

# GREECO

## Territorial Potentials for a Greener Economy

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## Executive Summary

The development of case studies within the GREECO project was meant to give a real life dimension to the theoretical concepts and hypothesis developed within the other tasks. The main objectives of the case studies are to identify the role of the regions in driving a green economy development; analyse the regional key drivers and enabling conditions of the transition to the green economy (policies, financial instruments and investments, etc.); and to identify good practices of regional transition to green economy.

GREECO's main goal during the selection of the case studies was to have a mixture of regions which are balanced from a geographic, economic, policy, size, and typology point of view. The case studies have been selected according to criteria such as types of territories (ESPON); geographical and historical contexts; sectors and size of the region.

GREECO selected four decentralised and developed regions: Navarra (Spain), Ruhr (Germany), Jämtland (Sweden) and Burgenland (Austria). Four of them have different economic context with Ruhr being highly industrialised previously and facing the challenge of transition to a modern economy. Navarra and Burgenland have benefited from strong regional leadership and have exploited their natural assets to the maximum especially in the field of renewable energy. Jämtland has predominantly been a leader in greening the agricultural and forestry sector. Two other regions – Cornwall (UK) and Puglia (Italy) - are less developed than the first group of regions but share their strong drive towards the green economy especially in the energy sector. The GDP per capita of Zealand (Denmark) is lower than the EU-27 average except for the northeastern part which is closely linked to the Capital Region. Green economy is seen as a possibility to catch up with the rest of the country. South Transdanubia (Hungary) is an example of a less developed region that has some ambition in green economy development but still has a long way to travel. Malta is an interesting case of a small island territory with abundant natural assets (wind and sun) and a big shortage of water and raw materials.

## Short summaries of the ten case studies

### ***Austria - Burgenland, NUTS-2 (AT11)***

Burgenland is a NUTS-2 region with its own regional government (*Landesregierung*). It is interesting from a green economic perspective because of its path towards energy autarky based on renewable energy production including wind energy and biomass. There is a strong governmental support for development of renewable energies. The territorial capital here is huge: over 40 % of total area is occupied by agricultural land with high wind potential. Burgenland is a relatively polycentric region, with a network of six technology centres, one of them leading in renewable energy issues and European Centre for renewable energies (EEE). Burgenland has the potential to become an absolute leader in renewable energy in Europe (wind and biomass) including through applied research and development.

### ***Denmark - Sjaelland, NUTS-2 (DK021, DK022)***

Zealand consists of 17 municipalities. Municipalities are the main driving force but the region council has a strong coordinating role. The northeast part of the region serves as hinterland to the capital

region with a relatively high level of education and income, unlike the western and southern parts. There is a relatively strong and further growth potential in renewable energy, bioeconomy and tourism. Likewise, the area holds very good wind energy potential, alongside clean-tech positions and growth potentials in the north-east. Almost all municipalities are signatories to the Covenant of Mayors and national green economy commitment arrangements and they pursue own climate and energy programmes. A comprehensive industrial development support programme *Growth forum* has a strong emphasis on “clean-tech”. There have also been attempts to development of university network in the west and the south and to develop attractiveness for space-demanding green technology experimental innovation, in the south. The west has continued an industrial ecology development strategy with remarkable results.

### ***Estonia - Lõuna-Eesti, NUTS-2 (EE008)***

Southern Estonia is one out of five NUTS 3 regions in Estonia consisting of six counties. The administration in the country is centralized and the functions of the local governments in Estonia are relatively limited. It is the leading region when it comes to organic farming in Estonia. However, there are challenges related to the development of organic processing and marketing, which are lagging behind the development at farms. Forest biomass is the most important source of renewable energy in the region, accounting for 37% of the total primary energy consumption. Ensuring effective utilization of wood residues, raising awareness of environmental issues and popularization of the forest certification schemes among the private forest owners are among the main challenges on the way to a greener forestry sector. Nature and rural tourism in the region are on the rise. Small tourism enterprises are exploring positive synergies between organic agriculture and tourism activities. When it comes to green initiatives in the building sector, Estonia was successful in using the revenues from the trade of CO<sub>2</sub> quotas in financing the refurbishment measures of the apartment buildings. The region has plenty of unused potential in terms of green economy. For example, due to low density of population there is a lot of unused land that is suitable for organic agriculture and the cultivation of energy crops

### ***Germany - Ruhr Area***

Ruhr area consists of 15 NUTS-3 regions out of which 11 regions are large independent municipalities with widespread decision power, in particular on spatial development issues. The other four regions are counties each consisting of a number of municipalities. These 15 regions form the Regional Association Ruhr (RVR) - responsible for regional planning and several tasks in tourism and business development and development of open space. The Ruhr Area might serve as an example for a regional transition from an old and heavy industrial base to a modern high-tech and service oriented region with some focus on green economic development. The region has some "natural" territorial capital, mainly in the rural parts (forests, agricultural land), but also in the high-density cores (open space, Ruhr landscape park). Brownfields can also be understood as territorial assets for development of green economic activities. Several eco-innovation clusters exist with a strong university base with high-tech orientation and attached technology centres and parks. These assets are combined by a high awareness among political and economic actors form the potential of a green economy strategy for the development of the region.

### ***Hungary - South Transdanubia (Dél Dunántúl), NUTS-2 (HU23)***

Hungary is a traditionally centralized country and regional policy making takes place at the national

level. The role of the regions is only to provide inputs and signal the needs of the region for the national government. The South Transdanubian Region consists of three NUTS-3 countries which are further divided into a total of 24 micro-regions (NUTS-4 level). The region lags behind both of the national average and of the EU-27 on a range of development indicators. South Transdanubia is sparsely populated and is characterised by a large number of poorly accessible settlements and a relatively low share of manufacturing. Although starting from a low level, the region's innovation system has seen a positive development through R&D infrastructure- and inter-regional linkage building. R&D efforts exist in the field of bio- and life sciences & eco-innovation; information technology, and laser technology. The region has vast resources for biomass production and geothermal production that could lead a green economy transition.

### ***Italy - Puglia, NUTS-2 (ITF4)***

Puglia is a NUTS-2 region comprising five provinces. Puglia is still considered as the most dynamic region in Southern Italy and it has a great potential for renewable energy, solar in particular. Puglia has important cultural assets and beach resorts, which facilitate the growth of the tourism. Recently, regional authorities have promoted initiatives in support of R&D and innovation, with a focus on the creation of technological districts and investment in human capital. Policy initiatives are developed with the support of the recently created Regional Agency for Technology and Innovation (ARTI). There is also a strong political agenda related to consumption patterns and recycling and recovery rates are growing accordingly. The regional administration recently took important steps in changing the regional innovation governance system that are aimed at rationalising policy development and implementation. Puglian pioneering experience in renewable energy (PV in especial) is often mentioned as a best practice and according to ARTI (2013) could be easily transferable to other regions with similar characteristics. Finally, Puglia already ranks high in Italian classifications of green entrepreneurship.

### ***Malta, NUTS-0 (MT)***

Malta is a densely populated city-state. The country is not rich in natural resources and crucial resources like fresh water, limestone and land are insufficient. Coastal and marine areas are the biggest assets of Malta with a significant contribution to wealth generation through tourism and marine economy. Other key sectors with big greening potentials include RES, building sector, water management, waste recycling and organic farming. Although Malta has the most abundant solar and wind resources in Europe it is a late starter in RES development, but with a big potential. The potential of waste, wave energy and solar water heating for buildings is also considered. The main innovation challenges for Malta are those in relation to boosting financial and human resources in research and innovation, stimulating research and innovation in enterprises and promoting an innovation culture.

### ***Spain - Navarra, NUTS-2 (ES22)***

Spain is a highly decentralised country and Navarra is a NUTS-2 region composed by one single NUTS-3 region. In terms of territorial capital, Navarra's climatic conditions hold a great renewable energy potential, its landscapes and natural areas are a great touristic asset, the cluster presence in the region is high, which facilitates knowledge spillovers. Navarra holds one of the most developed environmental legislative frameworks in Spain. In addition, in 2010 Navarra adopted MODERNA, a strategic plan to define a new model of economic development for in the medium and long term.



The strategy foresees investing in wind energy and eco-innovation as sectors having high potential for development. In addition, regional effort on RTD and innovation in Navarra has experienced a remarkable evolution since its regional R&D expenditure as a percentage of GDP has increased from 0.9% in year 2002 to 2.13% in year 2009. This can be attributed to a steady regional innovation support policy. Moreover, it also has a wide variety of sectors prone to become green(er).

### ***Sweden - Jämtland , NUTS-3 (SE322)***

Jämtland is rich in resources and potential for developing both traditional and “new” forms of activities within the green economy. Greening in a sparsely populated and peripheral county such as Jämtland is highly dependent on greening the transport sector. Greening the transport sector is of key importance for greening the tourism sector. It is also very active in structural funds programs and development of networks for regional development and innovation. The area holds a strong “natural” territorial capital in the form of renewable stocks of biomass, agricultural land, water and wind. It also possesses less tangible assets like good business climate – the most small firms per capita in Sweden and some eco-innovation clusters with business and university. More predictable and stable national and EU level policies with long-term approach would better facilitate greening the economy in the county. At the same time the strong role of municipalities can in some cases hinder the implementation of national and EU policies at local level. It would be essential to take measures to increase the awareness of local decision- and policy-makers on the opportunities provided by greening the economy.

### ***United Kingdom - Cornwall and Isles of Scilly, NUTS-2 (UKK3)***

The NUTS-2 and NUTS-3 region Cornwall and Isles of Scilly (unit: Council of Cornwall) consists of the two LAU1 territories Cornwall and the Isles of Scilly. The economy in the region is specialised in experience economy (tourism and creative services) and bioeconomy (agriculture and fisheries), but less in the “high value” industries financing, consulting and ITC. Cornwall already is a great tourism destination. About a fourth of the employment generated in the region depends on tourism. It also has a very good wind energy potential, but with possible conflicts with landscape interests. Cornwall is signatory to the Covenant of Mayors and it has done a strategic choice of “Low carbon” as a catalyst for economic development. It also supports renewable energy and environmental technologies using national and EU funding, while it has endorsed specific public sector procurement policies. Cornwall develops a university network supporting the innovative research environment and an adequately educated labour force enabling indigenous development of green solutions. Another focus area for green transformation in the region concerns the integration of natural ecosystems restoration in the planning of economic development and water basin management.

## **Key drivers for greening the economy derived from case studies**

A comparison of the ten case studies is a challenging task precisely because of the difference of contexts, the different natural characteristics and assets, the multitude of institutional settings and the varying capacities for financing the greening of the economy. However, there are a number of key factors and conditions that transcend the differences and that are instrumental for a transition to a green economy.

## ***Territorial assets***

The importance of natural assets depends on the sector of the green economy. The capacity to capitalise on the natural assets is strongly linked to other factors such as the governance and strategic framework in a specific region. A transition to a greener energy sector through a growth in renewable energy is closely related to the availability of sun and wind. However, a country/region like Malta which has the best possible conditions in this respect has not been able to develop the sector because of other reasons such as lack of political drive, lack of appropriate legislation and financing but also because of lack of space and resistance of the populations towards the construction of wind turbines. On the other hand, regions like Burgenland and Navarra have fully profited from the abundance of wind and through a strong leadership and thanks to the excellent legislation and institutional framework they have become leaders in RES generation. We have a similar situation in Cornwall where a strong political leadership on regional level, availability of funding and close collaboration with research institutions and the private sector has made it possible to develop technologies for generation of electricity from the waves. Naturally, the lack of strong conflicting territorial interests from other sectors such as tourism is also a pre-condition.

There is an interesting case of how lack of natural assets puts a pressure for greening a sector. Such is the case of water in Malta where extreme water shortage has been the trigger for innovative measures for greening the sector through technologies for water savings, appropriate pricing, fighting the illegal boreholes. Malta's water scarcity has been (and could be further) turned into an advantage by gaining an upper hand in water sector innovation capacity.

In conclusion, rich natural assets are an enabling condition for green economy development. However, lack of natural resources can also be a trigger for greening and innovation as the need for sustainable management of scarce natural assets is critical.

## ***Governance and institutions***

The quality of governance and institutions are instrumental for the transition to the green economy. Without any doubt, all governance levels are important and it is difficult to single out one as more important than the other. While national targets give the initial momentum and national policies create the overall framework of operation, regions and municipalities are instrumental in translating this vision into regional and local realities. The significance of regions is bigger in larger, more decentralized countries such as Spain, Germany and Italy. Other countries like Sweden and Denmark have weaker regions with limited jurisdiction but are instead having strong municipalities and the primary driving forces of the transformation towards the green economy are thus the national government and the municipal administrations. Regional role is harder to nail in smaller countries without strong regional administrative traditions such as Hungary and Estonia. It has to be noted that because of the Cohesion policy, regions have gained in importance especially as far as planning is concerned. In the example of the UK, regional structures have been dismantled or significantly reduced and demonstrates that the role of the regions also has political dimensions.

Political stability is also one of the characteristics of good governance. Political stability is important for ensuring the continuity of strategic choices such as adopted targets, financial commitments for greening the economy or simply having an overall mindset which is propitious to greening the economy. This is very much a challenge at the end of a political cycle. Navarra is a positive example in

this regard where a persistent commitment to green the regional economy has been translated into a widely consulted and agreed Regional Innovation Strategy – MODERNA.

The diversity of regional institutions, the synergies between them and the quality of human resources are a strong factor for enabling the transition to the green economy. Although the regional power is weak in South Transdanubia, a strong and ambitious regional institution such as the Regional Development Agency can play an important role which is shown by the initiative for a Regional Energy Strategy that aims to create a common framework and priorities for the region. On the other hand, South Transdanubian institutions are suffering from the low availability of quality human resources in the region. Puglia is a positive example in this respect with a remarkable landscape of institutions operating in the field of advanced technologies within energy, agriculture and nanotechnology, which have enabled the leading role of the region in this field. These institutions are not restricted to public organization, but range from industry to research.

### ***Strategic and policy framework***

All case studies have demonstrated unequivocally that the strategic vision of a region is a major driver for greening the regional economy. This is especially the case if the strategic vision has been achieved with the participation of a wide group of regional stakeholders – public, private, non-governmental sector and academia. The approach guarantees a shared understanding both of the benefits and challenges of greening the whole economy or a specific sector. The Maltese Tourism Plan is an example of a shared sustainable vision for one particular sector. Sometimes, the vision comes from a single person or company and such is the case for the Esteban Morras' windy vision in Navarra.

One can never write enough on the importance of policy for greening the economy as a whole and the specific sectors. The case studies demonstrate this well. One possible strategy for regions is to align themselves with national, EU compliant targets and ensure compliance. This is the case with less ambitious regions or late starters such as Malta and its RES targets. However, these targets might not be sufficient for ambitious regions such as Navarra, Zealand or Puglia which have already reached far in their RES development and therefore needs more ambitious goals. Additionally, regions and municipalities have a powerful leverage through spatial planning, permitting and enforcement of legislation which is the case for Zealand. For example, integrated urban and transport planning making it easier to use bicycle-public transport combinations and park-and-ride commuting are examples of local planning efforts that are key to the transformation. Green public procurement is another efficient policy which can be implemented on regional level. E.g. in Jämtland, green public procurement in the transport sector has been one main reason for the success of greening the transport sector.

### ***Financial support***

A lack of financial support is seen among the limiting factors for greener growth in virtually all the case studies analysed. Thus, most regional actors stressed the importance of financial mechanisms and emphasize the need for increased public support. Financial support can take the forms of a feed-in tariff for the renewables sector (Malta, Puglia, Navarra, etc.); enhanced financing of R&D and technological cooperation in the region; grant support for innovative companies and projects, etc. Funding could either come from national sources or from Structural and Cohesion policy. Structural and Cohesion policy is a strong driver for greening the energy sector especially in less developed

regions (through RES targets and concentration of funding), through support to energy efficiency renovation of building and through its sustainable transport priorities. There are ongoing comprehensive efforts on mainstreaming the environment and climate change into the planned investments.

### ***Environmental awareness***

Relatively high level of environmental awareness has been translated into political expectations and eventually into strategies, policies, financing and actions. Awareness is achieved through long and persistent efforts on behalf of the regional and municipal administration which control a number of communication tools. Awareness is also strengthened through consistent involvement of stakeholders into creating a future vision. Additionally, awareness could also act as a pull factor for environmentally-friendly goods and services. Awareness is important for greening the economic sectors through consumption choices. In transport, this would be the preference for public transport or alternative transportation; in energy – the decision to renovate the building and improve insulation; in agriculture – the preference to purchase organic products, etc. In the case studies there are examples where this is the case.

## **1. Introduction**

### **1.1. Objectives of the case studies**

The development of case studies within the GREECO project was meant to give a real life dimension to the theoretical concepts and hypothesis developed within the other tasks.

The main objectives of the case studies are to identify the role of the regions in driving a green economy development; analyse the regional key drivers and enabling conditions of the transition to the green economy (policies, financial instruments and investments, etc.); and to identify good practices of regional transition to green economy.

The case studies are expected to create an integrated narrative of how green economy works in the selected regions. This means binding together and creating a storyline around drivers and enabling conditions, performance indicators and other green economy development factors. They are also used to test hypothesis and validate GREECO regional typologies coming from the other tasks. Authors put an emphasis on the positive practices within the case studies regions but at the same time try to paint a comprehensive picture of the green economy. Describing obstacles and disincentives and hindering factors can bring useful insights on what needs to be improved. They also include an analysis of “lost potentials”.

### **1.2. Criteria for selection of the case studies and list of the case studies**

GREECO's main goal during the selection of the case studies was to have a mixture of regions which are balanced from a geographic, economic, policy, size, and typology point of view. The case studies have been selected according to the following criteria.

- a) **Different types of territories** according to the standard ESPON typologies.
- b) **Different geographical and historical contexts** - regions from different parts of Europe from the point of view of geography, history, economy, wealth, etc.
- c) **Sectoral** - each case study will cover several of the strong sectors for the given territory.
- d) **Size of the region** - the case study regions are not comparable in size and there are case studies at different NUTS level in order to paint a more telling picture of the green economy.

GREECO has also taken into consideration a number of softer criteria for the selection of the case studies such as:

- e) Non explicit drivers of green economies development, such as **governance frameworks** and public-private collaborative schemes;
- f) Maximum **diversity of drivers and enabling conditions** and sectoral characterisations found across Europe;
- g) **Economic dynamism** – case studies will include more developed as well as less developed regions.

**Table 1** Analysis of the case studies according to selection criteria

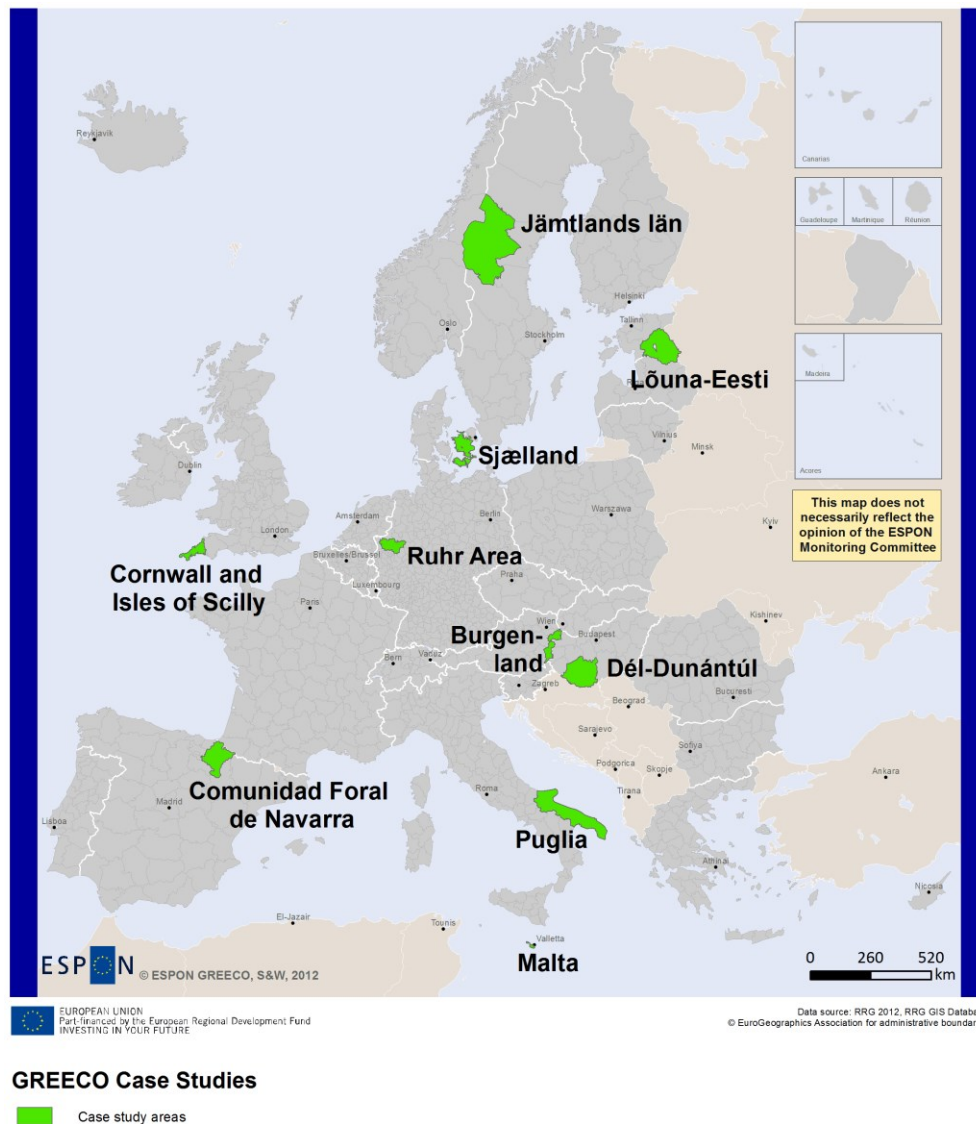
Name	Country	NUTS	ESPON type	Geographical context	Cohesion policy type	Governance system	Strong sectors (focus of the case studies)
Navarra	Spain	3	Border, coastal, metropolitan, mountainous, industrial transition, intermediate (urban-rural)	Mediterranean	More developed	Decentralised	Renewables, Agro-food industries, Sustainable tourism, Environment and waste, Sustainable vehicle, Sustainable construction
Puglia	Italy	2	Coastal, metropolitan (Bari Taranto), industrial transition (Taranto), mostly intermediate	Mediterranean	Less developed	Decentralised	Energy, Green research and eco-innovation
Jämtland	Sweden	3	Border, Sparsely populated, mountainous, industrial transition, predominantly rural,	Northern Europe	More developed	Decentralised	Agriculture, Forestry, Transport, Tourism
Southern Estonia	Estonia	3	Border, coastal, intermediate (urban-rural)	Northern Europe	Less developed	Centralised	Building and construction sector, Agriculture, Forestry, Tourism
Ruhr Area	Germany	2	Metropolitan, predominantly urban,	Western Europe	More developed	Decentralised	Energy and Water
Burgenland	Austria	2	Border	Central Europe	Transition	Decentralised	Renewables, transport?
Zealand	Denmark	2	Border, coastal, some parts intermediate, some rural,	Northern Europe	More developed	Decentralised	Renewable energy, Manufacturing, Natural ecosystems
Cornwall	UK	2	coastal	Western Europe	Transition	Decentralised	Energy, Natural ecosystems
South Transdanubia	Hungary	2	Mountainous, industrial transition, between intermediate and rural	Central and eastern Europe	Less developed	Centralised	Bio-economy, Energy production, Green innovation and research
Malta		0	Border, coastal, island, metropolitan, predominantly rural	Mediterranean	Transition	Centralised	Energy, Tourism, Water

### 1.3. Methodology for drafting the case studies

The drafting of the case studies started in late 2012, early 2013. The research approach combined desktop research, phone interviews and personal interviews. The task leader had developed a common outline of the case studies in order to ensure consistency between them. The desk research was used for familiarization of the authors with the territory: economy, economic history, geography, climate, figures, policies, etc. and for review of existing literature on green economy features of the region. The interviews (both phone and personal) were targeted at key stakeholders - policy makers from ministries and key state institutions, funding institutions, associations, NGOs, etc. They were meant to capture the story behind the figures as well as to construct a picture of the stakeholder's perception of the development of green economy.

### 1.4. Overview of case studies

**Figure 1** GRECO Case Study Regions



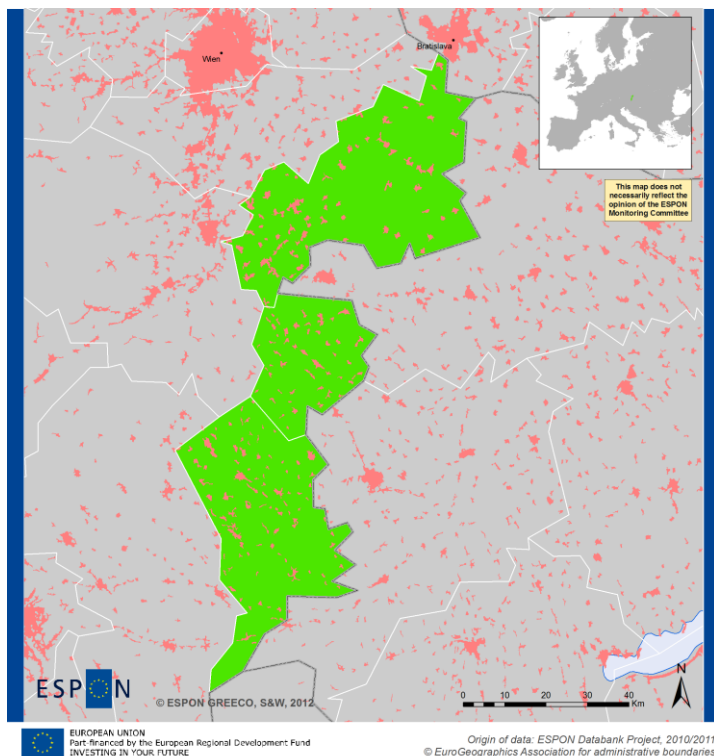
#### **1.4.1. Austria - Burgenland, NUTS-2 (AT11)**

Burgenland is a NUTS-2 region with its own regional government (Landesregierung). According to the Environmental Goods and Service Statistics (EGSS) available for Austria at NUTS-2 level, there are 4,753 green jobs generating a turnover of 645 Million EUR in 2010. This is about four percent of all jobs, the green turnover corresponds to 10 percent of total GDP in the region, which is about Austrian average. There was a growth between 2008 and 2010 of 131 green jobs and about 57 million EUR green turnover.

Burgenland is interesting from a green economic perspective because of its path towards energy autarky based on renewable energy production. For electricity, self-sufficiency based on renewable energy will be reached by the end of 2013. For total energy consumption, the share of renewable energy will be increased to 55 percent by 2020, the goal of a complete energy autarky through renewable energy shall be reached by 2050. The territorial capital is huge: over 40 % of the area is occupied by agricultural land with potential for high wind energy and biomass production. There is a strong governmental support for development of renewable energies. Key elements in the regional strategy for renewable energies are the expansion of biomass for district heating, wind energy, photovoltaic and fostering of applied research and development. Burgenland has a research and development infrastructure with six technology centres, one of them leading in renewable energy issues, and a university of applied science, forming together with policy and administration an eco-innovation network fostering renewable energy production, energy savings and thus climate protection.

**Figure 2      Map Burgenland (Austria)**





#### Burgenland Case Study

■ Settlement area

#### 1.4.2. Denmark - Sjaelland, NUTS-2 (DK021, DK022)

The NUTS-2 region Zealand (Sjaelland) consists of 17 municipalities (LAU-2). Most of the local authority drivers are controlled by the municipalities, but the region council has a strong coordinating role. The NUTS-2 region is split in two NUTS-3 regions (DK021 and DK021), but they do not represent any existing administrative territory. Rather, the border between them represents the border of the Capital Region before the local administration reform in 2007 and can be useful for historical reference.

Region Zealand contrasts the neighbouring Capital Region with a low level of per capita GDP. This average, however, covers a considerable gap between parts of the region. The northeast part of the region adjacent to the Capital Region enjoys a high level of income and education. The more peripheral parts of the region towards south and east have levels of income and education that are lower than the national average. The study shows that the potentials of the green economy are also potentials for these parts of the regions to catch up with the more well off parts of the region.

The region and the municipalities have focused policies on development of renewable energy, bioeconomy and green experience economy. Almost all municipalities are signatories to the Covenant of Mayors and national green economy commitment arrangements. They pursue own climate and energy programmes: In particular, development of wind energy, district heating based on biomass and gasification of manure and other industrial waste.

In the south, the expansion of wind energy generation, wind turbine blade manufacturing and demonstration facilities have counteracted the long-term decline in jobs and income following the

trends in industrial and regional structures. These trends, however, have been too strong to be offset by these green growth initiatives.

In the west, the innovative industrial symbiosis and the biofuel cluster lay the foundation for competitive industrial production in the future. In both cases, the municipal authorities have been the driving forces, but backed by the regional council. Large scale second generation of biofuels is expected to be put into action when the EU regulation ensures a reliable European demand for second generation biofuels.

Conflicting interests between landscape values and wind resource rents hamper the development of the excellent wind potentials in many parts of the region. These conflicts can often be mediated by arrangements sharing the resource rent from wind generation with the local community. In Denmark such arrangements are instituted by the national government.

Other economic potentials include the investment in energy efficient buildings and in sustainable transport infrastructure. The region hosts a relatively large construction industry and the region supports the coordination of competences related to energy efficient buildings and sustainable construction. This is expected to strengthen the competitiveness and be helpful in achieving a high share of the anticipated booming market in the 2010s.

**Figure 3      Map Zealand (Denmark)**



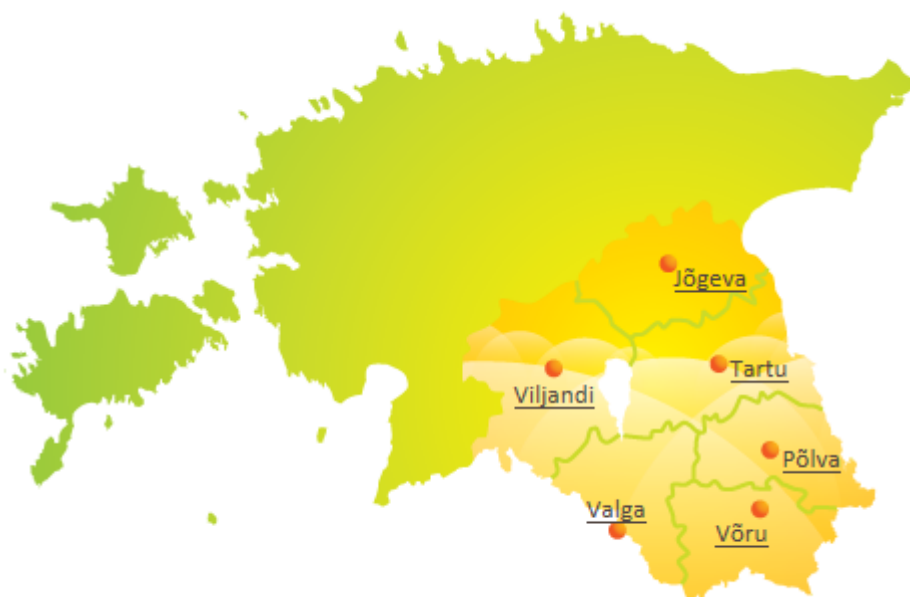
#### **1.4.3. Estonia - Lõuna-Eesti, NUTS-2 (EE008)**

Southern Estonia is geographically peripheral region, located on the crossroads between the EU and Russia. The region has a population of small size and a low density. There are especially good preconditions in the region for the bioeconomy and tourism sectors development.

Southern Estonia is the leading region when it comes to organic farming in Estonia. However, the challenges related to the development of organic processing and marketing, which are lagging behind the development at farms, should be overcome. Forest biomass is the most important source of renewable energy in the region, accounting for 37% of the total primary energy consumption. Ensuring effective utilization of wood residues, raising awareness of environmental issues and popularization of the forest certification schemes among the private forest owners are among the main challenges on the way to a greener forestry sector. Nature and rural tourism in the region are on the rise. Small tourism enterprises are exploring positive synergies between organic agriculture and tourism activities. When it comes to green initiatives in the building sector, Estonia was successful in using the revenues from the trade of CO<sub>2</sub> quotas in financing the refurbishment measures of the apartment buildings.

It has been emphasized that there is currently a low level of political support to the green economy development. Public sector should lead the way, both ideologically and financially, in the transition to the green economy and set a positive example in their activities and attitudes (e.g. through GPP). Moreover, there is a need to enhance the capacity of the local and regional governments. The current governance structure limits initiative and high-quality green development activities of the municipalities.

**Figure 4**      **Map Southern Estonia**



#### **1.4.4. Germany - Ruhr Area**

Ruhr area consists of 15 NUTS-3 regions (DEA12, DEA13, DEA16, DEA17, DEA1F, DEA31, DEA32, DEA36, DEA51, DEA52, DEA53, DEA54, DEA55, DEA56, DEA5C). Out of these, 11 regions are large independent municipalities with widespread decision power, in particular on spatial development issues. The other four regions are counties each consisting of a number of municipalities. These 15

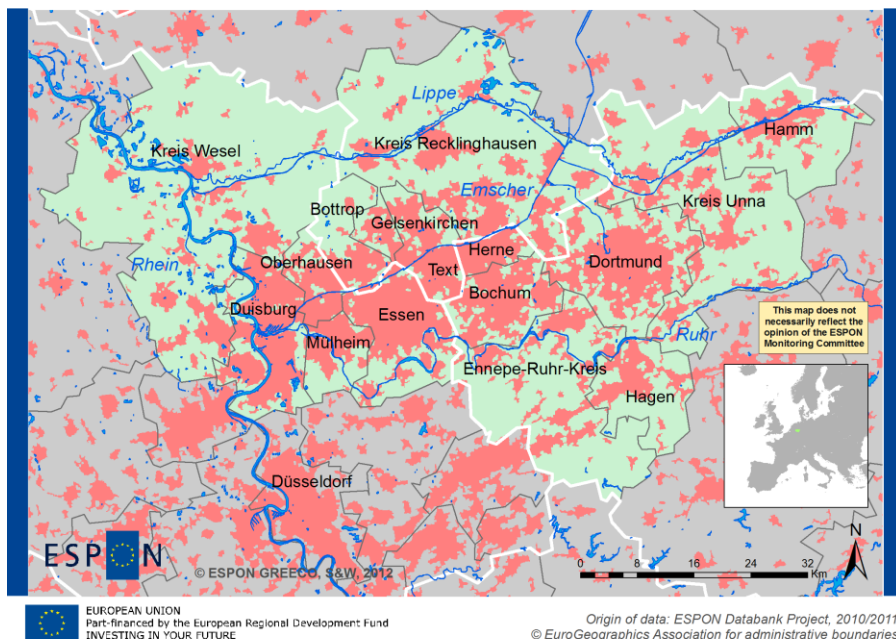
regions together institutionally form the Regional Association Ruhr (RVR) which is responsible for regional planning and several tasks in tourism and business development, public relations and development of open space. However, the Ruhr Area is not a NUTS-2 region, but spread over three different regional administrative districts (*Regierungsbezirke*). On top of this, the State of North Rhine-Westphalia (NUTS-1) has extensive legislative and financial power, alongside the Federal State (NUTS-0).

The Ruhr Area serves as an example for an ongoing regional transition from an old and heavy industrial base (coal, steel, etc.) to a modern high-tech and service oriented region with some potentials for green economic development. The regional structure ranges from high-density core cities of the agglomeration to rather rural counties forming the hinterland of the region. The region is endowed with some "natural" territorial capital, mainly in the rural parts (forests, agricultural land), but also in the high-density cores (open space, Ruhr landscape park). Also the numerous brownfields can be understood as territorial assets for development of green economic activities. Multiple forms of agglomeration economies and existence of several eco-innovation clusters do exist as well, with a strong university base with high-tech orientation and attached technology centres and parks. These assets are backed by a high awareness among political and economic actors for the potential of green economic activities for the development of the region. Several political initiatives and programmes at different governance levels have been established for green transition of the economy. Two green economic sectors are analysed in detail in the case study, the water and the energy sector.

Regards the water sector, a relic of the coal mining times, the Emscher River System, was still in place. This is an up to 3 meters deep open sewer system with concrete shells. The renewal of the Emscher River system is one of the largest infrastructure projects in Germany with an investment of about 4.5 billion Euro and lasting for about 30 years up to 2020. The renewal includes the construction or modernisation of four decentralised wastewater treatment plants, the construction of more than 400 km of large scale underground sewers along the Emscher River and its tributaries to collect the wastewater of 2.2 million people and the reconversion of the rivers as such. This results in a green belt crossing the Ruhr area which is a "new green engine for regional development" with new open space quality, leisure activities, new attractive residential areas and economic activities. Eventually, the renewal of the Emscher System contributes to a new green image of the region gradually replacing the old grey one.

As regards the energy sector, it was analysed to what extent a conversion to renewable energies is possible in high-density urban agglomerations and what specific potentials old-industrialised regions have for this. It is demonstrated that the uptake of renewable energies has also happened in such agglomerations and that there are huge potentials also in the densest parts of the region, in particular as regards electricity production from solar panels. Specific recourses of the Ruhr area for renewable energy production are the availability of brownfields and stockpiles for wind parks or solar power plants, the energy production from mine gas, landfill and sewage gas or even former coal pits that might be converted into underground pumped-storage stations.

**Figure 5      Map of Ruhr (Germany)**



#### Ruhr Area Case Study

- NUTS-2 region
- Settlement area
- NUTS-3 region

#### 1.4.5. Hungary - South Transdanubia (Dél-Dunántúl), NUTS-2 (HU23)

Hungary has traditionally been a centralised country. The regional policy making takes place at the national level. Following the EU recommendations statistical-planning regions were created but their main role is only to provide inputs and signal the needs of the region for the national government. The South Transdanubian Region consists of the counties of Baranya, Somogy and Tolna (NUTS-3 level), which are further divided into a total of 24 micro-regions (NUTS-4 level). The centres of the counties, also the major cities (of county rank) of South Transdanubia are Pécs, Kaposvár and Szekszárd. The South Transdanubian Regional Development Agency is the managing body of the Regional Operational Programme of the Structural Funds.

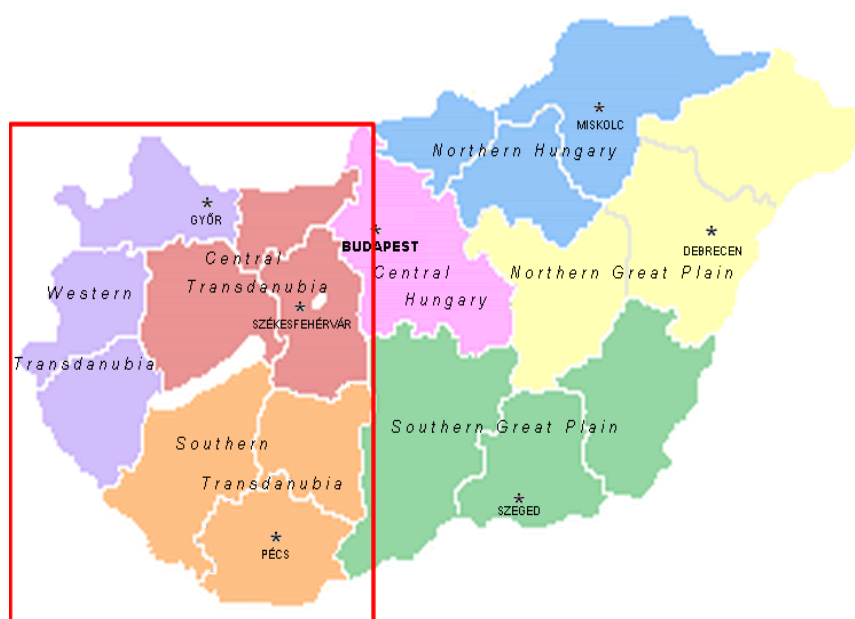
South Transdanubia is the most sparsely populated region in Hungary and is characterised by a large number of poorly accessible settlements. The region has a low rate of industrialization and a low share of manufacturing. Most development indicators are much below both the national and the European average. Despite the current situation, there are good potentials for development of green economy in the region based on the inherent regional assets in terms of good agricultural conditions, rich biomass, abundant geothermal resources and the available knowledgebase.

The bioeconomy is a traditionally strong sector in South Transdanubia and the added value and employment is higher than average in the region, both in a Hungarian and European context. The potential is further reinforced by the favourable climate and geographic conditions. The region has a low share of organic agriculture production and there is scope for significant improvements of organic farming. Being a predominantly rural area with significant agricultural production, South Transdanubia also makes a suitable area for biomass production from agriculture residues and forestry. The second significant potential resource for renewable energy production is geothermal energy. The geothermal gradient in Hungary, and likewise in the South Transdanubia, is significantly

above the world average and there is therefore outstanding potential for renewable energy production, in particular heat production. Energy production based on biomass and geothermal energy is the key prioritised areas on a national level which is spelled out e.g. in the new National Energy Programme for 2030.

Starting from a low position, the green innovation and research sector has seen a positive development following national and regional initiatives and institutions building e.g. by establishing a networked regional innovation system. It is currently a prioritised area among regional stakeholders which has led to more favorable conditions for green innovation. It has been observed that SME's innovation performance has improved and that the environmental technology sector is growing.

**Figure 6 Map Southern Transdanubia (Hungary)**



#### **1.4.6. Italy - Puglia, NUTS-2 (ITF4)**

Puglia (or Apulia) is a NUTS-2 region located in south-east Italy with a population of about 4 million inhabitants, comprising the following NUTS-3 provinces: Foggia, Bari, Brindisi, Lecce and Taranto. It should be noted a new province, Arletta-Andria-Trani (BAT), was created in 2004. The latter is excluded from ESPON typologies. Even if it has a low rate of industrialisation and its contribution to national GDP is modest, Apulia is still considered as the most dynamic region in Southern Italy.

Puglia has a great potential for the green economy transition. Firstly, it is the leading Italian region when it comes to renewable energy (solar in particular). Moreover, Puglia has important cultural assets and numerous beach resorts, which facilitate the growth of the tourism. In addition, recently the region has showed progress in terms of innovation capacity and increasing awareness about innovation issues in regional policy-making.

Even if Puglia is still lagging behind in terms of innovation performance and it has barriers to overcome if it is to become a smart and specialized region, the progress made over the last two decades in terms of (i) setting up the policy and legislative documents, (ii) setting up the institutions, such as the Regional Agency for Technology and Innovation (ARTI), (iii) raising awareness, (iv)



facilitating stakeholder interaction (clusters, technology and productive districts), etc. all of which is needed to a functioning and efficient regional innovation system, has been remarkable. In such a context, Puglia is well prepared to face these challenges due to the relatively high number of young researchers, SME involvement and emerging new business. In addition the forthcoming Smart Puglia strategy, framed in the RIS<sup>3</sup>, will also contribute to definitely overcome these barriers.

Besides, the Puglian pioneering experience in renewable energy (PV in particular) is often mentioned as a best practice and according to ARTI (2013) could be easily transferable to other regions with similar characteristics (e.g. sun irradiance). The key milestone of this process was Regional Law 31 of 21 October 2008, which limited the establishment of plants fuelled by renewable sources in areas of particular value and introduced the single DIA (Declaration of Home Activity) for the installation of the equipment renewable up to 1 MW, while the national law provided lower thresholds: 60 kW for wind power, 20 kW for PV, 200 kW for biomass. This resulted in a simplification of the bureaucracy for authorization of PV plants and spurred their deployment.

Finally, Puglia already ranks high in Italian classifications of green entrepreneurship. According to GreenItaly report 2012 (Fondazione Symbola – Unioncamere, 2012), Over the period 2009 to 2012 Puglia sheltered more than 21,000 companies with active investments in environmental goods and services sectors. Bari province ranked on sixth position in Italy, with almost 9,000 companies actively involved in green sectors. Such figures imply that one out of four Puglian companies hold active investments in the green economy, making Puglia placed slightly below the Italian average in terms of share of total companies with active investments in green sectors.

All in all, Puglia is well positioned to achieve the green economy transition. Over the last years it has promoted policy measures to enhance the regional innovation system and promote partnerships and networking. On top of that it already has a leading position in some green economy sectors, such as renewable energy.

**Figure 7**      **Map Puglia (Italy)**



### 1.4.7. Malta, NUTS-0 (MT)

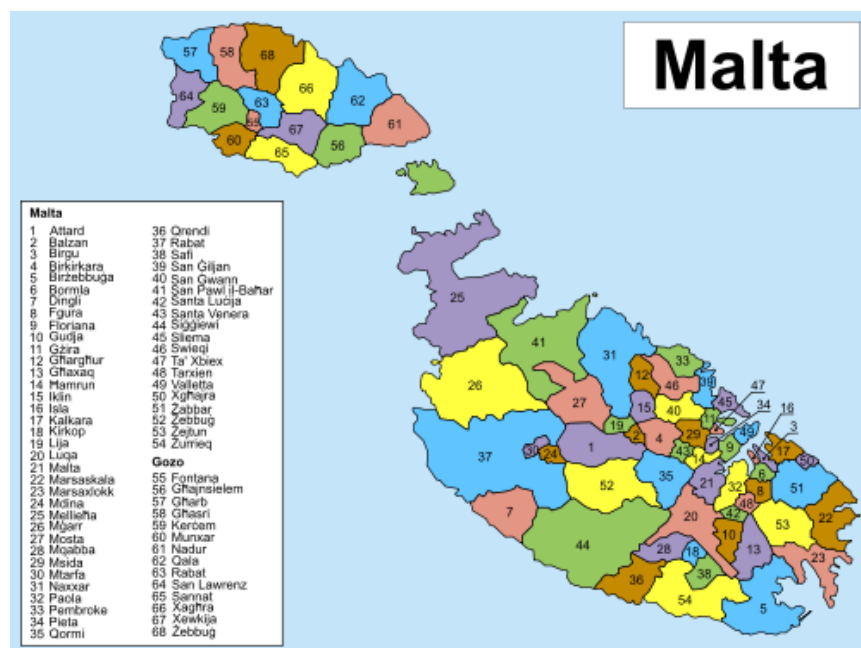
Malta is a city-state with one urban agglomeration, housing over 80% of the country's population. Malta is a highly centralised country and the whole territory is NUTS 0-2 region. The country is not rich in natural resources. Crucial resources like fresh water, limestone and land are insufficient. Coastal and marine areas are by far the biggest assets of Malta making a significant contribution to wealth generation through tourism and through marine economy as a whole. Key sectors with green economy potential include renewable energy, building sector, tourism, water management, waste recycling and organic farming. Malta also has the most abundant solar and wind resources in Europe.

Malta is a later starter in RES development but given the natural assets it has a big potential to decouple growing total energy demand from economic growth by investing in RES and alternative technologies. The potential of waste, wave energy and solar water heating for buildings is also being considered. Improvement of energy technologies through energy saving and energy efficiency measures is a priority as well. Malta is strongly dependent on the tourism industry and encourages its sustainable development. The ECO certification scheme was launched in 2002 with the aim of improving the environmental performance of hotels.

The share of eco-industrial turnover in GDP (2.22%) was around 25% higher than the EU average. The number of firms implementing eco-innovation-related management systems remained significantly low. The main innovation challenges for Malta are those in relation to boosting financial and human resources in research and innovation, stimulating research and innovation in enterprises and promoting an innovation culture.

The “environmental goods and services industry” is a growing sector. The draft National Environment Policy of Malta calls for the creation of green jobs and for the increase of such jobs by 50% by 2015; the preparation of a Green Jobs strategy by 2012; and setting up of an incubator for green industries by 2014. It is estimated that wind and solar energy will create around 8 mil jobs in a 20-year period.

**Figure 8 Map of Malta**





#### 1.4.8. Spain - Navarra, NUTS-2 (ES22)

Navarra is a NUTS 2 region composed by one single NUTS 3 region located in north-eastern Spain. The western Pyrenees form a natural frontier with France, in the region's north. The river Ebro crosses Navarra in the south, and provides it with an extensive system of canals. Like the countryside, the climate is one of contrasts, snow-covered mountains, cool mountain valleys, rain forest in the north-west, temperate green in the centre of the region, and fertile gardening country in the south, where the climate already verges on the continental.

Navarra is one of the richest regions of the 27 countries that make up the EU, with a per capita gross domestic product (GDP) of 118 (being 100 the European average). Besides, Navarra's per capita GDP is higher than most of the Spanish regions.

The main feature of Navarra's economy is the preponderance of industry, which accounted for a 28.4% of the total GVA of the region in 2010, as opposed an 15.6% of the same sector in Spain as a whole (Bergera et al.) By 2012, the shares of Industry and Construction had decreased, with 26.9% and 6.3% respectively, while the share in Services raised to 61.9%.

Against this backdrop, Navarra has certain competitive advantages to undergo the green economy transition, due to its inherent regional characteristics. In terms of territorial capital, Navarra's climatic conditions hold a great renewable energy potential, its landscapes and natural areas are a great touristic asset, the cluster presence in the region is high, which facilitates knowledge spillovers and besides it has a cohesioned institutional structure to foster change. In addition, Navarra is one of the most R&D investing regions in Spain. It has Technology Action Plans in place to achieve the objective of becoming one of the 50 most innovative regions in the EU and over the last decades it has built a solid policy framework to foster its priorities, as well as, monitored the evolution of measures adopted.

In 2008, Navarra started the process of strategic thinking, during which the regions strengths, opportunities, weaknesses, barriers, etc. were analyzed in a bottom-up way, looking the region's past evolution, defining present potentialities and developing realistic targets for the future. This process led to the approval of the MODERNA action plan in 2010. MODERNA is the new "Economic Development Model of Navarre", a strategic plan that promotes change towards a knowledge-based economy, specialized in the areas of health economics, green economics and talent economics, and which seeks to place Navarra among the top 20 European regions in GDP per capita. With regard to Green Economy, MODERNA puts emphasis in six sectors: **(1)** Sustainable Construction, **(2)** Sustainable Vehicle, **(3)** Renewable Energy, **(4)** Agro-food industry, **(5)** Sustainable Tourism, and **(6)** Environment and Waste. In other words, Navarra has already started the (green)er economy transition.

It is worth highlighting that MODERNA is considered by the European Commission as a good practice in the regional smart growth strategies (S3 "Smart Specialization Strategies") (EC 2012b). That is why the MODERNA action plan is considered the key measure that could be transferable to other European regions to deliver green growth.

**Figure 9**            **Maps of Navarra (Spain)**





#### 1.4.10. United Kingdom - Cornwall and Isles of Scilly, NUTS-2 (UKK3)

The NUTS-2 and NUTS-3 region Cornwall and Isles of Scilly (unit: Council of Cornwall) consists of the two LAU1 territories Cornwall and the Isles of Scilly. The economy in the region is relatively specialised in experience economy (tourism and creative services) and bioeconomy (agriculture and fisheries), but less in the “high value” industries financing, consulting and ITC. The greening of the UK economy has good potentials for jobs and income creation in the region of Cornwall and Isles of Scilly, the westernmost region of the South West. The per capita GDP of the region has been so low that it was entitled to objective 1 support from the EU Regional Fund. The green investments anticipated in the sea around the South West, however, offers opportunities for development of industries in the field of renewable energy technologies.

The combination of good wind and ocean energy potentials makes the South West a potential growth area for renewable energy technology. In particular, the expected development of immense renewable energy investments off the coast of the South West makes the South West to an attractive location for development and production of the plants and equipment that will be installed. Test and demonstration facilities, port infrastructures and reinforced transmission grid belong to the fixed investments required for this vision to materialise. Thus local governments cooperate with industry on developing test facilities of a leading standard.

Local government also works in partnerships with related businesses and public research institutions, colleges and schools on generating a well skilled labour force and service supply for industries working with ocean and wind energy.

Another focus area for green transformation in the region concerns the integration of natural ecosystems restoration in the planning of economic development and water basin management. It is

programmed in the Green Infrastructure Strategy aiming among others at making the region even more environmentally attractive to tourists but also to residents. This can be of importance for attracting the specialised labour force needed to work in the renewable energy industries. The programme also stresses the social inclusion aspect of improving access to rich natural spaces from deprived areas.

**Figure 11**      **Map of Cornwall**



## **2. Green economy ambition of the regions and strategic approach**

The green economy discourse has gained significant speed with Europe 2020 Strategy as well as with other global or regional movements. On a global level UNEP is making efforts in the area and has published a fundamental report on greening different sectors. OECD is also looking at the topic in its member countries. During the economic crisis national and regional governments are exploring different opportunities to generate growth and create new jobs. The European Union remains a world leader in a process which of transition to a green economy. EU legislation and targets exert significant pressure on national governments to reform entire sectors or the economy. The EU backs up its ambitions with significant financial resource through the Structural and Cohesion Funds but not only. In some cases this drive towards greening the economy is also happening on a regional level.

All studied regions have some ambition of moving towards green economy and acknowledge that such a path is desirable and is already bringing or would bring substantial benefits in the future. However, regions are different in the way they approach the transition to the green economy and the strategic, policy and financial efforts that are invested in it. One possible classification of regions

would divide them into those which align themselves with national, EU compliant targets and focus on ensuring compliance. They often struggle with human capacity or do not have the necessary financial means needed for the transformation of the economy.

However certain regions decide to follow a more ambitious path and often become leaders in a given sector or sub-sector. They often started their transition to greening one or more key sectors years ago and already have a strong competitive advantage over other regions. They have gained significant momentum in the process and have achieved measurable results which further stimulated change and drummed up additional political and business energy. The below section provides examples on the regional ambition and overall approaches to developing the green economy in the case study regions.

***Navarra (Spain) – a very ambitious region with a strong momentum in renewables and a strong strategic framework. A wide and comprehensive consultation process injects lots of legitimacy. Green economy is fully recognized by businesses as a future path of development***

As early as the 1990s, Navarra changed its economy from an agricultural structure to a modern industrial region, attracting considerable investment from Spain and abroad (the share of industry in the economy increased by 40% from 1960 to 1975). Then, in the 1990s a group of entrepreneurs and the Government of Navarra, enabled the region to become one of the key players in renewable energies. Over the 2000s Navarra's economic strategies have placed the region on 32nd place in the ranking of the 271 European regions in per capita income, due to the continuous growth of employment levels and quality of life. In this way regional stakeholders and the population have seen concrete, tangible results of the energy sector transformation.

Leading regions like Navarra would realize the value of developing a solid strategic framework through wide public consultation. In 2008, Navarra started the process of strategic thinking, during which the region's strengths, opportunities, weaknesses, barriers, etc. were analyzed in a bottom-up way, looking at the region's past evolution, defining present potentialities and developing realistic targets for the future. Over 5,000 stakeholders ranging from economic and social agents, public administrations, to educational and research institutions, participated in this process. The main aim was to analyse which economic sectors should leverage the RIS3 in Navarra. This process led to the approval of the MODERNA action plan in 2010. The implementation of the action plan is backed up with financial and institutional resources.

In recent years, businesses in Navarra have started to consider environment as a competitive factor. By trying to change the mindsets they hope to generate business opportunities, to produce new goods and services for all economic sectors. MODERNA has grouped these business opportunities in three categories: cleaner processes to generate less waste; cleaner products: environmentally-friendly products, based on eco-designs and using new materials; and resource efficiency.

***Jämtland (Sweden) – ambitious region which adopted sustainability as a local 'brand'. The region is challenged by its geographical location and dwindling population. There is still lack of awareness as to the opportunities offered by the green economy.***

There is a clear regional ambition in Jämtland related to greening the economy and improving the sustainability. The Östersund municipality has been setting local environmental targets that are higher than the nationally required ones. The municipality has been very successful especially in

relation to green transport and transport infrastructure. The municipality has also integrated sustainability as part of its “brand” and through its environmental management system integrated the sustainability work to all sectors. However, at the same time there is an insufficient political will and lack of awareness amongst policy-makers concerning the opportunities related to the green economy. The chain from EU level to local level is broken if the local decision-makers do not see the advantages of e.g. green investments. The conclusion is that there should be a constant effort of clarifying the advantages in greening individual sectors and the overall economy both to policy makers and other stakeholders. Despite its success in several sectors Jämtland’s relative performance is not as impressive as Navarra’s.

***Cornwall (UK) – regional targets are more ambitious than the national. Through exploiting its natural assets the region can become a leader in renewables.***

Cornwall is an ambitious region in terms of green economy and the Cornwall Council adopted in 2011 a “Green Cornwall strategy” to guide the economy of the region towards a green economy (Cornwall Council, 2011). The strategy aims at achieving targets which are more ambitious than the national ones (details in the GREECO policy report). The Council also has adopted strategies on a green infrastructure (Cornwall Council, 2013b) and on maritime resources (Cornwall Council, 2012). Nevertheless, there is a significant impulse from the national level through the Committee of Climate Change’s report on the options for local authorities in the process of decarbonising the economy. Local authorities are considered as social landlords, community leaders and major employers.

***South Transdanubia (Hungary) – transformation of the economy through higher energy efficiency, renewable energy and green agricultural sector***

The regional stakeholders in South Transdanubia have a good understanding of green economy as a concept and that moving in such direction would bring substantial benefits to the region. It was put forward that green economy development would in particular bring savings to municipalities and local governments, e.g. through energy savings and reduced maintenance costs. The New Szécheny Plan is the overall national strategic framework for economic development and one of its ambitions are to have an ‘energy- and cost-efficient institutional and economic structure by diversifying energy supply and developing the environmental industry’. The National Energy Strategy 2030 focuses on energy efficiency and renewable energy and it is translated on a regional level through the South Transdanubian Regional Energy Strategy. In the field of research and innovation the main strategic driver is the Regional Innovation Strategy in the South Transdanubian Region.

***Malta - vision for a specific part of the territory - Gozo. Transition to the green economy goes through greening individual sectors. Willingness to exploit specialization in the water sector as a comparative advantage.***

In Malta greening the economy is firmly on the political agenda. The transition to a green economy goes through intensive efforts for greening individual sectors. A recent reform in public transport is an example of a total overhaul of an entire sector. This is relatively easy in Malta because of the small size. The energy sector is also about to change shape radically. Pressure on the environment is a trigger for a strong movement for sustainable tourism. Water stress has been the driver for reforms in the sector.

In Gozo, Malta, the environment remains the main asset and the future vision is based on eco-principles as a model for sustainable living. This vision is to be reflected in the Local Plan for Gozo 'facilitating the development of the island as an eco-destination'. Gozo is serving as a kind of laboratory of green practices. The development of rural and agro-tourism is one of the main potentials for Gozo which will also strengthen the linkages between the tourist and agricultural sectors.

***Southern Estonia – ambitions are higher than the current financial capacities. Greener agriculture, food and tourism are parts of the regional identity***

In Southern Estonia, the sustainability issues are not playing a central role in the regional development at the moment and the priority in the region is given to boosting the economic growth and related issues. However, from the discussions with the county stakeholders it can be concluded that the counties would like to take a more proactive approach towards greener development of the sectors if they had more financial resources and the governmental support. The ambition of the regions is higher than the current capacities, especially financial as the green measures and alternative technologies require substantial investments, which is often a drawback.

In Southern Estonia, Põlva county has probably one of the most ambitious and sustainability-oriented strategies. The county is using 'a greener life' slogan, which refers to a valuable natural and living environment for living. In the vision 2027, Põlva county has an effective protection of the natural environment, resources are used sustainably and innovative production methods, as well as the local traditional activities are promoted. It is stressed in the strategy that both agriculture, food and tourism services should be guided by 'green' principles and form a part of the county's identity. Pristine natural environment and high quality living environment form the other part of the identity.

***Zealand – will for radical transformation of energy sector***

The transformation of the energy economy with renewable energy and energy efficiency as core components began to take shape after the rejection of a nuclear power based strategy at a referendum in 1984 and the subsequent recognition of the unsustainability of coal based electricity generation. The strategy evolved through to 2010-12, when parliamentary consensus was reached on transforming the economy to a state of "independency" of fossil energy in 2050. In other words, Denmark is heading for a 100% renewable energy economy.

***Ruhr (Germany) – successful transition from heavy industry to high-tech***

Because of the rich resources of hard coal, the Ruhr region was, and still is, one of the most important energy production sites in Europe. Today, it might serve as an example for a regional transition from an old and heavy industrial base (coal, steel, etc.) to a modern high-tech and service oriented region with some focus on green economic development. For instance, the development of wind energy is starting to show economic benefits after initial difficulties.

### **3. Overview of the territorial dimensions of the case study regions**

Understanding the territorial dimensions of the regions analysed has been a key aspect of the case studies. The territorial dimensions are related to the geographical location of the region, factors

related to land use, spatial settlement structures as well as the urban-rural inter-linkages within a region. The section below discusses some of the key territorial aspects having an influence on green economy development as highlighted in the case studies.

### **3.1. Location**

In terms of territorial dimensions, one of the key aspects influencing the development of green economy in the case studies is related to the location of the region. The location is important from two perspectives. On one hand it defines the physical characteristics of a given region. A Mediterranean region quite naturally has different green economy potentials than a northern or mountainous region based on its inherent climate conditions and physical assets. On the other hand, it defines the regions “connectivity” e.g. whether it is a peripheral or central region. The case studies cover a broad spectra of locations” ranging from the rather isolated island of Malta to the Ruhr area with a central position in Europe to Jämtland far north in Scandinavia.

A peripheral location is often seen as a restraining factor for development. Such is the case of **South Transdanubia**, where the location of the region are considered unfavourable and are often mentioned as factors limiting its development across sector. The region is surrounded by the national borders of Lake Balaton in the north, the River Drava in the west and the Danube in the east. Natural borders isolate the territory from the South Plain Region and the neighbouring Croatia in an economically unfavourable way, limiting e.g. export possibilities. Also in **Jämtland**, the peripheral location of the county, is identified by the regional stakeholders as a main barrier hindering the development of green economy. The distances are long within as well as to and from the county. The long distances within the county effects the development of the sectors as the transport distances are long for agricultural or forest products and the travelling distances for tourists from other counties are long making it difficult to travel to the tourist destinations in a sustainable manner.

On the other hand, the peripheral and rural nature of the county is also a factor that provides possibilities for agriculture, forestry and nature tourism. The geographic location of South Estonia, on the crossroads between EU and the Russian Federation, is an important asset for tourism development in the region. The geographical location of Malta is on one hand a disadvantage as the country is on the margins of the European continent but on the other hand – an advantage because of opportunities to serve as a bridge to a dynamic North African region.

### **3.2. Spatial development and land use. Territorial conflicts.**

The main territorial conflicts in the case study regions are related to land use and use of natural resources, among different interests and among different economic sectors claiming the same land for their activities. The territorial inter-linkages between economic sectors can however also be turned into an advantage. Tourism and agriculture are the economic sectors that complement each other rather than compete for the use of land and resources. The locally produced food becomes an integral part of the tourism industry. There is a growing interest to integrate local traditions and culture (including food) and traditional way of life into tourism product development. In case of forestry, tourism development is also perceived as an additional source of income, so the conflicts are rare

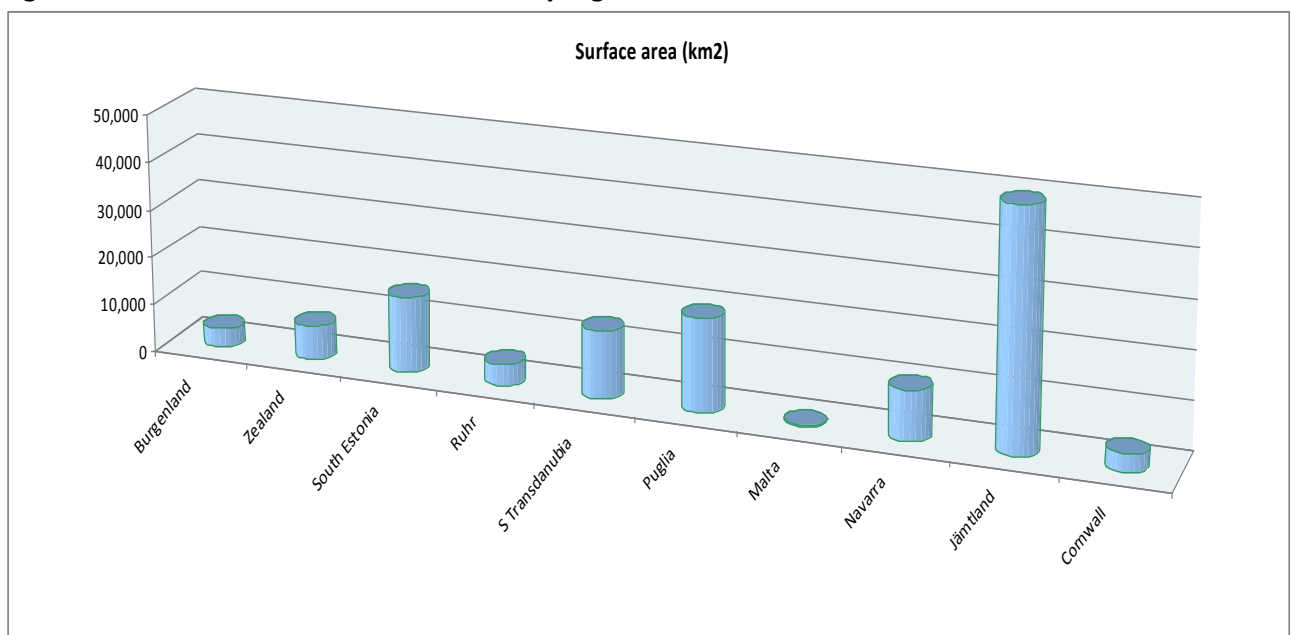
Another crucial territorial factor is the land use and the availability of land for a given purpose. Renewable energies, have diverse and complex demands on space, and are in general considered as land-intensive. In contrast to traditional power generation, RES in general needs to create a larger



area for the same amount of electricity. RES are usually distributed decentralized in space. E.g. wind energy can affect human life and its surroundings negatively. Similarly, the expansion targets may correlate with the interests of nature conservation and species protection as well as aspects of the landscape. The question can be posed on whether it is fair to claim the rural areas for the expansion of renewable energies although the core cities are much more energy intensive and emit more CO<sub>2</sub> emissions.

In Malta the land use aspect is taken to the extreme as land is an exceptionally scarce resource. As a result of the small territory and dense population, there is always an inherent conflict when a certain development requires space. Also, due to the small size there are no economies of scale for investment into solar or wind. However, Malta can provide an example of where lack of territory has been turned into an opportunity for innovation. Lack of space is for instance identified as one of the main barriers for PV development in Malta, in addition to the lack of political will and the absence of binding targets. Malta is therefore trying to use the roof space for placing PVs. However, also roof space is often limited because of penthouses where the roof is owned by the owner of the property. The solution is that instead of installing the PVs on the roof of the building, they can be installed in a park or on roofs of public buildings (idem.). A small size of a region can also be considered as an advantage in some cases, as the changes are easier to introduce and the development is easier to monitor.

**Figure 12** Surface area of the case study regions



In **Jämtland**, there are in particular territorial conflicts between wind energy, reindeer husbandry and tourism, e.g. between increasing the amount of windmills and the will to present a landscape of undisturbed nature. It is also noted that it is not always unproblematic to define the most environmentally sustainable measures to be taken within a sector. For example, increasing the use of forest biomass may be in contrast with the need to protect the land for the conservation of biodiversity.

Jämtland has large areas with potential for wind power. Wind power development is negatively influenced by the county wanting to present a landscape of undisturbed forests, mountains and

waters with low human impact as the extensive tourism industry is dependent on those qualities. Tourist businesses do not want to introduce wind power in their surroundings because they are afraid it would have a negative impact on their business. Further, the municipalities are in some cases against developing wind energy as the local politicians may be afraid of losing their political consensus. There may also be low understanding of the development potential of wind energy. Municipalities have complete control over land use which has a further negative effect on the development of wind installations (Interviews; OECD 2011a).

In **Southern Estonia** there are few examples of territorial conflicts mainly related to clear-cutting close to the settlements and tourist attractions, and the use of lower quality wood as a construction material versus for energy production. A conflict with the local community arose when the logging activities took place in the forest with a high cultural and spiritual value for the local population (old burial sites, burial mounds and some meaningful trees). In future the conflicts may arise if the cultivation of fast growing tree species for energy production becomes more profitable than reforestation with the traditional tree species, which may have a negative environmental impact. In addition, a conflict between timber and non-timber use of forest (recreational use, hunting) may emerge in case of more intensive felling volumes. The regional actors stress that the territorial conflicts may arise in future e.g. if the bio-energy production increases but the government does not regulate it properly.

In **Navarra**, the location of wind parks in the region depends not only on the wind potential of the area, but is also conditioned by different standards of environmental protection and preservation. In addition, due to their impact on landscape, the implications these parks have on Navarra's landscape have set the ground for debate, e.g.:

*Should these parks focus on a specific area to facilitate regional planning? Would it be better to spread them? Can wind parks be considered as an element of landscape improvement?*

Due to their effect on landscape, the regional government stopped approving proposals for new wind farms in 2004 (NATURE 2007). Nonetheless, it should be noted that wind-power capacity can grow without building any new farms.

In **Puglia**, PV fields and large wind farms have partially modified the rural landscape, which is a valuable touristic asset in the region. However, Puglia's Regional Renewable Energy Strategy has evolved over time and learnt by doing resulting in stronger landscape policies to avoid land use conflicts:

- Puglia is one of the first regions to adopt landscape guidelines.
- When local communities opposed to large wind farms in Foggia or PV fields in agricultural land, the regional government changed its approach towards more sustainable patterns (OECD 2012).

In addition, municipalities have the competence to give permission for wind farms based on the municipality's spatial plan. It should be noted that this plan, following regional criteria, should exclude protected areas, urban areas, high value landscape areas, etc., as well as, provide guidelines with regard to plant density, territorial distribution, and availability of infrastructure such as roads and electricity networks.

### **Box 1 Spatial aspects of the development of renewable energy in the Ruhr Area**

The successful development of renewable energies is a major challenge for the spatial planning in Germany, especially in a metropolitan area such as the Ruhr area. Above all against the background of the successive decline of traditional energy production in power plants, where much energy is produced in a relatively small area, there is a need of creating new structures in the future. Therefore, the development of renewable energies, as a core element of green economy development, is a major challenge and an opportunity for regional planning to put the differing open space requirements for a sustainable development in harmony. The policy objectives can be achieved with an efficient land use only. This means that the development of renewable energy, climate protection measures and adaptation to climate change must be implemented space-efficient.

Because of their climatological claims the construction of renewable energy plants is in each location not possible. For wind energy plants a corresponding wind speed is crucial for the generation of electricity and the produced power increases with the cube of the wind speed. Thus choosing a suitable site is in particular depending on the local wind conditions. In addition, larger separating areas to residential areas are required by the ever-increasing wind turbines to protect the people in their living environment from adverse impairments such as noise and visual effects. In the spatial distribution of wind energy sites in the Ruhr region and in neighboring regions a clear link can be seen to the structural conditions of space. In the Ruhr area there are 170 wind plants so far, which are mainly located in the less dense region at the boundaries of the region. In the core zone of the Ruhr as well as in the cities, the number of wind turbines is low. Individual plants, if any, are located in the border area of the independent cities. In addition, land use conflicts tend to get bigger following the height of the turbines. For example, wind power plants are visible over long distances and thus have a negative impact on the landscape and for birds protected under the EU Birds Directive. In part, this may even lead to a technical overprinting of nature and landscape.

Photovoltaics create demands on space which are dependent on high solar radiation intensity and duration, as well as minimal shading by adjacent constructions. Small scale photovoltaic systems can be installed on or at existing buildings or structures, where they generally produce no spatial effect. Large-scale solar power plants, on the other hand, will be built on open space, where they can trigger a large spatial effect. The concerns of nature and landscape therefore have to be considered along the space requirements of photovoltaic for efficient and environmentally sound land-use.

The many fallow industrial and commercial sites, brownfields as well landfills present a great potential for the usage of renewable energy, especially for the core cities in the Ruhr area. These areas are already predisposed surfaces and no significant land use conflicts are here generally expected.

### **3.3. Demography and spatial distribution of settlements**

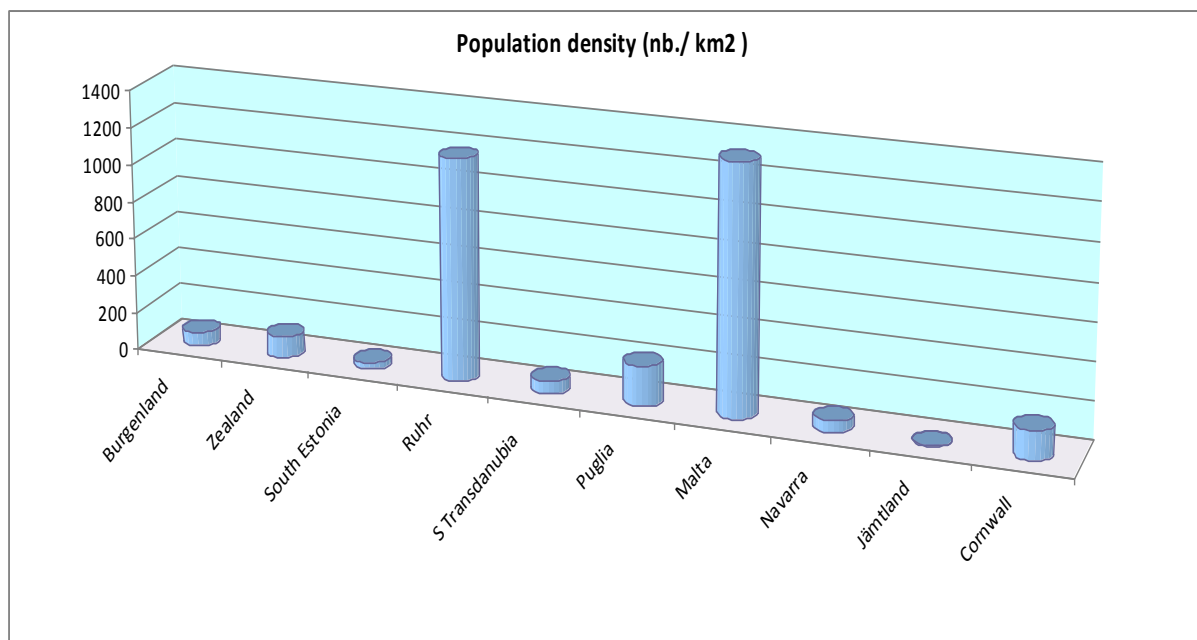
Another important territorial factor is the settlement structure. South Transdanubia is the most sparsely populated region in Hungary and is characterised by a large number of small settlements, in many cases micro-villages which are poorly accessible. Jämtland is one of the most sparsely populated regions in the EU with only 2.6 inhabitants per km<sup>2</sup> compared to the Swedish average of 22 inhabitants per km<sup>2</sup> and the EU average of 118 inhabitants per km<sup>2</sup>. More than half of the

population lives in small communities and villages and 34% live in the only city of the county, Östersund. It is considered as a challenge for the county to provide access to services to the inhabitants as the distances to services are exceptionally long as there are only three densely populated areas or centres. Also the demographic challenge of aging farmers in the region can be considered as one barrier to greening the sector in addition to the decreasing number of farmers which can have a clear influence on the agricultural landscape and thereby also biodiversity.

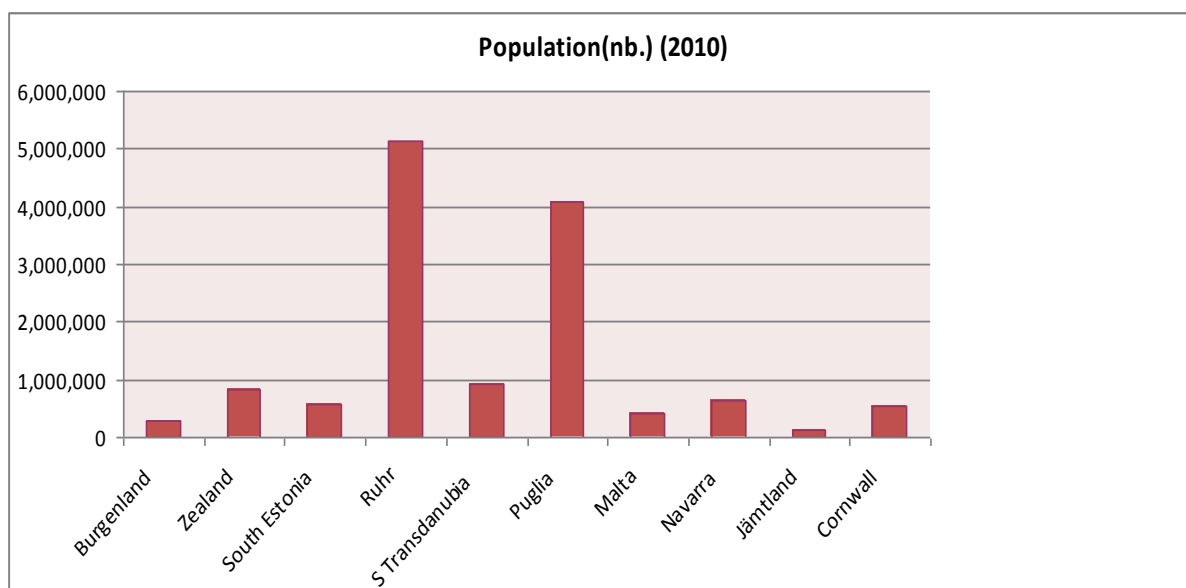
However, also such a disperse structure can be considered an advantage. In Southern Estonia, the small population size and dispersed settlement is among the factors that favored the development of rural tourism in particular.

On the other far end is Malta. Malta is the most densely populated country in Europe and demography is a potential threat towards green economy potential as the high density of population is strongly linked to land use aspects.

**Figure 13**      **Population density of the case study regions**



**Figure 14**      **Population of the case study regions**



It is important to take into consideration in policy making the demographic challenges related especially to the aging population. When greening the economy is discussed in policy, it is beneficial to include the effects that the demographic development has on labour and competence supply and how it relates to the opportunities for greening the economy. It has already been noted for example that the retiring farmers and thereby the decreasing amount of farmers change the agricultural landscape in Jämtland.

### 3.4. Urban-rural inter-linkages

Urban and rural regions have different roles to play in a green economy. Urban regions have the dominant in terms of being the production centers but also as having the largest possibility to influence resource efficiency. Rural areas have another role, in that of providing the resource base.

In Puglia, the urban development is widely scattered throughout the territory. This encourages decentralised urban growth based on the various poles of development around the main urban centers (Foggia, Barletta, Bari, Monopoli-Putignano, Taranto, Brindisi, Lecce and Casarano). Puglia contains extensive depressed areas mainly in the interior and periphery of the region (Dauno hills, Murgia hills and lower Salente peninsula)

Also Southern Estonia region is relatively polarized, despite its small size. On the one hand, it includes a well-developed and fast growing Tartu county, which acts as an economic driver for the region. On the other hand, - the other five peripheral counties which have much lower standard of living and are being deserted economically. Regional differences in welfare levels and business conditions are rather significant and are causing migration of the population into regional centers and their hinterlands. This in turn causes a lack of labour force (both in quantity and in terms of qualifications) in the rural areas (Statistics Estonia 2013). It is difficult to attract and keep the qualified labor force in the peripheral areas. There is simply a lack of committed and knowledgeable people, who would take an initiative and drive the change towards a green economy.

### **3.5 Spatial proximity as a means for innovation and knowledge distribution**

The *situation* and *access* to knowledge is an important territorial/spatial aspect, but also the role of *diffusion* of knowledge: i.e. how acquired knowledge is becoming available, distributed and implemented. Mechanisms such as spatial proximity strongly influences the relationships between firms, science infrastructure, producers and users, inter-firms and last but not least between firms and the wider institutional environment. This is an aspect that the green development across many sectors relies heavily upon and in particular for eco-innovation performance. That is to say, the level of innovative capability of a region influences directly the ways in which technology is diffused within the region. Moreover, research has shown that knowledge production tends to be geographically concentrated (Annoni et al., 2010). In addition, research has shown that innovation tends to be higher in core-regions and systematically lower in lagging regions. The reasons for this are twofold. On the input side, core regions provide greater potential diversity of specialization opportunities and greater potential home market. On the output side, they provide higher level of connectedness (McCann et al. 2011).

In summary, geographical proximity matters in business performance and in the creation of innovation (e.g. it leads to different types of spillovers, productivity and efficiency, but most importantly knowledge spillovers). In addition, at the regional level, geographical concentrations of linked industries, like clusters, are of increasing importance. In fact, regional clusters could lead to higher competitiveness for firms that are part of them due to the higher innovation rate and availability of specialized resources (Annoni et al., 2010). Along these lines, **Puglia** has promoted such knowledge spillovers by means of the setting up of Productive Districts, Technology Districts and various sectoral clusters.

## **4. Development of the green economy – examples from the case studies of impacts on GVA growth and job creation**

Green economy has the potential of contributing to GVA and job creation. The case studies have tried to capture instances and periods of time when greening a particular sector or the overall economy have advanced the economies and changed the job situation significantly. Because of the difference in regional situations and the different sectors it would not be realistic to compare regional performances in terms of GVA added or jobs created. The following examples simply demonstrate that it is possible that greening one or more sectors of the economy can have a tangible impact on GVA growth and on job creation.

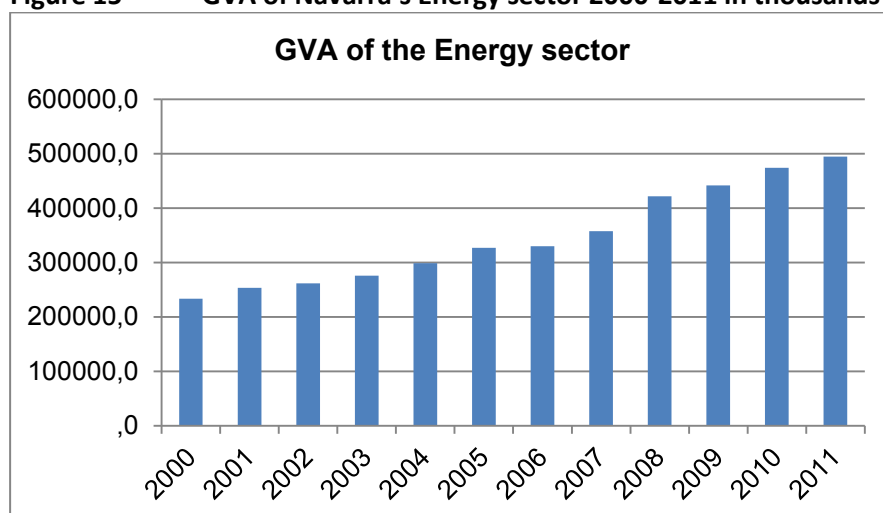
### ***Burgenland (Austria) – a noteworthy part of the economy build on green economy***

According to the Environmental Goods and Service Statistics (EGSS) available for Austria at NUTS-2 level, there are 4,753 green jobs generating a turnover of 645 Million EUR in 2010. This is about 4 % of all jobs, the green turnover corresponds to 10 % of total GDP in the region, which is about Austrian average. There was a growth between 2008 and 2010 of 131 green jobs and about 57 million EUR green turnover.

### ***Navarra (Spain) – significant job creation through development of renewables***

Navarra attained worldwide recognition in the renewable energy sector where around 6000 are employed. Especially wind energy has become an active industrial and productive sector of the region, ranging from energy producers to industrial plans to produce type of equipment of wind turbines. Also the agro-food industry is a strong sector which has seen a high level of productivity whilst the agriculture has gradually lost importance in the region's economic structure.

**Figure 15      GVA of Navarra's Energy sector 2000-2011 in thousands EUR**



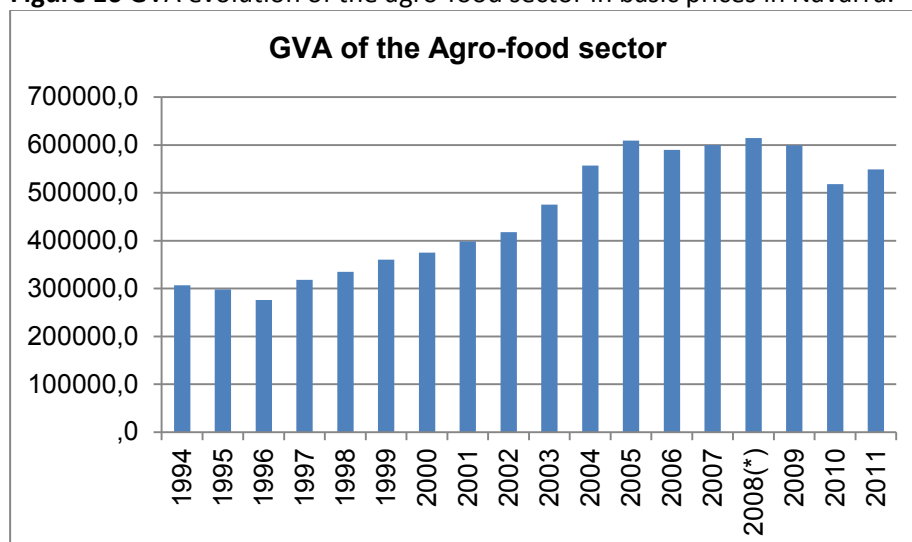
Source: Instituto de Estadística de Navarra

Navarra's GVA in the energy sector more than doubled for the period between 2000 and 2011.

### **Box 2    Renewable Energy and Employment in Navarra (Gobierno de Navarra 2009)**

"Navarra's first wind farm was erected at the end of 1994 when the unemployment rate was 12.8%. Four years later, in 1998, we reached the first 100 installed megawatts and employment dropped to 10%. In 2001, when the two centres dedicated to technological research and development and the training of workers was started up, CENER and CENIFER respectively, unemployment dropped to 6.8%. In 2007, before the start of the current financial, economic and worldwide employment crisis, 100 companies dedicated to renewable energies had been created in Navarra; they were 5% of the total GDP, 1.7% of Navarra's employment, with over 6,000 jobs created, with a total unemployment of 4.76% in the region. By then, 953 MW of wind power and 60 MW of photovoltaic had been installed. Between 2002 and 2006, employment in renewable had increased 183% in Navarra, with an impressive reduction in total unemployment. Employment for young and qualified individuals (only 18% of the five thousand jobs created are low skilled)."

**Figure 16** GVA evolution of the agro-food sector in basic prices in Navarra.



Source: Rural development, environment and local administration Department

Employment in the agro-food sector in Navarra grew by more than 20% - from less than 10,000 employees in 1994 to more than 12,000 at the peak year of 2005. In 2011, the number of employees went down to about 11,000. (Source: Rural development, environment and local administration Department)

#### ***Ruhr – rising employment in wind power and water management sector***

From 1997 with 1044 employees, the number of employees has increased steadily. In 2011 more than 8,000 people from NRW are employed in wind energy technology. Especially it is the medium sized engineering companies and foundries in the Rhineland and the Ruhr area, which have developed a new pillar and export their products such as gearboxes, generators, steel towers, bearings or major components for wind turbines.

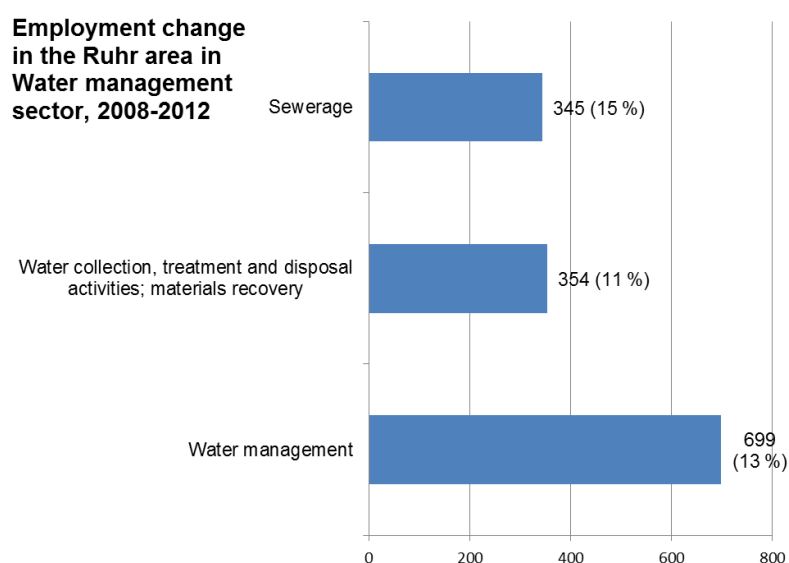
A similar development is reflected in revenues from the equipment and system construction of wind power in NRW. Here the revenues sharply increase of 906.9 million EUR in 2005 to 2,083.5 million EUR in 2011 as sales have more than doubled in six years.

Even ahead of the completion of the project impressive employment effects have been recorded. Thus far, about 5500 jobs have been created in Germany, which alone 3,400 jobs were created in North Rhine-Westphalia. Also this positive employment development can be expressed in an increase in 101000 person-years. However, these increases in jobs not alone in the water sector are allocated, but are mainly the result of extensive award of contracts.

However, the following figure shows a growth of employees in total water management sector in the Ruhr area. From 2008-2012 the employees have increased by 13 percent in the entire water sector management. This represents a total increase of 699 employees. Were nearly identical proportions, this growth spread across the sectors "Sewerage" with a plus 345 employees (15 %) and the sector "Water collection" with an increase of 354 employees (11 %).



**Figure 17** Employment change in the Ruhr water management sector, 2008-2012

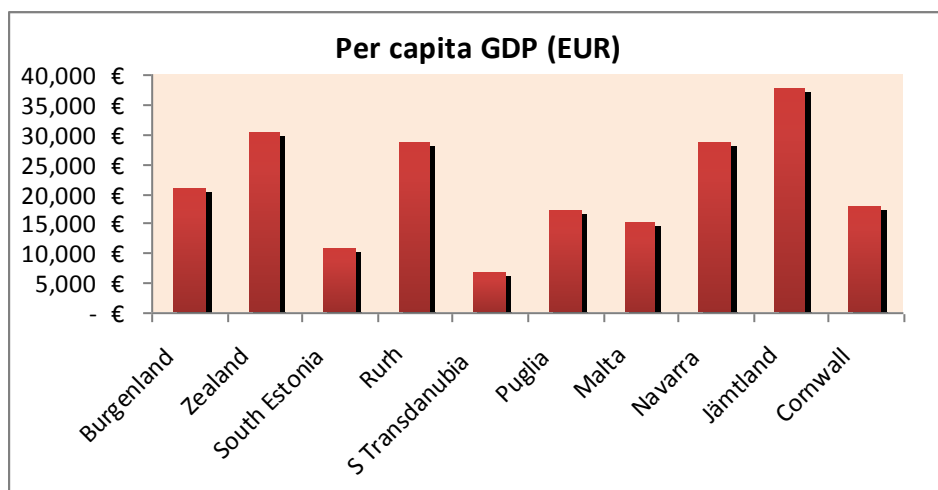


## 5. Key drivers and enabling conditions

A comparison of the key drivers of the green economy in the context of ten case studies is a challenging task precisely because of the difference of contexts, the different natural characteristics and assets, the multitude of institutional settings and the varying capacities for financing the greening of the economy. Additionally, the GRECO case studies have addressed different sectors of the green economy and data collection was carried out for these particular sectors. However, there are a number of key factors and conditions that transcend the differences and that are instrumental for a transition to a green economy. These key factors are been singled out and are presented in this chapter.

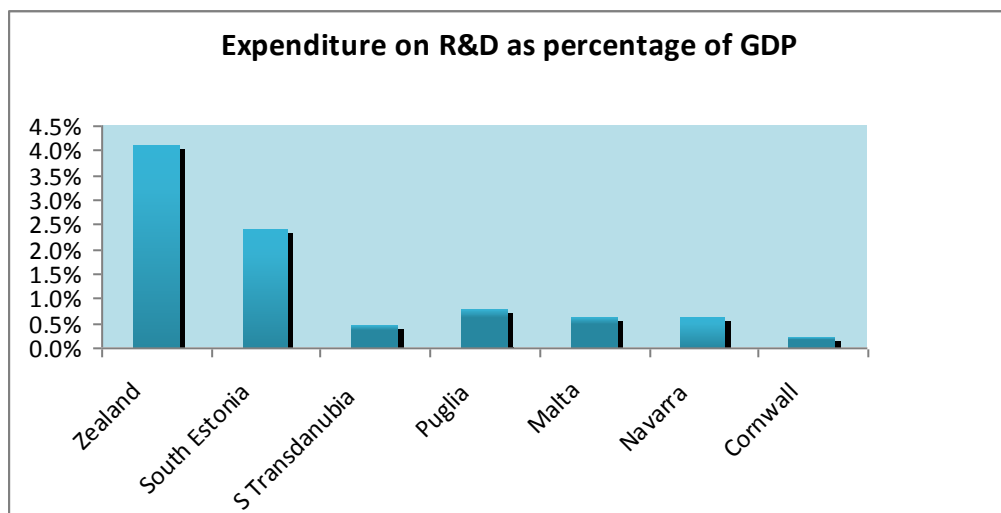
**GDP of the region per capita** – despite its imperfections the GDP per capita is an indication of a certain level of wealth. This is a factor for enabling transition of certain sectors to a green economy.

**Figure 18** GDP per capita



**Expenditure on R&D/GDP** – the level of expenditure is an indicator of importance assigned by the Member State and the region to the sector and is a factor for the development of the green economy.

**Figure 19**      **Expenditure on R&D as percentage of GDP**



## 5.1. Territorial assets

Rich natural assets are an enabling condition for green economy development and the importance of the specific natural assets depends on a given sector of the green economy. A transition to a greener energy sector through a growth in renewable energy is closely related to the availability of e.g. sun and wind. Certain sectors are more dependent of territories than other. E.g. the agro-food sector, by definition, depends on the spatial on location. The location decides which types of crops are grown etc. The climatic variations from north to south also imply different irrigation needs.

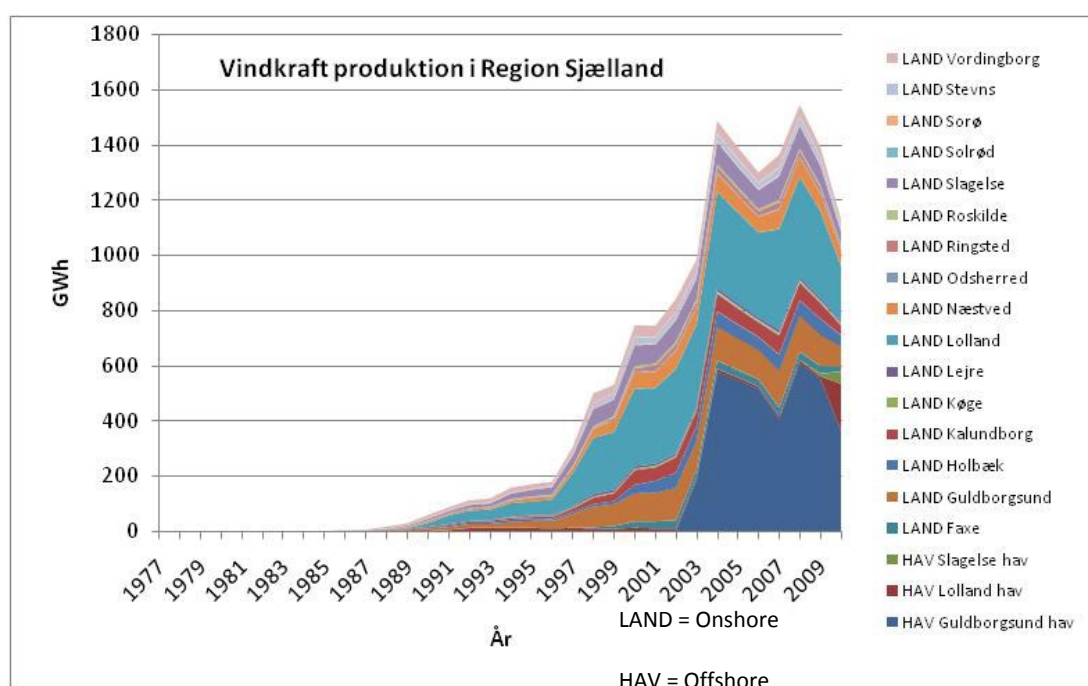
The capacity to capitalise on the natural assets is strongly linked to other factors such as the governance and strategic framework in a specific region. There are a range of examples of regions with rich territorial assets that did not manage to take advantage of them due to lack of political will and lack of appropriate legislation. In addition, the lack of natural resources can also be a trigger for greening and innovation as the need for sustainable management of scarce natural assets is critical. In terms of territorial capital, **Navarra's** climatic conditions hold a great renewable energy potential. Its landscapes and natural areas are a great touristic asset, the cluster presence in the region is high, which facilitates knowledge spillovers and besides it has a cohesioned institutional structure to foster change.

The recent downscaling of industrial activities in **South Transdanubia** and the generally low level of industrialisation has in many economic sectors been identified as a barrier to green economy development. On the other hand, the low industrialisation of the region provide some advantages as it has resulted in that a relative good environmental status as been maintained and serious ecological degradation have been avoided. The quality of the environment, with the exception of the industrial zone in Komló-Pécs-Beremend, is therefore better in South Transdanubia than in other regions in

Hungary. This is an asset of the region that could encourage new initiatives of the private sector in economic development using the rich nature values and drive the implementation of restructuring and the revitalization of the region.

Realising the good wind potential of the **Zealand** region has made wind energy one of the most expansive sectors in the economy of the region since the early 1990s. The figure below shows that the excellent wind potential at the southern island Lolland has been developed to a wide extent. It contributes with around half the onshore wind energy generated in the region. The offshore wind energy at the coasts of the region contributed in 2009 approximately as much as the onshore wind energy and this is expected to be the most expansive wind energy source in the 2010s and 2020s.

**Figure 20 Wind energy production in Region Zealand 1977-2009 (GWh)**



Source: Author's calculations based on the Energy Agency Wind-Turbine Database (Danish Energy Agency, 2012).

**Malta** is not rich in natural resources, with the exception of sun radiation and wind conditions which are in fact the best in Europe. Malta has the best possible conditions in Europe with regards to solar power but has not been able to develop the sector because of other reasons such as lack of political drive, lack of appropriate legislation and financing but also because of lack of space and resistance of the populations towards the construction of wind turbines.

Crucial resources like fresh water, limestone and land are scarce and in fact insufficient to meet the demand. Limestone is a natural resource that has made Maltese architecture what it is now and needs to be actively protected because of its shortage. This is done through setting the right price of stone, research into reconstituted stone and also being particularly meticulous about the environmental impacts of quarrying. The rest of the raw materials are imported – a fact which puts Malta in a situation of dependency. Fresh water is another key resource whose importance has been even higher having in mind the arid climate of Malta. Malta is particularly adamant about implementing its water policies and managing water in the right way.

Coastal and marine areas are by far the biggest assets of Malta making a significant contribution to wealth generation through tourism and through marine economy as a whole. However, a key technological bottleneck for the offshore wind farms and the floating solar islands is the depth of the sea.

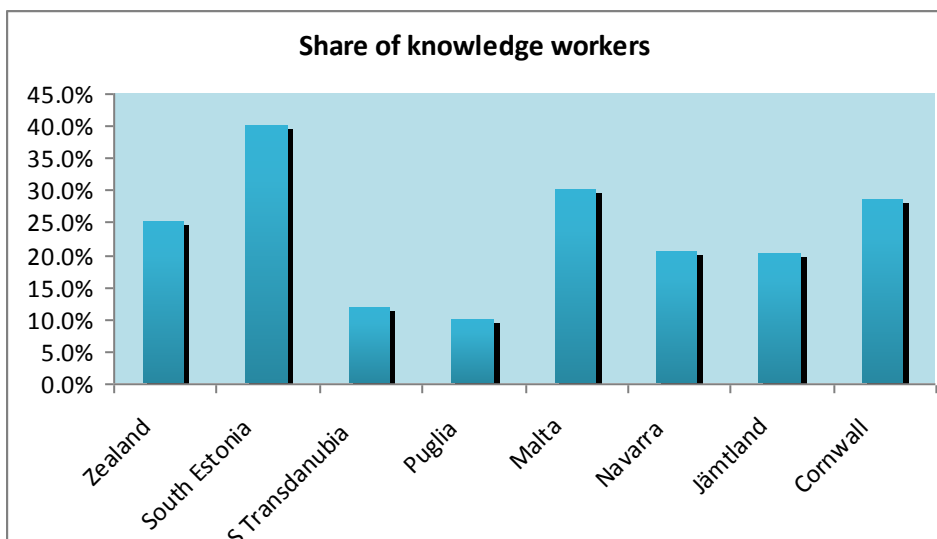
#### **5.1.1. Availability of human capital in a territory**

Knowledge workers are also a part of the territorial assets. The demographic challenges (further discussed above in chapter 3.3) can also influence the development for instance through the lack of competent labour force following negative population trends. The demographic development in **Jämtland** is recognised as a challenge for green economy development in the county. Lack of working force is expected in many parts of the county, both in terms of low and high qualified labour force in all sectors. The population has been decreasing and the county is facing several demographic challenges in the near future as approximately 24% of the active labour force is expected to leave the labour market during the period between 2008 and 2018. In forestry, it is noted there are already vast variation between the competence levels of employees which can further influence the environmental consideration in the sector. In agriculture the large share of aging farmers and the decreasing active agricultural activities are discussed for example in connection to environmental issues where the development can give clear implications in landscape. Also in forestry, it is challenging to find competent educated employees. There are also large variations in the competence level amongst both employees and forest owners. The low competence and knowledge level among the land owners and other actors active in forestry can also have consequences in taking environmental issues into consideration which is why it is considered essential to increase the awareness on the issues.

In **Estonia**, there are significant disparities between urban and rural areas and it is difficult to attract and keep the qualified labor force in the peripheral areas. There is simply a lack of committed and knowledgeable people, who would take an initiative and drive the change.

In **South Transdanubia**, two universities provide various courses in the region, which could potentially satisfy the local enterprises' needs of professional labour force. Pécs university is the first University in Hungary, established in the 14th century, with around 26 000 students and 2000 teaching staff. However, a remarkable part of the graduates apply for jobs outside of the region after finishing their studies – mostly in the capital Budapest. This situation is leading to drainage of educated labour force in the region creating obstacles for finding highly skilled workers necessary in a knowledge based, green economy transition.

**Figure 21** Share of knowledge workers in the case study regions



The figure above is an indicator of the structure of the economy and indicates the availability of universities and other research institutions as well as availability of employees in the private sector who are not directly involved in productive employment. It shows that Puglia and South Transdanubia are significantly lagging behind the other regions. South Estonia has the highest share of knowledge workers, 40 % of active population.

## 5.2. Successful governance approaches

In addition to the strategic vision discussed previously the quality of governance, political stability and the quality and variety of the institutional landscape are instrumental for the transition to the green economy. The significance of regions as agenda-setters is bigger in larger, more decentralized countries such as Spain, Germany and Italy. Other countries like Sweden and Denmark have weaker regions with roles limited to coordination but are instead having strong municipalities. Therefore the primary driving forces of the transformation towards the green economy are thus the national government and the municipal administrations. In many New Member States the regions were created artificially for the purpose of Cohesion policy planning. These regions suffer from an inherent weakness but nevertheless should not be underestimated as Cohesion policy provides a big share of the funding in these countries.

### ***Southern Estonia – political will is key for greening the economy but local administrations are faced with low capacities***

In Southern Estonia there is the recognition that the public sector should ensure the economic stability and create a favorable economic environment which will steer the investments in green technologies and alternative solutions. Only a long-term commitment at the national level to pursuing green economy objectives provides investors the security to invest in a green economy and the costly activities that might bring profit in the future.

Unfortunately, there is a low level of political and financial support to the transition to a green economy today. In case of bioenergy, for instance, there is no strong political will to increase the production, since the EU 2020 targets for Estonia have already been achieved with regard to the

share of RES in gross final energy consumption. The current administrative structure is a major drawback in development towards a green economy. The low administrative and financial capacity of the local governments in Estonia hinders the adequate use of the Structural Funds and pursuing the sustainability objectives. The local governments are often too small to perform the necessary functions properly. They neither have the capacity to apply for the funds, nor to co-finance the projects (Kalvet 2010). The financial resources at the regional level for the implementation of green economy objectives are also limited. An administrative reform, which would enhance the capacity of the municipalities to implement larger development projects and rationalize their work, is needed.

***Jämtland – there is a need for an uninterrupted governance chain from EU policies to local level implementation***

The municipal self-government in the Swedish region of Jämtland strongly influences the implementation of EU policies at local level. Political will at local level can function as an essential driver towards greening the economy. At the same time however a lack of political will at the local level can break the chain of decision making from EU level to local level. Strong and clearly set EU goals can function as drivers influencing the local level policy making and implementation but in some cases in Jämtland the current EU goals and guidelines have been considered too weak and seen by the decision-makers mainly as guidelines. This clearly influences the efficiency of EU and national policies as policy drivers as the EU policies do not always reach all the way down to the local level where they should be practically implemented. In general, the local and regional actors in Jämtland stress the need for more national level support for the development of sustainability in the sectors as well as the need for more long-term approach from both the national and the EU level in order to facilitate investments and work related towards the policy goals by local authorities, entrepreneurs and inhabitants.

***Zealand (Denmark) – the region fully uses its physical planning responsibilities and ensures progress through narrow collaboration with the private sector***

The influence of the Danish regions including Zealand comes mainly through their responsibilities in physical planning and facilitating industrial development. Regions also draft Agenda 21 Strategies. Municipalities are in charge of compliance with environmental law but also planning heat and water infrastructure as well as carrying out nature protection activities. Regional councils also develop regional development strategies and thematic strategies. Almost all municipalities are signatories to the Covenant of Mayors and national green economy commitment arrangements. These commitments include not only commitments to reduce energy waste and emissions in the service institutions of the municipalities, but also to help the private sector in the territory of the municipality to become more resource efficient.

***Ruhr (Germany) – a complex governance structure ensuring excellent coordination with public and private stakeholders***

Ruhr consists of 15 NUTS-3 regions out of which 11 municipalities with large decision power. However, Ruhr region is not a NUTS-2 region but spreads over three NUTS-2 ones. Since 2009 the Land North Rhine-Westphalia has transferred the regional planning function to the Regional Association Ruhr (RVR). Thereby the RVR is the regional planning unit and coordinating or controlling the competing spatial requirements and thus encourage the sustainable urban and regional

development. The creation of the Regional Plan is in an inter-communal and participatory planning procedure in which all stakeholders, such as recordable like cities, government agencies, associations and municipalities are integrated (Metropole Ruhr, 2013 g).

***Southern Transdanubia – regions are looking for their optimal role squeezed between national and local level***

Hungary has traditionally been a centralised country and even though some regionalisation processes were undertaken during the last decade, regions in Hungary have in recent years lost their administrative importance. Today, after the most recent reform in January 2013, regions have no administrative power and only exist from a planning perspective. Below the national level, districts and municipalities are the next official administrative level. This is making the regional governance issues more complicated and it is not possible to enforce any binding strategies or targets on a regional level. The South Transdanubia region is however still trying, mainly driven by the Regional Development Agency, to increase the economies of scale by creating voluntary strategies and try to get their official approval by working with the regional county council and with the municipalities.

***Malta – an ambitious late starter who wants to capitalize on its natural assets while severely constrained in terms of space***

Malta has the best possible conditions in Europe with regards to solar power but has not been able to develop the sector because of other reasons such as lack of political drive, lack of appropriate legislation and financing but also because of lack of space and resistance of the populations towards the construction of wind turbines. However, the country is making a quick progress once the process took off.

### 5.3. Institutional framework

The diversity of regional institutions, the synergies between them and the quality of human resources are a strong factor for enabling the transition to the green economy, for instance through the capacity to implement and enforce green economy strategies and new legislation. Some examples are presented below. Regional public institutions are the main institutional drivers in the studies regions using their strategic position for creating the strategic framework. They also use their legal responsibilities in physical planning and enforcement of legislation. Regions and municipalities are often instrumental in creating additional institutions in collaboration with the private sector and/or universities. This is possible because of their coordination role but also because of the financial resources they are able to mobilise. The institutional landscape in the studies regions includes general regional development agencies, technological and innovation development agencies as well as thematic foundations and associations. Most regions boast strong thematic clusters in their strong sectors which are at the same time a result of a successful performance but also a cause. The case studies also feature strong networking platforms but also public-private partnerships and fully private institutions. The GREECO case studies are not in a position to measure the quality and performance of these institutions and can only partially describe the institutional diversity.

**Table 2** Summary of key institutions highlighted in the case studies

	Public institutions	Non-for-profit	Clusters	Thematic centres	Networks	PPPs	Private
<b>Navarra</b>	Sodena – financial support; Ecological agriculture council, CPAEN; INTIA	Moderna Foundation; Cederna	Agro-food cluster; Prodema; Ecopolis (industrial park)	CENER - technology center;			
<b>Puglia</b>	Regional Agency for Technology and Innovation; ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development,  National District for Energy Technologies (DITNE)	InnovaPuglia SpA	Energy Cluster	Tecnopolis-CSATA, New materials research centre	Network Contracts		
<b>Southern Transdanubia</b>	Regional Development Agency; University of Pécs and University of Kaposvár	ST Regional Innovation Agency	Regional Food- Innovation Cluster; ST Energy Cluster; Blue Economy Innovation Cluster	Regional Food Science Competence Centre; RES Competence and Innovation Centre; Regional Food Office; Regional Wine Office;			
<b>Southern Estonia</b>							
<b>Zealand (DK)</b>			Copenhagen CleanTech Cluster; Biofuel cluster in			Growth Forum	a second-generation biofuel factory INBICON was founded in



			Kalundborg				Kalundborg as a joint venture between energy companies
<b>Malta</b>	Ministry for Gozo; Malta Council for Science and Technology						
<b>Ruhr</b>	Regional Association Ruhr  Regional economic development agency Metropol Ruhr	Emscher Association					Ruhrcoal stock company

***Navarra (Spain) – a diverse landscape of public institution and clusters supporting the green economy***

MODERNA, in addition to the aforementioned action plan, is also a recently created foundation (Foundation MODERNA), with the goal of implementing the MODERNA action plan and fulfilling the vision for the Navarra of 2030, in terms of quality of life, sustainability and prosperity.

SODENA is a public institution of Navarra, which provides financial support for the entrepreneurial development of Navarra, through venture capital. It was created in 1984 and is focused on four strategic sectors: Agro-food, Biotechnology, Energy and Environment and ICT.

The Ecological agriculture council, CPAEN, depends on the Government of Navarra and it is responsible for the control of ecological agriculture in Navarra. Its main activities include dissemination of knowledge on ecological production systems providing technical guidance to companies in the field; providing technical support for the development of studies and projects for the transition towards ecological agriculture of farms; promoting the consumption and dissemination of ecological agricultural products, etc.

The Navarra agro-food cluster was established in 2008 and it comprises companies and research centres in the agro-food field. It is coordinated by CEIN (European Centre of Business and Innovation in Navarra), which is a public institution. Its main goal is to strengthen the competitiveness of the sector with a bottom-up approach, in doing so it fosters R&D and productivity, increases presence in international markets, improves the competitiveness environment and provides networking opportunities to the companies. Currently, this cluster is working together with MODERNA to develop a roadmap to address the new types of demand and to capitalize synergies with other sectors in Navarra, such as Sustainable Tourism, Biomedicine, Health Services, Renewable Energies and environmental sustainability.

Recently two relevant stakeholder initiatives have been fostered in the form of PRODEMA and Ecopolis. PRODEMA was established in 2010 and it is a cluster for the Promotion and Development of Environment in Navarra. It consists of businesses, public organizations, research centres and universities. It has the goal to foster projects and activities based on R&D and cooperation in the field of environmental management. Ecopolis<sup>1</sup> is an industrial park specialized in companies dealing with the environment, with a special focus on resource efficiency, regardless their sector.

CENER is a national technology center created in 2000 by the Government of Navarra, the Spanish Ministry of Education and Science and CIEMAT (the Centre for Energy, Environment and Technology Research). Over 130 researchers work in CENER on new energy applications. CENER is focused on four areas: wind energy, biomass, photovoltaic and thermal solar

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<sup>1</sup> <http://ecopolisnavarra.com/>

energy and bioclimatic architecture. CENER has an unequalled experimental rotor and turbine laboratory. In addition, CENIFER works together with the Employment Service of Navarra, the Spanish Ministry of Employment and Social Affairs and the National Employment Institute (INEM) to train professionals in renewables.

INTIA is a public company created by the Government of Navarra providing advanced services to companies to foster the development of the agro-food industry sector in terms of quality, efficiency, innovation and sustainability. It was established in 2011 as a result of the merger of the public societies that had been providing support for over 30 years to the agricultural, agro-food and the irrigation infrastructure companies in Navarra.

CEDERNA is non-for-profit association funded in 1991 and aimed at supporting the socio-economic development of the mountainous area of Navarra. It provides advisory services, information, technical support and helps to find financing.

### ***Puglia (Italy) – regional networks and clusters as a major enabling factor***

For instance, one key factor for Puglia's success of the green innovation and research sector is its institutional framework. Despite its relatively small size, the region has established a strong institutional base with its 5 Universities, more than 30 Public and Private Research Centers, 6 Inter-regional Centres of Competence, 3 Enterprise Incubators, 7 Industrial Liaison Offices, 21 Public Research Infrastructures as well as 6 technological Districts and 17 Productive Districts.

The creation of regional networks and clusters has proven to be a successful approach in Puglia. In recent years, a model of networking has taken shape in which universities, public and private research centres and other institutions collaborate in trying out new products and processes and promote the transfer of technologies such as nanotechnology, laser microprocessing, magnetic resonance and advance research techniques applied to energy, health, agriculture and food, aerospace, mechatronics. In this context, the four technological clusters established and based in the new "Made in Apulia" research landscape also have a leading role in several sectors.

The Network Contracts adopted in 2009 under the auspices of the Small Business Act (SBA) have been a 'powerful accelerator' for green transformation. They were introduced as a new tool that aims at enhancing collaboration among firms to increase their potential for innovation, research, and development. (more information in the GRECO Policy Report)

### ***Puglia – public-private research network in energy***

DITNE (National District for Energy Technologies), created in 2008, is the cornerstone of the energy strategy of Puglia and since 2012 and also leads the recently created Energy Cluster. DITNE was set up with the aim to strengthen contact and scientific cooperation between research and industrial institutions, strengthen competitiveness of the region, international wide visibility and encourage quantitative growth of business and skills in the field of renewable energy and production of electricity. DiTNE, in synergy with **DHITECH** (for hi-tech)

in Lecce, District of Mechatronics of Bari and DARE of Foggia (for food), will help to create in Apulia, a public-private research network and technology transfer in the field of energy. DiTNE promotes development and production of new components, constituting in this way, a strong and strategic choice for sustainable industrialization at the national level as well as in the Apulian Region.

***Southern Transdanubia (Hungary) – start up of regional networking is strengthening the regional capacities***

A number of regional institutions and cluster networks have been established to support such initiatives, even though their capacity is sometimes low due to lack of financing and regional expertise. To tackle these challenges and improve its capacity, the region is participating in a number of regional projects, e.g. regarding sustainable energy, mainly managed by the Regional Development Agency. This suggests that there is a will in the region to further developing in a green economy direction and an understanding that regional cooperation is crucial in this process.

**The Blue Economy Innovation Cluster** was initiated by the University of Pécs, Faculty of Business and Economics in 2011. It is an alliance of university research groups, research institutions and for profit organizations that share the vision of socio-economic-ecological sustainability. The cluster is based on a concept that envisages regional economies that rely on local resources and competences without the exploitation of those local resources. The concept of Blue Economy also emphasises that economic activity on the regional level is to be organized via the coordination of the local SMEs exploring and using their synergies and complementarities. The Cluster has the objective to implement Blue Economy innovations; to manage market participants in a systematic, complex way. It cluster provides integrated services supporting municipalities in terms of public lightning, energy efficiency in buildings, infrastructure and waste cycles. The cluster has 15 members and around 20 external members (<http://www.blueeconomycluster.eu/>).

The **South-Transdanubian Regional Food-Innovation Cluster** established in April 2011 has the overall goal to foster the cooperation of companies, organizations, institutions in the field of food industry in the region as well as development of high added valued, so called strategically important food (functional, organic, conventional) according to the current trends in consumer behaviour, moreover to produce products which meet with the customer needs in a sustainable manner.

The **Regional Food Science Competence Centre** is a result of the efforts to harmonise the concentrated knowledge base(s) of the knowledge potential of the universities; to increase competitiveness of SMEs operating in the region by generating feasible innovations based on a cooperation of the academic and consulting sector in the food industry (<http://www.ddrek.hu/>). The establishment of the center was a priority in the Regional Innovation Strategy.

***Southern Estonia – LEADER, bottom-up initiative for sustainable tourism***

The so-called Community Initiatives of the EU such as LEADER, aims to support a bottom-up process and participation of local actors in cooperation and the exchange of experience at a European level. The eight LEADER groups in Southern Estonia region have also played a significant role in promoting sustainable tourism development, more environmentally-friendly agricultural practices and alternative construction techniques.

### ***Zealand (Denmark) - Public-private partnership for economic growth promotion***

An important instrument in implementing the regional development strategy of Zealand is the public-private partnership “Growth Forum”, which has adopted the Industrial Development Plan (Vækstforum Sjælland, 2011). The Growth Forum Zealand is responsible for establishing and developing a framework for professional development in Region Zealand. The goal is to promote economic growth in the region of Zealand and develop framework conditions to match future requirements and provide the basis for prosperity.

The municipal administration of Kalundborg is an active player in this industrial ecosystem and has been so throughout its history. The “industrial ecosystem” is, however, not the result of a well-elaborated plan for development of resource efficiency. The municipality stresses the importance of more soft enablers such as a high level of mutual trust and a local spirit of cooperation (Kalundborg Symbiose, 2013).

### ***Ruhr (Germany) – wide range of regional institutions***

The development of the Ruhr region is determined largely by a complex governance structure with a variety of private and public/political actors and institutions. As mentioned above, the **Regional Association Ruhr (RVR)** which is responsible for regional planning but it also supports major infrastructure projects such as the Industrial Trail and the Emscher Landscape Park. The **Emscher Association** is responsible of the Emscher project and therefore a key stakeholder in the Ruhr region. Their competences include developing the river landscape of river maintenance, flood control, wastewater disposal, rain and ground water management and the renaturation of the Emscher. However, the plans, goals and measures will be developing in a reciprocal coordination with the RVR and summarized in an independent informal document so-called “Masterplan Emscher future” (Emschergenossenschaft, 2013 a; BBSR, 2009). Important stakeholders for the urban and regional development, especially in terms of structural change in the Ruhr region, are the economic development agencies of the 53 municipalities and the **Regional Economic Development Agency** (Metropol Ruhr GmbH) for the whole region

## **5.4. Innovative policy approaches**

All case studies have demonstrated unequivocally that in addition to the strategic vision of a region and the institutional framework, the set of national and regional policies are the most important driver for greening the regional economy. The main analysis of policies within GRECO is carried out within the overall policy report. This section only presents a few examples of innovative regional policy making to support green growth.

The policy report analyses in detail the Green Cornwall Strategy guiding the regional economy to a greener performance. It also dwells on a number of policy tools in Cornwall including: the competitiveness support programme; contracting and mobility of technologists and doctors for R&D activities; stimulation and support for R&D business projects; identification and promotion of technological cooperation in R&D; and support for new innovative technology-based companies.

In Puglia, regional administrations is responsible for policy making in the area of scientific and technological research and support to innovation for industrial sectors. In Puglia, policy initiatives are developed with the support of the recently created Regional Agency for Technology and Innovation (ARTI). Italian regions have also acquired responsibilities in energy and since 2007 it has had the Regional Environmental Energy Plan (PEAR). Italian regions have also gained a central role in permitting of plants powered by renewable sources.

In Southern Estonia, Põlva county has one of the most ambitious and sustainability-oriented strategies. The county has developed its own label “Rohelisem märk” (A greener mark) for local food and products, natural building and finishing materials, local handicrafts and tourism services.

Jämtland has the responsibility to draw up, implement and follow-up on strategies for the development of the county (the most central being the Regional Development Strategy and the Regional Development Programme).

In Hungary, despite the small or non-existent traditional role of the regions there are efforts and examples of regional strategies and programmes. The Regional Development Agency of South Transdanubia, has recently developed a Regional Energy Strategy in order to elaborate a common regional framework for future green developments which is the first attempt of setting energy priorities for the region.

In Zealand, regional policy ‘work’ comes through the physical planning and enforcement of environmental legislation. Municipalities are also signatories of the Covenant of Mayors.

Green public procurement is another very useful instrument which has come up as an issue in several of the case study regions. In Jämtland, stakeholders agree on the important role of GPP but municipalities have not made big progress. GPP of sustainable food products in Jämtland is especially challenging since producers are small and cannot produce the amounts that are required by the municipalities. One possible way for advancing GPP is that municipalities would base their public procurement on seasonally available products. Clear rules for green public procurement would send a strong message to other actors and consumers. It would be essential to increase awareness of the possibilities of GPP. The amended Public Procurement Act creates the basis for using environmental considerations and criteria in public procurement by stating that the contracting authority shall prefer green solutions.

In Malta, an updated National Action Plan for Green Public Procurement covers eighteen product groups ranging from textiles to office IT equipment, and from air-conditioning to

food and catering. The target is ensuring is that by 2015 50% of public procurement is compliant with EU GPP criteria. The involvement of multiple institutions in a GPP Task Force would be an additional guarantee for success. There will be a quantitative and qualitative monitoring of GPP. Additionally, over 400 representatives of procurers & suppliers have been trained. There is a national GPP helpdesk & portal ([www.gpp.gov.mt](http://www.gpp.gov.mt)).

In Estonia, the Development Plan 2007-2013 for Enhancing the Use of Biomass and Bioenergy urges to take suitable measures when it comes to public procurement for biomass, consumption technologies and bioenergy. Public procurement is perceived as an important market regulation mechanism, which can contribute to the extension of biomass use by the state and local governments. The issues that require further analysis and assessment are energy efficiency requirements for public procurement, mandatory use of renewable energy by the national and local governments and the imposition of the potential obligation to acquire vehicles consuming biofuels. The Ministry of the Environment has developed the green public procurement guidelines and encourages the public sector to apply GPP, especially in the field of public transport, energy-efficient construction and improving energy efficiency in the buildings.

## 5.5. Financial support to the green economy

Most regional actors consulted in the case studies have stressed the importance of financial mechanisms and have emphasized the need for increased public financial support. The financial support and mechanisms available are therefore of crucial importance and one of the most important enabling factors for the transition towards green economy. The section below reviews the most prominent and common forms of financial support and instruments for supporting green economy development as seen in the case studies. Often, a combination of the below mentioned financial mechanisms provides the most efficient support to green economy in European regions.

### 5.5.1. EU Structural and Cohesion policies

The EU Funds, and in particular the structural funds is an important driver for virtually all regions studies. In less developed regions (cohesion regions) the funds have a more significant role as it can finance new environmental infrastructure whilst in more developed regions it mainly provides support to e.g. innovation.

Among the findings from **Estonia** is that the EU structural funds play a significant, if not the key role, in regional development initiatives for green economy. The budgets of local and regional governments are quite limited which does not allow them to undertake extra initiatives in the field of resource efficiency and environment. Thus, the greening of the sectors (especially agriculture) is coherent with the availability of EU funding and relies on the policy development taking place at the EU level.

In **Puglia**, the European Regional Development Fund (ERDF) contributes to the Regional Strategy for Research and Innovation and accordingly co-funds some of its initiatives, through the Regional Operational Programme (ROP) for Puglia. The ROP is funded with 5.2

million EUR and resources are provided as follows: the ERDF 50%, the Italian government 35% and the regional administration the remaining 15%. The expected impact of the ROP is the increase of GDP, growth in employment and greenhouse gases reduction. In order to deliver such impacts, the ROP identifies the following eight priority axes:

- Promotion and dissemination of research and innovation for competitiveness
- Sustainable and efficient use of environmental and energy resources for development
- Social inclusion and services to enhance the quality of life and the attractiveness of the region
- Promoting the potential of natural and cultural resources to improve the attractiveness and development of the region
- Networks and mobility links
- Competitiveness of productive systems and employment
- Competitiveness and attractiveness of cities and urban systems
- Governance, institutional capacity and competitive and efficient markets

In terms of outputs and results of the initiatives co-funded with ERDF funds, the main achievements of the integrated territorial projects that could be directly related to the green economy have been in the fields of environmental protection and risk prevention, urban and rural regeneration, infrastructure improvement, creation of employment agencies and internationalization of local products and territorial marketing.

In **Jämtland**, ERDF and ESF funding for projects have been considered very important for the development of green economy in the county. For example, projects developing green transport sector (e.g. INTERREG project Green Highway) and sustainable tourism have been successful.

In **Navarra**, public support has been provided to dynamize the agro-food sector and to help it face the challenges of increasing competition. One of the most significant initiatives is the support provided through the Rural Development Plan of Navarra which is aligned with EU (EAFRD) and national guidelines for rural development. It provides financial support to activities such as:

- Modernization and restructuring of the agro-food sector
- Fostering environmental services and animal friendly farming practices
- Strengthen the support to ecological agriculture
- Tackling climate change by preserving the carbon sink function soil plays
- Promoting territorial cohesion

In doing so, the current plan aims to maintain GDP and employment, contribute to biodiversity and also foster growth in non-agricultural activities.

**Table 3** Overview of Rural Development Plan 2007-2013 budget

Axe	Public contribution for the 2007-2013 period		
	Total public contribution (€)	EAFRD contribution (%)	EAFRD funds (€)
Increase competitiveness	173. 101. 057	30, 80%	53. 319. 411



Axe	Public contribution for the 2007-2013 period		
	Total public contribution (€)	EAFRD contribution (%)	EAFRD funds (€)
Improve rural environment	81. 435. 712	55, 00%	44. 789. 642
Quality of life in rural areas and rural economy diversification	15. 405. 330	50, 00%	7. 702. 665
LEADER	23. 778. 000	55, 00%	13. 077. 900
TOTAL	293. 720. 099	40, 48%	118. 889. 618

(Source: Gobierno de Navarra 2012)

### Box 3 LEADER + Initiative as a driver for green growth

The sharpest increase in the GVA of **Navarra's** bio-economy took place from 2000 to 2005 in the context of the LEADER + initiative. This EU initiative aimed at fostering the long-term socio-economic development of rural areas while adopting a sustainable development approach and was funded with structural funds. In Navarra, it affected 85% of the territory, but only 45% of the population, as it was not applicable to Navarra and its surroundings. The overall assessment of the project implementation was positive. It improved the quality of life in rural areas and it enabled to identify and prioritize areas where further action was needed.

Since there are many micro- and small-sized agricultural and tourism enterprises in **Southern Estonia**, they are often not capable of applying for funding from the large EU programmes. The importance of LEADER-initiative programme for this type of businesses was stressed in the interviews. The LEADER programme is aiming to improve the competitiveness of agriculture and forestry, of the environment and the countryside through the partnership between the local governments, private and third sector. The Local Action Groups were created to implement the programme (8 in Southern Estonia). There are projects supporting the development of tourism, local food networks, handicraft or other local products (Agri 2010b).

In summary, it can be concluded that the Cohesion policy is a strong driver for greening the economy in terms of its financial support especially in less developed regions (through RES targets and concentration of funding), through support to e.g. energy efficiency renovation of building and through its sustainable transport priorities. There are ongoing comprehensive efforts on mainstreaming the environment and climate change into the planned investments.

#### 5.5.2. Environmental taxes and charges

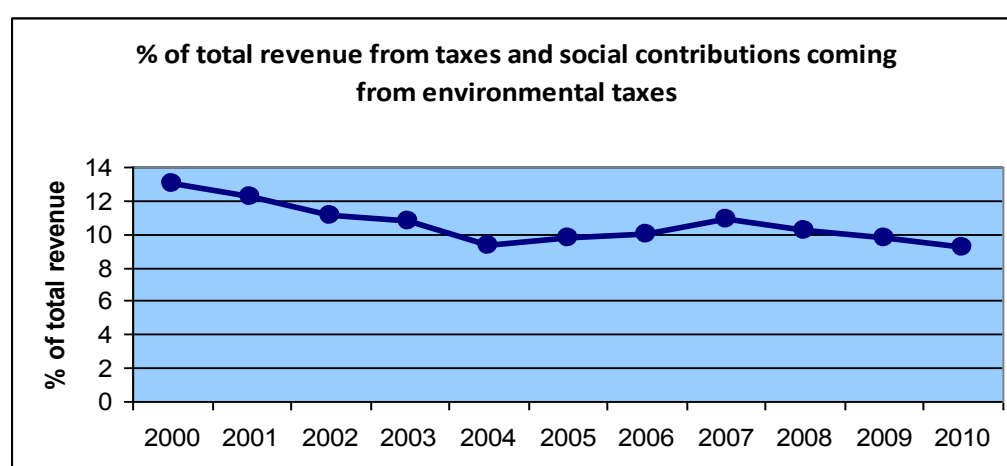
Environmental or energy taxes can enable profitable investments in resource saving and recycling solutions. By internalizing any negative environmental impacts from an economic activity or goods, it also creates an incentive for producers and consumers to shift away

from environmentally damaging behaviour, reducing environmental degradation and instead saving the costs of repairing damage that would otherwise have accrued.

In June 2005, the Government of **Estonia** applied the Ecological Tax Reform Principles with a purpose to increase environmental taxes and reduce labor taxes. Air pollution charges have increased, as well as oil shale waste charges. The charge rates are continuously growing and the stimulus of the polluters to protect the environment is becoming evident. Avoiding the environmental charges was among the important motivations for building the municipal wastewater treatment plants in bigger cities (Tartu, Viljandi). The current environmental charges rates are determined in legislation until 2015. 'Continuing the implementation of ecological tax reform through the constant further development of the environmental tax system' is among the measures in Estonia 2020 Action Plan for 2011-2015'.

Environmental taxation in **Malta** has remained fairly stable over the last decade as a percentage of GDP - between 3.1% and 3.6%. In comparison to the rest of the EU, this is relatively high (the EU-27 average is 2.6%), and can be attributed to taxation on transport (1.4% of GDP in Malta, 0.5% in the EU-27). Revenue from energy taxation, on the other hand, is below the EU average (1.5% in Malta, 1.9% in the EU-27). Taxes on pollution in Malta yielded 0.2% of GDP in 2010, the fifth highest level in the EU.<sup>i</sup> In Malta in 2010, 9.22% of total revenues from taxes and social contributions came from environmental taxes (see table below). There was a decreasing annual trend from 2000 to 2004, with small annual increases from 2004 to 2007, and then annual decreases once again from 2007 to 2010.<sup>ii</sup> In the period 2000-2010 the % of total revenue from environmental taxes was reduced with - 3.97% as can be seen in the chart below.

**Figure 22** % of total revenue from environmental taxes in Malta



Source: Eurostat

One example of the environmental taxes in Malta is the registration taxes of commercial vehicles of lower than EURO 3 emission standard were increased in order to encourage the

purchase of less polluting vehicles. The tax was also applied to non-commercial vehicles as of January 2012. Companies can also benefit from a reduction in company tax up to 125% on the amounts spent on electric cars.<sup>iii</sup>

### 5.5.3. National grant programmes

National grant programmes has in the case studies given support to regional and local government in investing into green economy through providing funding for e.g. energy efficiency, renewable energy and eco-innovations.

The case study on Malta provides several examples on support schemes for RES technologies. On example is the grant scheme for domestic solar water heaters that enables 40% of eligible costs to be funded up to a maximum of 560 EUR per family/installation, with no cap on the budget. Some 2-3000 residential PV systems have been installed in Malta up to now and the government plan is currently oversubscribed.<sup>iv</sup> The PV installations registered with the Malta Resource Authority (MRA) by 31 May 2012 amounted to 17 MWp, which would produce app. 26 GWh/year. An upcoming project is the installation of 67,000 m<sup>2</sup> of public roof tops with the capacity of 4.5-5 MW generating 7.5 GWh/year.<sup>v</sup> A similar grant programme was announced in March 2013 for an additional 20 million EUR for a two year period. This means a total investment of 40 million EUR (own investment included). This is expected to lead to the installment of almost 50 MWh of solar energy (residential and industrial) compared with a target of 27 MWh. The grants come partly from the Structural Funds.<sup>vi</sup>

The Maltese Environment and Planning Authority (MEPA) is also actively promoting solar water heaters and photovoltaic systems. Some 800,000 EUR is available for MEPA to incentivize the application of these technologies in existing and new buildings. Since 2010 150,000 EUR has been made available to farmers who opt for energy efficiency investments.<sup>vii</sup>

Several Government measures exist to share the risks of investing in eco-innovation activities. Support for green start-ups and entrepreneurial schemes is available through the Malta Enterprise schemes ERDF Innovation Actions Grant Scheme (Environment) and Small Start Up ERDF Grant Scheme which aim to assist SMEs in improving their environmental performance, for example by co-financing energy efficiency solutions and renewable energy installation.

The **SME Development Grant Scheme** supports the diversification of SMEs' activities and includes environment as a target area, providing grants to enterprises investing in eco-innovation such as energy-saving and renewables. Another example is the **Investment Aid Tax Credits Scheme** that offers eligible enterprises tax credits, calculated as a percentage of the value of the investment project for qualifying expenditure. Among the businesses eligible to participate in the scheme are eco-innovation activities, waste treatment and environmental solutions.

#### Box 4 Available grant schemes for green economy development in Malta since 2008

- Grants have facilitated the installation of 1,761 photovoltaic systems and 6,199 solar water

heaters;

- 700,000 EUR were allocated for projects under the Energy & Environment area of Malta's R&I programme;
- 10 million EUR was allocated for sustainable tourism products;
- 20 million EUR was allocated to industry (although it is difficult to determine the amount which might be classified as supporting eco-innovation); and
- 1.5 million EUR was provided to projects under an ERDF grant scheme which qualified as being of eco-innovative orientation.<sup>viii</sup>

Source: Eco-innovation Observatory, 2011

In **Hungary**, private persons can apply for funding from the Green Investment Scheme (GIS), financed by revenues from the sale of Kyoto units. Hungary has a substantial quota surplus of the allocated CO<sub>2</sub> quotas. Pursuant to the Government Decree 323/2007 (XII. 11.) on particular rules on the implementation of the law and to the quota contracts, the revenue originating from the sale of Kyoto units is used for climate protection purposes in the framework of the GIS. As a basic principle of the GIS, funding is provided only for measures that are most effective in reducing the emission of greenhouse gases. Since 2009, four sub-programs have been announced in the framework of the GIS, with a primary focus on the building energy sector: over three-fourths of quota revenues collected so far have been allocated to the funding of energy efficient buildings. This area is of particular importance, as emissions related to buildings account for 30% of total national carbon dioxide emissions. Also, **Estonia** applies a GIS for residential buildings and the public sector (since 2010); Apartment Building Renovation Grants providing 10-35% of the total cost of renovation. Like in Hungary, the CO<sub>2</sub> quotas are used to finance environmental projects and programmes that help to reduce CO<sub>2</sub> emissions. In total across Estonia, 243 apartment buildings received the grants by the end of 2011, representing almost one fifth of the total amount of work which needs to be done (Odyssey 2012). Moreover, some share of the revenues from the sale of CO<sub>2</sub> quotas was used for renovation of state-owned buildings to increase their energy (app. 146 million EUR are available). There are currently 480 buildings being renovated, most of them are schools and kindergartens, as well as cultural institutions (RKAS 2013).

Not all funds are channeled on national level; there are also examples on regional funding. One example is the County Administrative Board and the Regional Council of Jämtland that have been providing complementary funding to EU projects. The municipality of Östersund is in the process of developing a new local funding form for green ideas. It would be funded by a municipal carbon dioxide fund where it would be possible to set money to climate compensate for the CO<sub>2</sub> emissions caused by travelling.

#### **Box 5 Wind energy resource rent in Denmark**

Denmark is applying an interesting financial policy for supporting RES through the Danish Renewable Energy Act. It provides incentives to invest in renewable energy plants as well as schemes and rights that facilitate the local process of mediating conflicting interests in wind farm planning.

The renewable energy is supported to varying degrees depending on technology maturity and type by price subsidies, feed-in tariffs, investment subsidies, tax allowances and exemptions and for investments in household wind turbines and solar panels by deducting the electricity delivered to the grid from the electricity bill. These incentives enable investors to invest in renewable energy.

The so called 'wind energy resource rent' is shared between the owner of the wind turbine and the owner of the land. It is, however, not only coal or nuclear power plants that imply loss of landscape values. Other large technical installations such as wind farms do also in many locations make landscapes less attractive. The loss of landscape values, however, is born by the neighbours and other stakeholders in the particular landscape. First, the wind project entrepreneur is obliged to offer at least 20% of the shares in the project to residents within a distance of 4.5 km from the wind turbine. Second, neighbours who experience a drop in the price of their property are entitled to compensation fixed by an independent appraisal committee. Third, the municipality is entitled to remuneration of around 12,000 EUR per turbine to contribute to financing projects that can make the location more attractive.

In addition to these specific arrangements, the normal taxation rules ensures the local community a share in the rent as in any other income earned by the residents of the municipality. There are tax favours to investors in wind energy projects, but they are subject to limitations and the wind resource rent to the land-owner is reflected in a higher property value and thus a higher land-tax. Against this backdrop the Danish policy is to replace the 1300 MW installed wind capacity that is expected to retire in the 2010s with 1800MW new wind energy capacity, which is a net increase of 500MW.

#### **5.5.4. Tariffs and Feed-in tariffs - Decrease in price of installations**

Feed-in tariffs (FIT) has strong potentials of supporting green economy development as it makes it mandatory for energy companies or "utilities" to purchase electricity from renewable energy sources at a pre-determined price. This, in turn, ensures that those who produce electricity from identified renewable energy sources such as solar, wind and other renewable sources have a guaranteed market and an attractive return on investment for the electricity they produce. The case studies show several good examples of where FIT can boost the transformation towards green economy. However, feed-in tariffs applied in an inappropriate way can also have adverse effects as shown in the example of Navarra.

#### ***Feed-in scheme for promotion of PV plants in Puglia***

The production of energy from renewable sources is promoted in Italy by a complex system of incentives the most prominent being the fee-in-scheme, or feed-in-tariff and the "Quota system" (ARTI 2013). The feed-in scheme (introduced in 2005) grants incentives for electricity generated by photovoltaic (PV) plants connected to the grid. Under the FIT scheme, PV plants with a minimum capacity of 1 kW and connected to the grid may benefit from a feed-in tariff, which is based on the electricity produced. The tariff differs depending on the capacity and type of plant and is granted over a period of 20 years. The 5th feed-in scheme grants an all-inclusive feed-in tariff to the share of net electricity injected into the

grid and a premium tariff to the share of net electricity consumed on site. It ceases to have effect 30 calendar days after reaching an indicative cumulative cost of incentives of 6.7 billion EUR per year (including costs allocated for plants whose position in the relevant Registries does not exceed the applicable cost limit). The availability of FITs, especially in their early version, fostered an exponential growth in PV fields (Gazheli and Di Corato, 2011). This caused a speculative PV bubble generating large long-term rents for investors and correspondingly high energy costs for consumers (OECD 2012), which lead to a redesign of the incentives in 2011 and 2012, by gradual reduction in FITs for PV. When it comes to the “Quota system”, it foresees the establishment of a share of energy for renewable sources to be fed to the grid. This share may be provided by direct production or by acquiring the equivalent share of RES from a third party, by means the “green certificates”<sup>2</sup>.

### ***Tariff setting in Navarra - hampering RES development***

Electricity tariffs can also counter act green economy objectives if not set-up properly. E.g. the main barrier for the renewable energy sector not only in **Navarra**, but in the whole of Spain, is the Royal Decree-Law 9/2013. The new compensation system for renewable energy installations, established by the new law, will take into account the market price perception and a specific fee consisting of two components: power unit and operation. This new system eliminates the subsidies to renewable energy generation and leads to the establishment of retroactive taxes on existing operators of renewable energy installations. In views of the National Renewable Energy Producers Association, this new legislative framework hampers self-consumption of the renewable energy generated and harms both companies and consumers. In addition, it is contrary to the European Directives 2002/91/CE, 2012/27/CE, 2009/72/CE, 2009/28/CE. ANPIER (the Association of Renewable Energy Producers of Navarra) considers that this decree puts in risk the almost 10.000 renewable energy producers of Navarra. For this reason they approached the regional government to request institutional support and analyze the current situation and potential implications. It could be the case that Navarra would appeal the decree as unconstitutional.

### **5.5.5. Soft loans for renewable energy and energy efficiency measures**

#### **Malta – loans for energy efficiency**

Malta Enterprise has also offered soft loans to hotels, guesthouses, hostels, farmhouses, snack bars and restaurants to support energy efficiency measures, including energy saving measures, use of cleaner fuels and alternative energy sources. Loans of up to 400,000 EUR and covering up to 80% of the total eligible project costs have been provided for up to five years, and must then be repaid at an interest rate of 1.5% higher than the discount rate charged by local commercial banks. Applications were invited until the end of 2012, with the incentive remaining effective until the end of 2013.<sup>ix</sup>

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<sup>2</sup> Tradable green certificates (tradable commodities proving that a certain volume of electricity is generated from new RES) are used to fulfil the RES-E obligation.

### ***Southern Estonia – support schemes for retrofitting of apartment buildings***

In terms of green economy initiatives in Southern Estonia, the support schemes and loans for apartment building reconstruction could be brought up as a good example that could be picked up by other countries with a poor energy performance of the building stock. In South Estonia, the state owned foundation KredEx has played an important role in promoting energy efficiency measures in the building sector by providing support schemes and loans to the refurbishment measures of the apartment buildings and the reconstruction of the public buildings. The scheme is available since 2009, combining several funding sources; finances from the EU structural funds, a loan from the Council of Europe Development Bank and quotas trading. It provides advantageous terms with a longer refunding period to apartment buildings constructed in 1993 or earlier, dedicated to improving energy efficiency and indoor climate, but also installation of renewable energy appliances – solar cells or wind generators. The aim of the loan is to improve energy efficiency by 20% in apartment building with an area of 2 000 m<sup>2</sup> and by at least 30% in the larger ones. Investments are applied for in a competitive way and the environmental impact of the projects is taken into account. In 2011 about 167 loan contracts were signed in the framework of the programme for a total sum of 16.7 million EUR. According to the estimations, if the implementation of the scheme continues in the same volume, about 15% of apartment houses in Estonia will be refurbished. The share of reconstruction and refurbishing activities is higher in the larger cities. The peripheral areas, such as Southern Estonia region (except for the city of Tartu), are lagging behind for several reasons: a) no will to take a loan for reconstruction, as the wages are lower whereas the costs for renovation are the same. The value of the property is lower in the peripheral areas in comparison to Tallinn; b) limited access to information; c) less efficient performance of the apartment unions; d) lower energy prices in the region. In contrast, higher energy prices in the capital region and the city of Tartu are among the most important motivations for the public and private actors to apply energy saving measures in the buildings.

#### **5.5.6. Subsidies**

Environmental subsidies have the potential of supporting green economy through promoting greener and more sustainable technologies and stimulating a greener behaviour among consumers.

For the development of green traffic in **Jämtland** (and more specifically in the regional capital of Östersund), the system of reduced taxable benefit for the use of green cars has been central. The rules from the national level are however shifting and at the moment it is unclear what kind of rules will be implemented from 2014 onwards. That makes it difficult for the actors to know what kind of transportation to invest in. New green cars have also been exempted from vehicle tax but the current rules only apply until the end of 2013. It is unclear for the municipal actors what kind of rules will be applied after that which also makes decision-making concerning investments difficult. In relation to green traffic and especially green cars, a longer-term approach from the national level would be needed.

In **Malta**, the Ministry of Finance grants once-only investment subsidies for small wind and solar PV systems to domestic investors: for PV, 50% of eligible costs are funded up to a maximum of 3,000 EUR per family/installation; micro wind turbines (with a maximum generation capacity of 3.7 kW) installed on domestic premises may qualify for a grant of 25% on the purchase price up to a maximum of 232.94 EUR.

In **South Transdanubia**, subsidy programmes promote pilot projects among public bodies, companies and non-profit organisations which are entitled to apply for a grant supporting the planning and realisation of pilot projects on the use renewable energy sources. They grant favourable loans for the own contribution to the eligible projects for winning projects under a number of already terminated subsidy programmes. The main support scheme for the use of renewable energy in the transportation sector is a quota system supplemented by a reimbursement of excise duty. There are a number of policies intending to promote the development, installation and use of RES installations. However, some policies are currently not available due to exhausted funds of the related subsidy programmes.

### ***Environmentally Harmful Subsidies***

An Environmentally Harmful Subsidy (EHS) can be defined as “the result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs, but in doing so, discriminates against sound environmental practices’ (OECD). In the case studies, this can be observed in e.g. Malta, where agricultural water use is specifically exempted from abstraction taxes which are considered as an EHS. There are no estimates as to how much this cost to the state but at the national level effort is needed to ensure better cost recovery for water usage.<sup>x</sup> The current water pricing does not reflect reality. It is heavily subsidised, as substantial part of the supply is coming from groundwater for free, and because WSC obtains 60% of its water from RO, costing unofficially EUR 0.60/m<sup>3</sup>. This amounts to six times as much as the cost of extracted ground water. The Water Framework Directive will force Malta to design such a price of water which reflects the real costs behind it.<sup>xi</sup> Malta also excise tax exemptions for petroleum products for: electric power generation; maritime commercial, industrial or fishing vessels; inshore fishing; fuel used by aircraft operating for reward in international traffic. The biomass content in biodiesel is also exempt.

## **5.6. Environmental awareness**

A high level of awareness of green economy and its potential benefits among both policy-makers and the business community as well as among the public is instrumental for a transition towards green economy. A high level of environmental awareness can be translated into political expectations and eventually into strategies, policies, financing and actions. Awareness is also strengthened through consistent involvement of stakeholders into creating a future vision. Additionally, awareness is also enabling informed consumer choices for environmentally-friendly goods and services. E.g through choosing public transport or alternative transportation to renovate the building and improve insulation; in agriculture –



the preference to purchase organic products, etc. Awareness is achieved through long and persistent efforts on behalf of the regional and municipal administration which control a number of communication tools.

### ***Low awareness – often quoted barrier to green economic development***

A major obstacle to a green economy development in Southern Estonia is a low awareness level of the population. In case of forestry, the private forest owners often have low awareness of the environmental issues and lack professional knowledge and experience in forest management. Besides that, the regional stakeholders stress the need to increase the overall awareness level of the population. This might help the consumers to make responsible choices (sustainable construction materials, organic food etc.) which are not only based on the price (as it is today). The regional actors also highlighted the importance of education in greening of the sectors (including retraining and further training of personnel).

There are however several good examples of awareness raising activities in the case study regions that have helped to promote a green economy transition.

### ***Jämtland – Setting regional goals for awareness raising in agriculture***

The development of the agricultural landscape is strongly influenced by the structural change in agriculture and its decreased profitability. Positive development has however been taking place concerning awareness of the importance of agriculture and food production among the general public. Small trends amongst young generation concerning interest in agriculture as self-supporting life style have however arisen and some small-scale potential may be possible to arise to develop the sector

Following the national level strategy of Sweden's environmental objectives, Jämtland has produced a strategy for working towards the objectives in the region. In the regional strategy, Jämtland has included own goals and measures that are not included in the national environmental objectives and among them there are objectives related to awareness raising. Related to agriculture, Jämtland aims at increasing the awareness of farmers and consumers on resource management and circulation and sets also its own goals related to developing the foodstuff production in the region and increasing the share of products with eco-certification to 20%. The more specific regional goals also include objectives such as that 75% of the elected local politicians responsible for agriculture or environmental issues shall have participated in education concerning sustainability and resource management in agriculture. Information on whether the goals related to raising awareness have been reached has not been found.

### ***Ruhr area - Investing in knowledge-oriented economy to make possible the a from heavy industry***

The Ruhr area has changed remarkably during the latest decades. The area has gradually lost its heavy industrial base and many of the former industrial sites were taken out of industrial use and developed into brownfields. These economic structural changes enforced the necessity of the Ruhr area to depart from the "brown" industries towards an information

and knowledge-oriented economy with future-oriented professions (Metropole Ruhr, 2013 c). One of the most successful policies for this was already implemented in the 1960s, the establishment of higher educational facilities which were almost not present in the area before. Nowadays, there are five universities, 13 universities of Applied Sciences and several other research institutions and technology centres which converted the Ruhr area into one of Europe's densest education and research region (Mercator Stiftung, 2010). To communicate the structural and image change of the Ruhr in Germany and in Europe there was an intensive discourse since the mid-1990s to establish a new and modern label for the region. Since, the region was called "Ruhr Metropolis" to communicate an urban and regional science-oriented understanding of metropolitan regions (Ruhrgebiet Regionalkunde, 2013d).

#### ***Ruhr – advisory platform supporting knowledge transform and consultations***

The North Rhine Westphalia Ministry for climate protection has established an information and advisory platform, the dialogue platform Energiedialog.NRW, to support the stakeholders of knowledge transfer and consultations may occur in cases of conflict and to help as a neutral advisor in the early phase of planning process (<http://www.energiedialog.nrw.de/energiedialog-nrw-stellt-sich-vor/>).

#### ***Increased awareness of tourists increases the market for eco tourism***

In Southern Estonia, it has been noted that tourists' awareness of the negative impact of tourism on the environment is constantly growing, as well as the willingness to pay more for environmentally friendly products and services. Recognizing this fact, more and more of tourism business in the region are today offering organic and locally produced food and other products, which give them a considerable competitive advantage.

## **6. Lessons learned**

There are a number of key factors and conditions that transcend the differences and that are instrumental for a transition to a green economy. These drivers are related to the territorial assets, the governance system, the policy framework in place, the financial support mechanisms as well as the environmental awareness of decision makers and the public in the case study regions. The key drivers are summarised below together with a number lessons learnt which have been distilled by analysing the results of the ten GRECO case studies:

### **6.1. Territorial assets**

- Natural assets, such as rich renewable energy resources can drive a green economy transition. The importance of natural assets depends on the sector of the green economy. A transition to a greener energy sector through a growth in renewable energy is closely related to the availability of sun and wind, for example.
- The strategic and institutional framework is of utmost importance for regions capacity to transform the natural endowments into tangible green economy performance. For instance, a country/region like Malta which has the best possible conditions in this respect has not been able to develop the sector because of other reasons such as lack of political drive, lack of appropriate legislation and financing but also because of lack of space and resistance of the populations towards the construction of wind turbines. On the other hand, regions like Burgenland and Navarra have fully profited from the abundance of wind and through a strong leadership and thanks to the excellent legislation and institutional framework they have become leaders in RES generation.
- Territorial assets is however not a precondition for green economy as lack of natural resources can be a driving force for resource efficiency and innovation as the need for sustainable management of scarce natural assets is critical. Such is the case of water in Malta where extreme water shortage has been the trigger for innovative measures for greening the sector through technologies for water savings, appropriate pricing, fighting the illegal boreholes. Malta's water scarcity has been (and could be further) turned into an advantage by gaining an upper hand in water sector innovation capacity.

### **6.2. Governance and institutions**

- The quality of governance and institutions are instrumental for the transition to the green economy. The strength of the regional vision and conviction are translated into bigger or smaller results.

- All governance levels are important and it is important to ensure an uninterrupted chain of policy making and policy implementation from the EU level to the municipal level.
- The significance of regions is set in law but there is always a margin of maneuver no matter how limited the regional responsibilities are. Even the coordinating role can be performed with great impact. Political stability is important for ensuring the continuity of strategic choices such as adopted targets, financial commitments for greening the economy or simply having an overall mindset which is propitious to greening the economy. This is very much a challenge at the end of a political cycle. It is impossible to single out an institution which is the only answer to the green economy institutional challenge. What is important is to ensure a diversity of regional, national and municipal institutions, improve the synergies and interactions between them and the quality of human resources. Institutional forms include public organisations, industrial and innovation clusters, foundations and associations as well as private and public-private institutions. The governance structure can enable or disable regional efforts on greening. The case studies have shown examples on where current governance structure limits initiative and high-quality green development activities of municipalities and regions. Governance models should be promoted that gives stronger decision-making power to the regional and local level that would help to rationalize their work.
- Ambition matters: Efforts and initiatives of a relatively small group of people at local or regional level can make a great contribution to green economy development. Such achievement can be seen by the regional energy agency in Southern Estonia and the Regional Development Agency in South Transdanubia which have attained big achievements in popularizing green building and energy issues. In addition, the experience of the regional agencies showed that providing practical advice and hands-on knowledge directly to the enterprises and public authorities is an effective measure in promoting greener solutions. Thus, a great starting point of green economy development is to ensure that there are the people with the right skillsets and experience in place.
- Building networks and creating a “connected” institutional framework facilitates green economy transition. Improving the links among different regional actors can facilitate the achievement of common goals and promote knowledge transfer. It also provide support in, considering possible co-operations among different municipalities/enterprises that might result in a higher level of cost/energy efficiency due to the exploitation of synergies of economies of scale; fostering the cooperation among the local enterprises. By such actions, successful projects can be implemented, which are based on a clear vision, ensuring the local utilization of local research results, contributing to the improvement of the local economy, and raising the level of employment. Strengthen knowledge transfer mechanisms from universities and research centres to businesses in order to facilitate the transition.

- Cluster networks can increase their competitive advantage of SMEs by forming cooperative alliance. Clusters can enable the SMEs to unite their comparative advantages and overcome the relative disadvantage of the individual firms.

### **6.3. Policy framework**

- The policy framework has fundamental importance for green economy development as demonstrated in the case studies. One possible strategy for regions is to align themselves with national, EU compliant targets and ensure compliance. This is the case with less ambitious regions or late starters such as Malta and its RES targets. However, these targets might not be sufficient for ambitious regions such as Navarra, Zealand or Puglia which have already reached far in their RES development and therefore needs more ambitious goals.
- Stronger legislative provision and stricter regulations need to be introduced. More stringent EU policy could facilitate greening the economy at local level as at the moment local policy-makers may consider some EU policies mainly as guidelines that are optional to follow.
- Detailed policy targets at regional level facilitate measuring progress and evaluation of the distance to policy targets. The municipalities could develop their work towards greening the economy by setting clearer goals and especially by developing green public procurement and thereby setting an example and providing the framework for greening the economy locally.
- Strategies built on the participation of a wide group of regional stakeholders – public, private, non-governmental sector and academia is more likely to be successful. The approach guarantees a shared understanding both of the benefits and challenges of greening the whole economy or a specific sector. The Maltese Tourism Plan is an example of a shared sustainable vision for one particular sector.
- Long-term vision and stability of the policy framework is crucial. More long-term vision and approach in EU policy would facilitate decision making at local level as well as green investments of both public authorities, entrepreneurs and citizens. More stable policy could encourage developing green economy as it would provide a greater certainty to the decision makers on future development in policy and support. More stable policy would also facilitate continuation in working towards green economy. Long-term commitment at the national level to pursuing green economy objectives provides security to invest in a green economy and the costly activities that might bring profit in the future.
- Regions and municipalities have a powerful leverage in supporting green economy development through spatial planning, permitting and enforcement of legislation which is the case for Zealand. For example, integrated urban and transport planning making it easier to use bicycle-public transport combinations and park-and-ride

commuting are examples of local planning efforts that are key to the transformation. Green public procurement is another efficient policy which can be implemented on regional level. E.g. in Jämtland, green public procurement in the transport sector has been one main reason for the success of greening the transport sector.

- A diversity of policy instruments is important for stimulating the green economy. The policy targets need to be aligned with financial or fiscal support, GPP, etc. Different types of policies should avoid conflicting messages.

#### **6.4. Financial support**

- Financial support is a fundamental driver of green growth which is shown in virtually all the case studies analysed. A lack of financial support is seen among the limiting factors for green economy development many case study regions. The regional actors stress the importance of financial mechanisms and emphasize the need for increased public support.
- The role of the EU structural funds is significant, and in many less developed regions it is the single most important driver for green economy (through RES targets and concentration of funding), through support to energy efficiency renovation of building and through its sustainable transport priorities..’ The budgets of local and regional governments are often limited which does not allow them to undertake extra initiatives in the field of green economy. Thus, the greening of the sectors is coherent with the availability of EU funding and relies on the policy development taking place at the EU level.
- Financial concerns and profitability are among the main drivers for introducing any green initiative at the state, regional and individual level. Rising energy prices, for example, are encouraging the application of energy saving measures in buildings.
- The capacity of regional is crucial to enable Structural Funds to be increasingly channelled into greening the different economic sectors. The challenges are to mainstream the environment and climate change in all planned investments.

#### **6.5. Environmental awareness**

- A high level of environmental awareness can be translated into political expectations and eventually into strategies, policies, financing and actions. It can also act as a pull factor for environmentally-friendly goods and services. Awareness is important for greening the economic sectors through consumption choices.
- Awareness of local policy- and decision-makers concerning greening the economy and the opportunities it can provide for the municipal economy facilitates local level anchoring and implementation the EU and national level goals concerning green economy.

- An informed population can to a larger extent make responsible choices (sustainable construction materials, organic food etc.) which are not only based on the price (as it is today). It is also important provide education to companies in greening of the sectors (including retraining and further training of personnel).
- Awareness is also strengthened through consistent involvement of stakeholders into creating a future vision.
- It is important to increase awareness on green economy and the potential for growth among all stakeholders, decision-makers on all territorial levels, business and SME, citizens, etc. to make possible a true transition towards green economy.
- Improve the regional data collection and monitoring systems, A well-developed and coordinated monitoring system would facilitate targeting the policy efforts in the most efficient manner as well as make it possible to raise awareness of the current development amongst the general public and public authorities.
- Raise awareness on the availability of European funding programmes for green economy development in order for the regional intuitions to better utilise the available financing mechanisms. The awareness raising needs to be coupled with capacity building for project application processes.
- It is important to strengthen knowledge transfer mechanisms from universities and research centres to businesses in order to facilitate the transition.

## 7. Cases Study Reports

**Volume 4.2. Austria – Burgenland**, by Spiekermann & Wegener - Urban and Regional Research (S&W) (Germany)

**Volume 4.3. Denmark - Sjælland**, by Roskilde University (Denmark)

Volume 4.4. Estonia - Lõuna-Eesti, by Nordregio (Sweden)

**Volume 4.5. Germany - Ruhr Area**, by Spiekermann & Wegener - Urban and Regional Research (S&W) (Germany)

**Volume 4.6. Hungary - South Transdanubia (Dél-Dunántúl)**, by Regional Environmental Center - REC (Hungary):

**Volume 4.7. Italy - Puglia**, by TECNALIA Research & Innovation (Spain)

**Volume 4.8. Malta**, by Regional Environmental Center - REC (Hungary):

**Volume 4.9. Spain - Navarra**, by TECNALIA Research & Innovation (Spain)

**Volume 4.10. Sweden – Jämtland**, by Nordregio (Sweden)

**Volume 4.11. United Kingdom - Cornwall and Isles of Scilly**, by Roskilde University (Denmark)

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<sup>i</sup> Eurostat (2012). Taxation Trends in the European Union, [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_structures/2012/country/ie.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2012/country/ie.pdf)

<sup>ii</sup> Eurostat (2012). Total environmental tax revenues as a share of total revenues from taxes and social contributions, %, <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00064&plu gin>, accessed on 3 December 2012

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<sup>iv</sup> Interview with Luciano Mule'Stagna, Institute for Sustainable Energy, 13 March 2013

<sup>v</sup> Presentation by Godwin Sant, Energy Policy of Malta and Strategies for fulfillment, 6 October 2012

<sup>vi</sup> Interview with Luciano Mule'Stagna, Institute for Sustainable Energy, 13 March 2013

<sup>vii</sup> Malta's National Renewable Energy Action Plan 2010, [http://ec.europa.eu/energy/renewables/action\\_plan\\_en.htm](http://ec.europa.eu/energy/renewables/action_plan_en.htm), accessed on 28 June 2013  
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<http://finance.gov.mt/image.aspx?site=MF&ref=NRP%20with%20Consultation%20Document>

<sup>viii</sup> Eco-Innovation Observatory (2011). Eco-innovation in Malta: EIO Country profiles 2010, [http://www.eco-innovation.eu/media/EIO\\_Country\\_Brief\\_2010\\_Malta.pdf](http://www.eco-innovation.eu/media/EIO_Country_Brief_2010_Malta.pdf), accessed on 5 December 2012

<sup>ix</sup> Malta Enterprise (May 2011). Incentive Guidelines: Energy Efficiency Measures for the Hospitality Sector. Soft loans for hotels; guesthouses; hostels; farmhouses; snack bars and restaurants, [http://www.maltaenterprise.com/sites/default/files/support\\_measures/energy\\_efficiency\\_-\\_hospitality\\_guidelines.pdf](http://www.maltaenterprise.com/sites/default/files/support_measures/energy_efficiency_-_hospitality_guidelines.pdf), accessed on 21 February 2013

<sup>x</sup> European Commission, 2012, The role of water pricing and water allocation in agriculture in delivering sustainable water use in Europe, Final Report  
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<sup>xi</sup> Idem







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