varberg:** Finding a workforce with the right competence requirements is a major challenge. New businesses are not starting in as many numbers as before due to the lack of sufficient workforce.

5.2 Food production and farming



There is a critical interface between agriculture and (peri-) urbanisation. Conflicts often arise where urban expansion destabilises rural economies, patrimony systems and land markets. There is, however, also great potential for peri-urban farming: the production of local or high value food near the city and the creation of sustainable multifunctional landscape (Piorr et al., 2011) . Challenges related to the environmental impact of agriculture as well as agriculture in a changing climate are addressed in section 6 of this report.

CC.11 – Facing changes in agricultural economy

The agricultural sector is undergoing a major transition driven by processes such as scale enlargement, farm rationalization and diversification. Today farms are often becoming high-tech companies and, as a result, farming today is a high-tech job. The transfer of the agricultural enterprise from one generation to the next is another key challenge. Moreover, the current low profitability of agriculture leads to a decrease in terms of the attractiveness of the job as well as a labour shortage within the sector.

- **Aristoteli:** The region had increased the local agricultural production, including the production of grapes and olives. The agricultural producers have been supported by national and local programmes and institutions to create a complete supply chain and export their finished products (olive oil, wine).
- **Debrecen:** It is a big challenge for small-scale farmers to remain viable and profitable in this changing peri-urban context. There is a need to find solutions to increase the added value of their agricultural production.
- **Ghent:** Also in Ghent, it is a challenge for family farms to remain viable within the peri-urban context. The average age among farmers is high. Many of these farmers will retire in the coming decade and only few have successors.

- **Reggio Emilia:** Globalization of the market for agricultural products is a big challenge for many family farmers. Farming is no longer an attractive job, and the remaining farmers are of high age.
- **Varberg:** Local high labour prices and regulations decrease the competitiveness of local agricultural in relation to imported produce.

CC.12 – Mediating conflicts between farmers and other users of the open space

In peri-urban areas the agricultural dominance has changed dramatically over the last decades. These areas are characterized by an influx of people and capital. Urban people move to the countryside, for example, in search of a ‘rural’ lifestyle, for retirement, as commuters, or as IT-based home workers. As a consequence, rural areas are now home to a wide range of stakeholders, each with their specific expectations and claims concerning the availability and usage of space (Verhoeve *et al.*, 2015). Due to the resulting competition for land, today’s farmers are confronted with a difficult access to farmland.

- **Ghent:** In the peri-urban areas of Ghent there is a high competition for land. This creates conflicts between the different users of the open space, including farmers. The price of farmland has increased up to 50.000€ to 100.000€ per hectare. What is more, there is a need to find a new meaning to the economic and social role of farms in the shadows of the city.
- **Reggio Emilia:** Over the years, the dispersion of residential and productive activities and other urban functions in agricultural land has worsened the quality of the rural landscape and increased social costs for providing the necessary services. Moreover, there are some conflicts between residential and farming needs (ie. Smelling from livestock against quality life)
- **Varberg:** Farmers in Varberg face the same problems, yet to a smaller degree. Farmland is becoming more and more expensive.

CC.13 - Improving the city-agriculture relationship

The need for an improvement of the relationship between the city and the agricultural activities in the surrounding peri-urban area, was identified as an important common challenge of the PROSPERA partner regions. How to increase the added value of farming products and better meet the expectations of urban dwellers are two aspects of this challenge.

- **Ghent:** Via the food strategy “Ghent en garde”, the city wants to shorten the food chain, create direct links between the outside and the inside of the city, and improve the city-agriculture relationship in order to stimulate local food production and other assets of farming near the city (e.g. landscape).
- **Reggio Emilia:** The connection between the urban dwellers and the food they consume has degraded over the past decades. In more recent times, however, the demand of local produced sustainable food has increased. The challenge is to keep improving the connection in order to boost local food production and consumption.

- **Aristotelis:** The local entrepreneurs are using the brands produced in the region in order to create food signature of the region

CC.14 - Differentiating policies for the agricultural area

Agricultural production in the peri-urban area of a region varies. Often this is the result of differences in physical environment which is the case in Regio Emilia and Debrecen.

- **Debrecen:** In Debrecen there is a strong difference between the agricultural landscape to the east of the city and the one to the west of the city. Scale enlargement and intensification of agricultural activities predominantly take place in the western part of the city.
- **Ghent:** The city of Ghent would like to increase the sustainability of farms and stimulate farms to contribute to the city's development (e.g. local food, healthy and attractive landscape) instead of the current trend of farms focusing on the global market. To do so, a differentiated agricultural policy is needed, as each of the farm types has its own challenges. Spatially, variation in agricultural landscapes is limited, since there are no strong differences in physical environment.
- **Reggio Emilia:** Based on the geography the rural areas are characterized by a variation in the agricultural landscapes. Accordingly the Municipality makes for its planning policy a distinction between the following sub-areas: (1) Areas at high productive agricultural vocation: 51%; (2) Agricultural areas with high landscape values: 36% and (3) Peri-Urban Agriculture (AAP): 13%. This differentiation is based on local goals defined according Municipal rules about building and planning.

5.3 Tourism and leisure



European peri-urban landscapes are essential places for recreation and tourism, and also as a source of heritage and identity. Attractive peri-urban areas suffer under the pressure of urbanization. The PROSPERA partners identified several common challenges related to tourism and leisure.

CC.15 – Building tourism infrastructure

A good infrastructure is a premise for sustainable tourism and leisure. Seasonal variations in tourism and leisure, e.g. varying population sizes and traffic, challenge the public space, services and infrastructure.

- **Debrecen:** The municipality of Debrecen indicates the need to develop the Debrecen International Airport to further boost tourism. Improving the international accessibility of the city contributes to the enhancement of the economic potential of Debrecen as well as the increase of the number of visitors of Debrecen’s tourist attractions. The following further improvements of tourist attractions are targeted: improving of accessibility and infrastructural conditions as well as creating better circumstances for cycling, horseback riding and fishing tourism.
- **Varberg:** In Varberg rural tourism, which is based upon an attractive natural environment (forest, coast), is smaller but than city tourism but growing faster than city tourism. Tourism is a strong driver of economic development in the peri-urban area. In the summer the population of the municipality of Varberg doubles in size. This questions the availability of infrastructure and services: How to build services all year round? And how to manage services that are only cost-effective or profitable when there is a high number of tourists.

CC.16 - Developing gastro-tourism

The ambition to development of gastro-tourism as a leverage to drive sustainable development in peri-urban areas, was identified as a common challenge for Reggio Emilia, Artistoteli and Debrecen.

- **Aristoteli:** The creation of wine routes in the area and the promotion of gastronomic tourism with local products are prominent parts of the local tourism development.
- **Debrecen:** Debrecen wants to further develop gastronomic tourism. Not so much for tourists from around the globe but rather for local leisure and tourism. In the area of the old homesteads, where the previous operation was supplemented with animal husbandry and catering, program centres and adventure parks were established: e.g. Hanna Park, Koppány Szabaidőpark (Koppány Leisure Park), Fráter tanya (Fráter homestead). Further developments are planned.
- **Reggio Emilia:** It is a major ambition to valorise the eno-gastronomical tradition of the city, which is enclosed in the so-called “Food Valley”. Reggio Emilia aims to leverage on tourism based on experiences and life-styles, structuring a touristic offer

capable to promote the local tradition not only through the consumption of products, but also experiencing directly the craftsmanship of the food production and its linkage with the local landscape.

CC.17 – Balancing tourism and leisure with other economic activities

Peri-urban areas that are attractive for tourism and recreation are under threat of urbanization. The ‘natural beauty’ of these space, and thus their recreational capacity, are often heavily affected by urbanisation as open space is lost rapidly and traffic increases. What is more, the remaining open spaces are subjected additional pressure as the number of inhabitants and enterprises rises. How to deal with the urban sprawl which continues to contribute to a shrinking diversity and homogenisation of landscapes?

- **Aristoteli:** In Aristoteli the mining industry could hurt tourism by degrading the landscape and the natural resources (air, water, food chain, et) for example other local products
- **Debrecen:** Thanks to its location *-the city lies on the boundary of two landscape regions-* the city has relatively large forestlands (34% of the admin. area) in the Eastern part of the city that are under protection. In Debrecen, large amounts of land are in the possession of the municipality in the peri-urban areas as well, therefore negative effects of urban sprawl, such as decrease of natural areas and loss of biodiversity, can be managed efficiently. Increase of industrial areas could be controlled while preserving high-quality agricultural areas and the natural and cultural heritage, which can contribute to sustain the values and functions of tourism and recreation of the peri-urban areas.
- **Reggio Emilia:** The Municipality of Reggio Emilia is aiming to increase the attractiveness of natural and cultural heritage of peri-urban areas as a leverage for tourism and leisure activities. Parts of this strategy are the development of cyclo-touristic paths (“Greenways”) the enhancement of the “green belt” around the city and the application to MAB Unesco Programme in 2020.
- **Not Ghent:** Currently, Ghent is not promoting tourism in peri-urban areas because there is already a large pressure from leisure use of its own citizens in the green areas. Green areas are rather scarce, due to urban sprawl and shrinking open space in the past decades. One way to counter this is that the city of Ghent now actively develops green open spaces in the peri-urban area. These spaces combine several goals such as nature development, biodiversity, climate adaptation and recreational value to assure citizens have sufficient green area in the neighbourhood. For this, several scales of green areas are aimed at: small green places very close to people’s house, middle size green areas at neighbourhood level and four larger scale areas (“groenpolen”).

5.4 Mobility



At present, low density urban sprawl causes longer commuting distances, increased infrastructure costs, and less viable public transport systems. Urban expansion encourages car use, and car use encourages urban expansion. For sure, the development of sustainable mobility with a reduction of greenhouse gas emissions, gives rise to common challenges.

CC.18 - Connecting peri-urban areas to the city

Good connection between peri-urban areas to the city are important for, among other issues, the economic development of the region. What is more, good connections between the urban and peri-urban areas are also crucial for a sustainable development of local leisure and tourism.

- **Aristoteli:** Better links are needed between the mountainous areas and the areas near the seaside. The road network is outdated and in need of restoration and expansion. Road degradation multiplies every summer due to the tourism, and the accompanying vehicle traffic, and the heat. The old road infrastructure poses a specific challenge to the mobility of tourists.
- **Debrecen:** Some parts of the peri-urban areas are not well-connected with the inner-urban areas. The main roads leading from the peri-urban areas to the city centre are very busy in the rush hours because of the high number of commuters. These roads need to be further developed. In order to reduce car traffic, public transport and cyclepath connections shall be improved.
- **Ghent:** Ghent has pioneered with sustainable urban mobility through a car free zone in the city center and the development of a circulation plan, discouraging car use for transport to the city center. Good connections (especially for bikers and pedestrians) are in place to some extent but they still need improvement. The green climate axes should also contribute to this soft mobility. Public transport is also well-developed in Ghent. However, some specific areas such as the harbor and more remote areas are in need of a better connection.
- **Reggio Emilia:** Improvement of connections between urban, peri-urban and rural areas is needed, developing the infrastructural assets but also creating alternative sustainable connection networks for private and public mobility.
- **Varberg:** To increase the sustainability of leisure and tourism in the peri-urban areas, better connections are needed.

CC.19 – Facilitating intermodality

Currently, cars are the dominant transport mode in the peri-urban areas. Increasing the share of non-motorised and public transport is a substantial aspect to achieve environmentally sustainable peri-urban transportation systems.

- **Debrecen:** Sustainability (e.g. public transport, bike roads), modernisation and the further development of the public transport system are important challenges in the peri-urban area.
- **Reggio Emilia:** Reggio Emilia is located on the main axis of the country's infrastructure, situated along the highway and railway linking Milan to Rome. The City in April 2019 has adopted a new SUMP (sustainable Urban Mobility Plan) following the EC guidelines; this new plan has set ambitious targets in terms of modal split and the implementation of innovative strategies to tackle the current challenges in the field of transport. In this phase, into the SUMP there are no dedicated measures to peri urban areas. The Municipality is evaluating how to make the network of public transports more sustainable and efficient, enforcing the intermodality system (minibus – exchanging parkings) creating a huge network of public transports with high capacity (tramvia).
- **Ghent:** 'Ghent Mobile city' enables smooth, selective transit for the growing number of residents, students, and commuters. It addresses the immediate traffic intensity from the city region and searches for creative solutions for the public transportation network. Nonetheless there are many improvements to be made including the further development of water transport, interlinked with the creation of green climate axes.
- **Varberg:** A key question is: How to promote sustainable mobility in a region with low density in population?

5.5 Summary of common challenges for economic development

@ all partners please indicate the missing links

		 Aristoteli	 Debrecen	 Ghent	 Reggio Emilia	 Varberg
THEME 7 – ECONOMY						
08	Big (branch) plants	X	X	X		
09	SME Economy		X	X	X	X
10	Adequat workforce	X	X	X	X	X
THEME 8 – FOOD PRODUCTION						
11	Changing agricultural economy	X	X	X	X	X
12	Conflictual co-existence of farming with other land users			X	X	X
13	Improving the city-agriculture relationship			X	X	X
14	A differentiated agricultural area		X	X	X	
THEME – TOURISM AND LEISURE						
15	Building tourism infrastructure		X			X
16	Developing gastro-tourism	X	X		X	
17	Balancing tourism and leisure with other economic activities	X	X		X	
THEME 6 – MOBILITY						
18	Connecting peri-urban areas to the city	X	X	X	X	X
19	Facilitating intermodality		X	X	X	X

6. Natural heritage of the peri-urban region

6.1 Natural heritage



In peri-urban areas the remaining open spaces such as forests, parks, wetlands, grassland and arable land are under pressure of further urbanisation. This section discusses the challenges related to these physical spaces and their ecological value. Note: challenges with regard to environment or climate change are addressed in section 6.3 and 6.4.

CC.20 - Constructing green infrastructure in the peri-urban area

The planning concept green infrastructure (Foster, Lowe and Winkelman, 2011) comprises multiple green open spaces including parks, forests, wetlands, greenbelts and floodways in and around the city. Together these open spaces create a continuous network of green spaces that connects the city to its surrounding countryside. Moreover, green infrastructure improves the quality of urban life through the provision of ecosystem services, such as water filtration and flood control, the creation of pleasant and safe routes for pedestrians and bikes, and the re-establishment of ecological connectivity.

- **Debrecen:** The development of green infrastructure in Debrecen's comprises the creation of two ecological corridors along two creeks, one located to the east and one located to the west of the city. These corridors are called 'green-blue axes' [*zöld és kék folyosó* in Hungarian].
- **Ghent:** The green infrastructure of Ghent is defined in the Green Structure Plan of the city. The plan delineates eight radial axes that connect the city center to the countryside. These axes are called 'green climate axes' [*groene klimaatassen* in Dutch]. Ghent also focuses on the development of different scales of green areas throughout the city (small, medium and large scale "groenpolen" – see above CC17).
- **Reggio Emilia:** The green infrastructure of Reggio Emilia represents the load-bearing system of the city's urban and peri-urban green areas, as well as the main strategy for increasing its ecological infrastructure. The Green Belt consists of the 3 river parks (Crostolo, Rodano, Modolena and related ecological corridors) and multiple 'green wedges' [*cunei verdi* in Italian], intended as agricultural areas and mainly rural peri-urban territories that connect the river parks among themselves and to the city center. The green wedges constitute the agricultural component of the Green Belt and are characterized by the persistence of the rural landscape within the urbanized territory, while the 3 river parks represent natural corridors that cross the municipal territory from South to North, constituting load-bearing elements of the municipal ecological network.

CC.21 - Afforestating the peri-urban area

In multiple PROSPERA areas there is an ambition to afforest the peri-urban area. This ambition includes both the preservation and the expansion of existing forests as well as the creation of new forests.

- **Debrecen:** On the eastern and north-eastern part of the city's territory there are many old forests. These forests are of great ecological value and a part of them called Big Forest is protected since 1939. In fact, this forest is the first area ever to be protected by Hungarian law on natural protection.
- **Ghent:** There are very little forested areas around the city of Ghent. Therefore the city aims to plant new forests around the city, e.g. Parkbos, in order to provide new recreational space to the urban population. The afforestation requires in several cases the reconversion of farmland to forests, which gives rise to a conflict about agriculture in the peri-urban area.
- **Reggio Emilia:** The city of Reggio Emilia wants to plant extra trees throughout its territory as part of a strategy to compensate for CO₂-emissions. In total the city plans to plant 50.000 additional trees by the year 2024. The availability of land is a key concern: Where can the city plant new trees in the peri-urban area? And what is the best place for such afforestation? So far the city has planted 8.757 new trees and 10.800 new shrubs (figure of December 2018).

CC.22 - Mapping, valuating and communicating about ecosystem services

The natural heritage of the peri-urban area provides ecosystem services: benefits to humans gifted by the natural environment and from healthy ecosystems. There are many different types of ecosystem services including supporting services (e.g. water purification), provisioning services (e.g. food), regulating services (e.g. micro-climate) and cultural services (e.g. recreation).

- **Debrecen:** There is a great need to inform residents of the peri-urban about the local natural heritage and the ecosystem services it provides. Such shared knowledge is a prerequisite for an effective preservation of the natural heritage. The Municipality is also interested in mapping these values.
- **Reggio Emilia:** The planning practitioners of the city of Reggio Emilia are interested in mapping and valuating the ecosystem services in the agricultural landscape. They argue that a good understanding of these agricultural ecosystem services is essential to preserve and develop the agricultural areas around the city.
- **Varberg:** The planning practitioners from the municipality of Varberg perceive the concept of ecosystem services as highly-interesting but too abstract to be used in practice. They argue that it is especially difficult to value ecosystem services.

CC.23 – Tightening access to farmland to prevent the loss of open space

The open spaces of the peri-urban areas are under high pressure. Firstly, there peri-urban areas are characterized by ongoing urbanization and, as a result, the peri-urban soils are sealed at a fast rate. In addition, peri-urban areas are confronted with the process of counter-urbanization: newly-arrived urbanites buy farmland and convert it to recreational spaces, including private gardens, horse pastures and areas for hobby farming (Primdahl *et al.*, 2013; Rogge and Kerselaers, 2013). To a great extent this rapid loss of open space is due to a failing farmland preservation policy. In many countries, urban sprawl continues at the expense of farmland.

- **Ghent:** Around Ghent, as the number of farmers drop a high percentage of farms are no longer used for agricultural activities. The farms are often bought by non-farmers to transform them into residential housing, or a non-agricultural enterprise like bed & breakfast, woodworking or transport company. It is estimated a high number of farms are now being re-used for these functions. What is more, a great amount of the farmland, estimated around 16 percent of the total agricultural land, is now being used as horse pasture, garden and other urban open spaces. This loss of open space, and farmland in specific, is one of the central issues we want to tackle in PROSPERA by investigating which policy instruments or other actions can be implemented at local level to preserve farmland and open space.
- **Varberg:** All of the urban areas in Varberg are surrounded by farmland of high quality. This land is valuable and has an important role, for example for the farm industry, food production and for ecosystem services. In Sweden, farmland is of national interest, and every exploitation has to be very well motivated and analyzed. So, when Varberg is growing –predominantly in the peri urban areas- the valuable farmland is under threat. The development strategy for Varberg is therefore to build where there is already built, this strategy is known as ‘densifying the cities’, and to concentrate the development close to already existing urban areas outside the city.

CC.24 - Enhancing biodiversity

In current times the variety in species and ecosystems is rapidly declining. Likewise, the PROSPERA partners struggle to preserve the local biodiversity, both fauna and flora. The loss of biodiversity results from a loss of domestic species and a growth of invasive species.

- **Debrecen:** In order to preserve biodiversity the city of Debrecen aims to promote domestic species and to suppress invasive species.
- **Reggio Emilia:** Within the territory there are some important elements that are characterized as specific biodiversity hubs, such as ecological river corridors, fountains and expansion tanks. The progressive anthropization of the rural landscape and the fragmentation of urbanized development along the linear axes has generated weaknesses in the local ecological network, which presents fragmentation and isolation phenomena of some ecological nodes, as well as the reduction of diversity of natural and semi-natural habitats and departure of some animal and ecologically-demanding plant species. The identification

of existing eco-systemic services and actions aimed at adapting to climate change should therefore be considered as an opportunity to guarantee an increase in biodiversity of the territory and the conservation of local habitats.

6.2 Cultural heritage



The preservation of local cultural heritage is now seen as an integral part of a community's sustainable development effort. The preservation of cultural heritage is particularly pressing in peri-urban areas because the landscape is changing rapidly.

CC.25 – Balancing conservation and development at heritage sites

When preserving historical sites, cities must balance conservation and development. On the one hand, they want to conserve these sites just as they are and 'freeze the time'. On the other hand, they want to develop the sites in a sustainable way in order to unlock their economic potential (e.g. recreation and tourism) and to make them accessible to the general public. In various PROSPERA regions some of these heritage sites lie in the peri-urban area.

- **Aristoteli:** The mining activity leads to the extraction and removal of the ancient findings in the mines of Skouries. As reported, some of the ancient findings have been excavated, but are left without protection. UNESCO recognizes the importance of mining historical heritage, but also the growing concern about the adverse impact of the extractive industries on natural World Heritage Sites. For the Municipality of Aristoteli, the creation of a "Center for Aristotelian Studies" and the designation of the Ancient Stagira and Ancient Acanthus as sites of UNESCO National Monuments of World Heritage, has been a target in the past and continues to be a priority.
- **Debrecen:** Throughout the peri-urban area of Debrecen there are many important remnants including the Csörsz' trench system which is protected by national law. Other sites of cultural heritage in the peri-urban area are protected by local law. The challenge is to link conservation and development of the area. Careful protection of archaeological sites during constructions and land use in peri-urban areas can also be considered as a challenge in terms of cultural heritage.
- **Reggio Emilia:** Due to its long history, the landscape of Reggio Emilia is characterized by the presence of many historical and architectural buildings. The city aims to undertake active conservation and enhance these areas through dedicated promotion and initiatives, also to connect urban and rural cultural heritage. An example is the "18 century walk" [*passeggiata settecentesca* in Italian], a route that runs from the historic centre of Reggio to the Reggia di Rivalta in the rural area, passing through the Crostolo River Park. Other historical buildings to be enlightened: Clostrum of san Peter, The House of Ludovico Ariosto (Maurizioano) to be easy get thank to greenways and bike lanes across rivers (Rodano- Gattalupa).

- **Varberg:** The Grimeton area is a world heritage site and consists of several radio towers and represents the start of the modern information technology of wireless communication.

CC.26 – Creating awareness on Cultural Ecosystem Services

Cultural Ecosystem Services (CES) are the non-material benefits people obtain from the landscape. They include recreation, aesthetic enjoyment, physical and mental health benefits and spiritual experiences. The Cultural Ecosystem Service contribute to a sense of place, foster social cohesion and are essential for human health and well-being. Although everyone benefits from CES, their impact on urban life is mostly intangible, and as a result difficult to measure and quantify.

- **Debrecen:** Throughout the peri-urban area of Debrecen there are many important remnants of past ages, including temple ruins, the Csörsz' trench system and Kurgans graveyards. These site of cultural heritage are, however, little-known by the local inhabitants.
- **Reggio Emilia:** The territory has a very strong and lon tradition in enogastronomy and food excellencies. Prodcuts such as Parmigiano Reggiano Cheese, and Lambrusco Wine and Balsamic Vinegar, together with enogastronomies experiences, are not just the results of agriculture or food technics but the results of culture, tradtions and stories that need to be restored and promoted. In the same way, Reggio Emilia is well known all over the world for its educational approach for earlychildhood (Reggio Emilia Approach) and cooperative movements, the oucomes of a cultural, political and social tissues embedded with specific values rooted on the territory and the community (solidarity, sense of belonging, cooperation, active participations, human rights respects, etc).
- **Varberg:** In Varberg much of the work in preserving historical heritages sites has been done by local interest groups on a voluntary basis. Today there are less volunteers to help preserve these important sites since the population is aging and there is a lack of interest among the younger generations. Moverover, another important challenge is to increase the awareness amongst farmers about the cultural heritage value of agricultural landscapes.

CC.27 – Reconciling modern-day farming and traditional agricultural landscapes

As food production is changing rapidly (see section 5.2), the traditional agricultural landscapes are in decay. In many cases, however, the cultural heritage of these traditional agricultural landscapes is highly valued and, as a consequence, the challenge of preservation arises. How can these landscapes which are created by currently disappearing farming activities be preserved? And what is the role for modern-day farming in these valuable landscapes?

- **Debrecen:** The challenge is most pressing in the western part of the city and the county. The scale of agriculture in the Great Hungarian plain is rapidly enlarging and, as a consequence, the traditional agricultural landscape is lost.

- **Reggio Emilia:** Many former farm buildings are abandoned and this could entail a risk, so it is necessary to encourage their recovery and re-functionalisation, in particular of the heritage of historical and cultural interest such as traditional farmhouses.
- **Varberg:** Many parts of the peri-urban areas that surround the urban center of Varberg have a more agricultural character. Agricultural activities have created interesting landscapes, yet today they are in transformation as agricultural practices change.

CC.28 - Preserving small-scale landscape elements

The cultural heritage of an area is not only defined by large-scale site of exceptional landscape value (e.g. castle domains and orchards). Equally important are the small-scale landscape elements that are located throughout the entire territory. Examples of the small-scale landscape elements are hedges, trees, pools, etcetera.

- **Debrecen:** In Debrecen scale-enlargement and intensification of the agricultural sector is transforming the landscape of the Great Hungarian Plain. In this flat, fertile area many small-landscape elements are rapidly disappearing, including old farm buildings, endemic loess vegetation, wetlands, trees etc.
- **Ghent:** The Flemish Agency Cultural Heritage provides an online inventory of small-scale landscape elements [*KLE's* in Dutch] throughout Flanders. Subsidies also exist at Flemish and provincial level to create and preserve small landscape elements. Nevertheless, it is difficult to preserve these small-scale landscape elements.
- **Reggio Emilia:** Towards the Appenines Mountains the traditional rural landscape was composed of mixed horticulture and forested areas. Scattered throughout the territory, patches of this valuable landscape are still present. Practitioners at Reggio Emilia are looking for a way to preserve the traditional landscapes within their farming practices.

6.3 Environment



Apart from urban sprawl, see previous sections, the peri-urban areas are faced with multiple environmental challenges including air pollution, soil pollution and waste disposal. Note: The challenges related to climate change, are described in the next section of this report.

CC.29 - Reducing air pollution

Air pollution is a significant risk factor for a number of pollution-related diseases, including respiratory infections, heart disease, COPD, stroke and lung cancer. The human health effects of poor air quality are far reaching, but principally affect the body's respiratory system and the cardiovascular system.

- **Aristoteli:** The mining industry is the main source of air pollution in the municipality of Aritosteli.
- **Debrecen:** Air pollution is one of the most pressing environmental problems in the city of Debrecen, and mostly affects the inner city. According to the Air Quality Plan of Debrecen which is valid for the period of 2015-2020, the Air Pollution Index of the city was good on an annual scale, however, the daily values of different pollutants (PM₁₀, O₃, NO_x) often exceeds the limits which can cause serious health damages. Due to the frequent daily limit exceedances, air pollution is a huge problem for the city. Especially PM₁₀ and PM_{2.5} (data collection is poor for this component) cause more problem in terms of air pollution. In winter the main source of pollution is residential heating, which blast out the pollutants PM₁₀ and PM_{2.5}. In summer the main source of pollution is transport which pollutes the air with O₃ and NO_x. Transport emissions skyrockets as the number of vehicles increased rapidly in the last two decades. In addition, from time to time there is a significant dust pollution in the city because the wind can brings the dust easily from the agricultural areas to the inner urban areas due to the lack of a protective forest belt on the western border of the city. Moreover, bad air is often trapped in Hungary because the country is located in a big basin surrounded by mountains. The dust coming from the agricultural lands contains different size of dust: PM_{2.5}, PM₁₀ and particulates that are over 10 micrometres.
- **Ghent:** The Flemish Environmental Agency researches the air quality in Ghent's territory, including the harbour of Ghent, on a yearly basis (VMM, 2018). Since 2012 the city achieves the European standards for air pollution, yet there is still much room for improvement. The main source of NO₂ industry in the harbour area and traffic in the urban area. The main source of PM₁₀ and PM_{2.5} are industry in the harbour area and residential heating in the urban area. Whilst NO₂ emissions steadily decreasing, there is no improvement in the emissions of PM₁₀ and PM_{2.5}. Finally, industry in the harbour area emits carbon black but these emissions are decreasing.
- **Reggio Emilia:** The air pollution in Reggio Emilia is mainly due to motor traffic, house heating and ammonia emissions from livestock farming. What is more, the polluted air remain in Reggio Emilia for a long time, due for its geographical characteristics (Reggio Emilia is located in a basin surrounded by the Alpines and the Alps).

CC.30 - Reducing soil and water pollution

Besides air pollution, many peri-urban areas are confronted with soil and water pollution. Inhabitants of these area are confronted with this pollution in both direct ways (e.g. swimming in polluted water) as well as indirect ways (e.g. eating food that was grown in contaminated soils).

- **Aristoteli:** The mining industry is the main source of soil and water pollution in the municipality of Aritosteli.
- **Ghent:** Near Ghent there is a lot of intensive farming, including dairy and milk production.

- **Reggio Emilia:** A critical issue is the presence of nitrates in groundwater, which could be considered as related mainly to intensive farming and, to a lesser extent, to other concurrent causes such as industrial activities or issues related to the sewerage systems.

CC.31 - Cleaning up illegal dumping sites

Illegal dumping, also known as fly dumping, is the dumping of waste illegally instead of using an authorized method such as kerbside collection or using an authorized rubbish dump. Illegal dumping involves the unauthorized disposal of numerous types of waste including building materials from construction sites (e.g. drywall, roofing shingles, lumber, brick and concrete), automobile parts, household appliances, household waste, furniture, yard scraps, and medical waste.

- **Aristoteli:** The municipality of Aristoteli faces ongoing illegal dumping throughout its' territory, and especially near the villages of Stagiron, Stratoniki and Neochori. Recently the mayor has given priority to the clean up of uncontrolled garbage.
- **Debrecen:** Illegal dumping sites exist in the peri-urban area of Debrecen, yet the Municipality is trying to clean up these areas.
- **Reggio Emilia:** Throughout the city of Reggio Emilia there are some areas where the Municipality is discovering dumping sites from the past. These sites were created in the sixties (the law at that time allowed it) but nowadays they represent relevant challenges to be reclaimed.. In particular these areas are close to the small river in the city. These historical dumping sites, including the site's soil, need to be thoroughly cleaned before they can be used for other purposes.

CC.32 – Working towards circularity

The city can be conceptualized as an urban metabolism: a flow of materials, water and energy. Since the world's resources are inherently limited, the strategy of circularity (or circular economy) aims at the elimination of waste and the continual use of resources, including food, water, materials and energy. Circular systems reuse, share, repair, refurbish, remanufacture and recycle resources in order to create close-loop systems. Likewise, circular cities connect supply and demand of materials, water and energy in their territory to lower the use of resources.

- **Ghent:** The big plants, mainly in the harbor, are also often energy-intensive, with a high CO₂ emission. Opportunities for using residual heat, renewable energy, alternative fuel sources and new technologies are being investigated. The goal is to use resources and energy in a more optimal and sustainable way and to transform North Sea Port into a climate neutral harbour. Finally, the location of industrial areas indeed sometimes leads to conflict with other land uses (conflict with neighbouring functions due to loss of land when industrial area enlarges, air quality, impact on landscape, mobility etc.).
- **Reggio Emilia:** The city of Reggio Emilia aims for a more circular use of bio-organic waste and water. Recently, the effluent of the city's wastewater treatment plant is being recovered and used for the irrigation of 2.000 hectares of farmland. Furthermore, the city is planning to build a new plant that converts the city's organic waste into bio-methane. The plant will produce

energy, and fertilizers (composted digestate) as a by-product. Another relevant local experience is Remida, linked to early childhood system. REMIDA collects waste from companies that is subsequently recovered and redesigned in order to be used as educational and pedagogical tools in schools and citizens labs.

6.4 Climate change



As global warming is becoming undeniable, societies are forced to take action to avoid GHG emissions (climate mitigation) and to prepare for the new climate and related climate impacts (climate adaptation).

CC.33 – Needing to plan for too much water

When regions plan for climate change adaptation the design of resilient water systems is a key issue. As global warming persists, today's extreme weather events such as floods and droughts are expected to occur ever more frequently. Hence, climate change poses a dual challenge for practitioners: they must prepare the territory for an abundance as well as a shortage of water.

- **Aristoteli:** Extreme weather phenomena such as cloudbursts are a threat to the local population as well as tourists since they may interrupt energy supply and other essential services.
- **Debrecen:** Debrecen must adapt to weather extremes, including heavy rain and drought. The impact of drought can already be observed today. Throughout the city old trees are dying as a result of a lack of water. What is more, the impact of the droughts is exacerbated by the current depletion of groundwater levels.
- **Ghent:** In Flanders the precipitation in winter is expected to increase and, as a result, flood risks aggravate. The precipitation during summer, however, is expected to decrease and, as a result, summer droughts will occur more frequently and last longer.
- **Reggio Emilia:** In Reggio Emilia both the amount of days with heavy precipitation as well as the amount of days without any precipitation are expected to increase due to climate change. The city and the surrounding region must adapt to droughts and floods. To mitigate flooding and other extreme weather events, the city of Reggio Emilia defined some quantitative goals including the ambition to construct 70m² of green roofs or 1.900m² of permeable flooring or 9m² of water squares or a combination of these strategies.
- **Varberg:** While climate change will predominantly aggravate current flood risks, the area will also need to adapt to summer droughts.

CC.34 - Facing a new, unfamiliar climate challenge: drought

In regions with moderate climatic conditions, e.g. Belgium and Sweden, there is often little awareness or policy on the aggravating drought risk, which results from climate change (Bressers, 2015). In the past, the inhabitants and the policy makers of these regions were almost exclusively pre-occupied with flood issues, not the upcoming drought challenge. In recent years, however, severe droughts have sparked an interest for the challenges posed by the shortage of water.

- **Aristoteli:** In Aristoteli severe and prolonged droughts are a threat to agriculture, exacerbated by excessive water pumping.
- **Debrecen:** In general, due to the geographical conditions of the Carpathian Basin drought is not new phenomenon in Hungary, but climate change effects will increase its intensity.
- **Ghent:** In the past few years Flanders has been confronted with a series of consecutive summer droughts, including the summers of 2015, 2017, 2018 and 2019. These extreme weather events gave rise to a growing concern about the impact of drought on Flanders' agriculture, nature and waterways.
- **Reggio Emilia:** Within researches done for the vulnerability of the territory of Reggio Emilia, the following considerations have come out. The analysis on climate done from 1960 to 2014 has shown a slight drop in the total annual rainfall while as regards extreme events, the days with very intense rainfall have increased slightly only in the last decades. The annual drought days have instead a less clear trend even if they show a slight decrease in the last decades. Various studies have instead shown an increasing trend of dry days during the summer season. As regards future projections to 2100, two scenarios could be developed corresponding to different hypotheses of climate-changing emissions but both provide for a significant decrease in total annual rainfall of 40-70 mm at the end of the century.
- **Varberg:** In Sweden nearly all focus and resources went to the alleviation of floods. Due to recent events, summer droughts are now widely acknowledged as an important climate challenge.

CC.35 - Mitigating the urban heat island

An urban heat island (UHI) is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to the great amount of sealed surfaces and human activities in the city. The temperature difference is usually larger at night than during the day, and is most apparent when winds are weak. As climate change continues, local policy makers need to prepare for more frequent and more intense heat waves. Due to the urban heat island, urban dwellers are extra vulnerable for heat waves and the resulting heat stress. To mitigate the UHI planning practitioners must reduce soil sealing and green the city by creating new parks, uncovering water streams, planting trees and constructing in green roofs.

- **Debrecen:** One of the main research topics of the Department of Meteorology of the University of Debrecen is Urban Heat Island observation of the city. According to one study from 2013, the geographic location of the city (flat place without big water surfaces) favours

the development of UHI. As an illustration, see the figures below. During summer the average temperature is 1,3 Celsius higher in the inner-urban areas than in the peri-urban.

- **Ghent:** A study of the urban heat islands in Flanders classifies Ghent as a city with a relatively high UHI (Brouwers *et al.*, 2015). On average air temperature during summer is about 3 degrees Celsius higher in the city center than the surrounding rural area (Maiheu, Van Den Berghe and Boelens, 2013).
- **Reggio Emilia:** To mitigate the local urban heat island, the city of Reggio Emilia defined some quantitative goals. Firstly, the city wants to create 19.000m² of new green parks. Secondly, the city wants to construct 70m² of green roofs or 1.900m² of permeable flooring or 9m² of water squares or a combination of these strategies. The temperatures in Reggio Emilia, in fact, have increased both yearly and seasonally. This increase affects both the maximum and minimum temperatures even though the increase appears more decisive for the minimum temperatures. A study carried out by the Municipality of Reggio Emilia, in collaboration with ARPAE, clearly shows the difference in temperatures in the city center compared to the periphery, with a more marked difference in the cooler hours of the day (up to about 2.5 °C), and a less relevant one – which almost disappears - in the hottest hours.

CC.36 – Re-inforcing the coastal defense in light of sea-level rise

As global warming persists sea-levels are rising. This challenges coastal regions around the globe since it aggravates coastal erosion and increases storm surges and, as a result, coastal defense gets outdated. Hence, coastal regions need to rethink their coastal defence systems, especially on the long term. The coastal defence system comprises both natural systems such as beaches, dunes and reefs as well as man-made infrastructures such as dykes and water barriers.

- **Aristoteli:** The municipality of Aristoteli has a very large amount of coastline, bordering the Aegean and the Thracian Sea. The beaches are major touristic hotspots, drivers for the economic development of the area. As sea-levels rise, these beaches and other parts of the coastline are under threat.
- **Varberg:** The municipality of Varberg is located near the Öresund, the sea that divides Sweden and Denmark. Moreover, Varberg encompasses a couple of small islands in the Öresund. As sea-levels rise, local coastal defense needs to be improved without hampering the touristic experience. Varberg's beaches are key to the touristic development of the city.

6.5 Summary of common challenges for the natural heritage of the peri-urban areas

		 Aristoteli	 Debrecen	 Ghent	 Reggio Emilia	 Varberg
THEME 7 – NATURAL HERITAGE						
20	Constructing green infrastructure in the peri-urban area		X	X	X	
21	Afforestating the peri-urban area		X	X	X	
22	Mapping, valuating and communicating about ecosystem services		X		X	X
23	Tightening access to farmland to prevent the loss of open space			X		X
24	Enhancing biodiversity		X			
THEME 8 – CULTURAL HERITAGE						
25	Balancing conservation and development at heritage sites	X	X		X	X
26	Creating awareness on Cultural Ecosystem Services		X		X	X
27	Reconciling modern-day farming and traditional agricultural landscapes		X		X	X
28	Preserving small-scale landscape elements		X	X	X	

				
Aristoteli	Debrecen	Ghent	Reggio Emilia	Varberg

THEME 9 – ENVIRONMENT						
29	Reducing air pollution	X	X	X		
30	Reducing soil and water pollution	X		X	X	
31	Cleaning up illegal dumping sites	X	X		X	
32	Working towards circularity			X	X	
THEME 10 – CLIMATE CHANGE						
33	Needing to plan for too much and too little water	X	X	X	X	X
34	Facing a new, unfamiliar climate challenge: drought	X	X	X	X	X
35	Mitigating the urban heat island		X	X	X	
36	Re-inforcing the coastal defense in light of sea-level rise	X				X

7. PROSPERA targets

7.1 The objective of the PROSPERA target

The general objective of the PROSPERA project is to improve regional policies on the protection and promotion of natural heritage by tackling loss of ecosystem services and by improving sustainable development in peri-urban areas threatened by urban sprawl. The kick-off meeting clarified that this general objective is interpreted in varying ways throughout the PROSPERA meeting. What is more, it showcased an eagerness to address a multitude of challenges within the PROSPERA project. These very first discussions amongst the PROSPERA partners equally revealed that partners often didn't have a coherent or clear view on which challenges to address, even within their own peri-urban area.

As Rogge et al. (2013) stress, clarity about each partners' goals and a shared understanding of the common goals is essential to develop a successful process. To create a better understanding of the specific themes and challenges that each individual partner wanted to address within the PROSPERA project, ILVO developed a target-tool (see attachment) The following guiding question was used to support partners in their prioritisation of themes: *How would you distribute 100 points over the ten different themes?*

Partners were also invited to use this target in meetings with their local stakeholder group to organize a process of dialogue and learning that entices all partners. The pictures below (figure 7.1), taken at the workshop in Debrecen, show how these visualisations supported a lively debat and dialogue.



Figure 7.1 – Using the PROSPERA target to debate the priorities for each PROSPERA partners during the workshop in Debrecen [picture by Fedra Barna]

7.2 Results (February 2020)

Filling in the target revealed interesting information about the thematic focus of the different partners in PROSPERA. What is more, partners that used the target in their dialogue with the local stakeholder group indicated varying priorities among the different participants. As a kind of ‘setting the scene’, each region made a synthesis of the prioritisations made by their stakeholders. Figure 7.2 provides the result of this exercise.

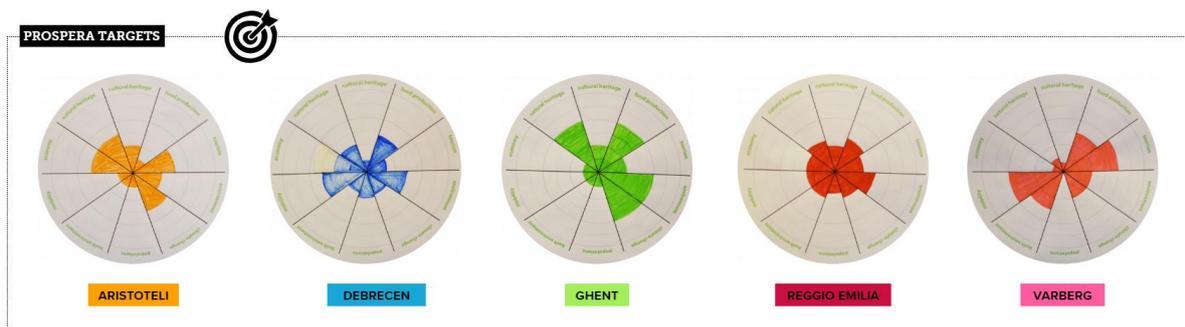


Figure 7.2 – Results of the PROSPERA targets for the various PROSPERA region [results from the workshop in Debrecen, February 2020]

8. PROSPERA framework on the levels of government

8.1 Objective

The PROSPERA project explores the governance of peri-urban areas which includes research on the potential of local authorities to facilitate sustainable development through their policy instruments. Hence, this report devotes special attention to the institutional contexts in which the PROSPERA project takes place. Comparing the institutional contexts in the five different European regions is complex and there is a high risk of misunderstanding. Firstly, confusion may arise from the differences in language and terminology. For example, the Italian word *provincia* and the Dutch word *provincie* refer to different levels over government. Secondly, the PROSPERA partners vary with regards to the state structure. In a federal state, e.g. Belgium, the legislative power is divided between the nation and its' composing regions. In contrast, regions in non-federal states, e.g. Sweden, are subordinate to the nation. Thirdly, the way that non-elected levels of government are appointed varies.

In short, there is a high risk that PROSPERA partners get lost in translation. Therefore, ILVO structured the levels of government in the five diverging policy contexts (see figure 8.1) in a rigorous way. This framework on the levels of government aims to avoid confusion about the institutional contexts. A balance is sought between completeness and comprehensibility. Throughout the PROSPERA project the framework will be used consistently to transpose policy making from one region to the other.

8.2 Methodology

The framework was developed by ILVO in co-production with the PROSPERA partners. First, ILVO conducted desktop research on the institutional context of each of the five regions. Based on this research ILVO drew a first draft of the framework. Next, this draft was send to a contact person in each county to and the framework was updated according to their remarks. Subsequently, the second version of the framework was presented to all participants of the PROSPERA workshop in Debrecen in February 2020. Any additional remarks were processed in the following month.

8.3 Framework on the levels of government

The framework includes:

- The elected levels of government that develop and effectuate policies.
- The appointed levels of government that effectuate policies.

The framework does not include:

- The administrative units (e.g. NUTS-regions) that only serve to inform policy making. For example, the framework does not include the Hungarian region The Great Plains as it only is used for as a unit for statistical analyses

- The sub-level divisions of levels (e.g. state-level representations on the meso-scale). For example, the framework doesn't mention the county (län) level in Sweden.

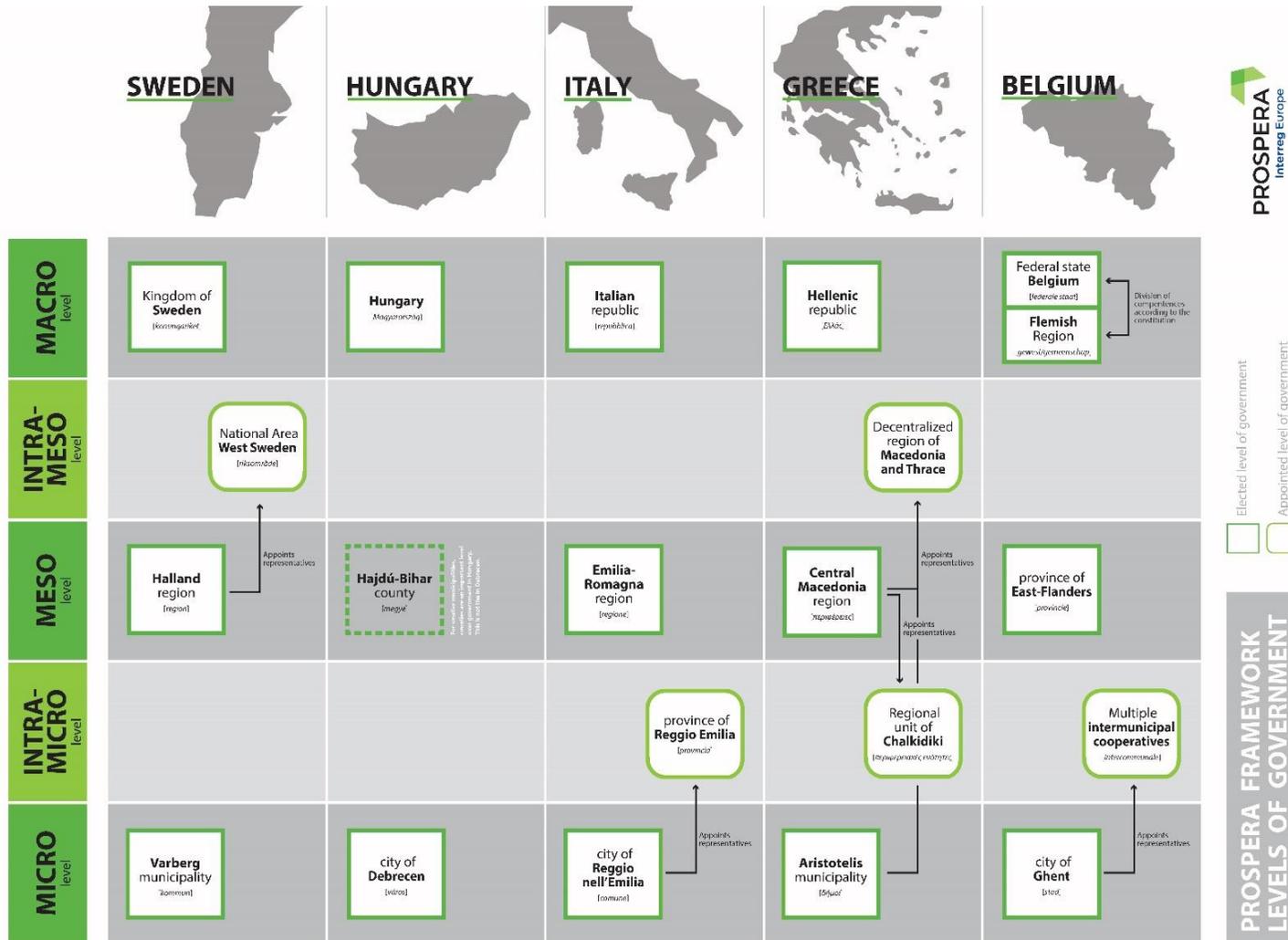


Figure 8.1: Framework on the levels of government in the PROSPERA regions

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