# GREECO

# Territorial Potentials for a Greener Economy

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This basic report exists only in an electronic version.

# List of authors

**Regional Environmental Center - REC (Hungary)**

Ruslan Zhechkov

Ellen Baltzar

**With contributions from the following partners:**

**Tecnalia Research and Innovation (Spain)**

Carlos Tapia

Iratxe Peña

Idoia Goñi

**Nordregio (Sweden)**

Rasmus Ole Rasmussen

Ryan Weber

Gunnar Lindberg

Patrick Galera

Anna Berlina

Liisa Pirjo

Berit C. Kaae - University of Copenhagen (Denmark)

**Spiekermann & Wegener, Urban and Regional Research -S&W (Germany)**

Klaus Spiekermann

Mike Dokter

**Roskilde University (Denmark)**

Anders Christian Hansen

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# List of abbreviations

ARTI - Regional Agency for Technology and Innovation, Puglia
ATO - Optimal areas for the management of waste
BAT – Best Available Techniques
BAU – Business as Usual
BMW – Biodegradable Municipal Waste
BOD5 – Biochemical Oxygen Demand
CAP – Common Agricultural Policy
CFP – Common Fisheries Policy
CLLD – Community-Led Local Development
C&D – Construction and Demolition Waste
EAFRD – European Agricultural Fund for Rural Development
Eco-AP – Eco-Innovation Action Plan
EDEN – European Destination of Excellence
EE – Energy Efficiency
EEA – European Environmental Agency
EHS – Environmental Harmful Subsidies
ELV – Emission Limit Value
EMAS – Environmental Management and Audit Scheme
EMFF – European Maritime and Fisheries Fund
ESCO – Energy Savings Company
ESDP – European Spatial Development Perspective
ESF – European Social Fund
ETAP – Environmental Technologies Action PLan
ETS – Emissions Trading Scheme
ETQL - European Tourism Label for Quality Systems
FAO – Food and Agriculture Organisation
GDP – Gross Domestic Product
GHG – Greenhouse Gas

GSTC - for Global Sustainable Tourism Criteria
GVA – Gross Value Added
JESSICA - Joint European Support for Sustainable Investment in City Areas
IED – Industrial Emissions Directive
IPP – Integrated Product Policy
IPPC – Integrated Pollution Prevention and Control
LAU – Local Administrative Unit
MBI – Market-based Instruments
MS – Member State
MSW – Municipal Solid Waste
NEEAP - National Energy Efficiency Action Plans
NGO – Non-governmental Organisation
OECD – Organisation for Economic Cooperation and Development
PEAR - Regional Environmental Energy Plan, Puglia
PPP – Public Private Partnership
PV - Photovoltaic
RBD – River Basin District
RBMP – River Basin Management Plan
REACH - Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
RE(S) – Renewable Energy (Source)
RIS – Regional Innovation Strategy
RIS3 – Regional Innovation Strategy for Smart Specialisation
R&D&I – Research, Development and Innovations
SET Plan – Strategic Energy Technology Plan
SME – Small and Medium Enterprise
TA 2020 – Territorial Agenda 2020
TAC – Total Allowable Catch
TEN-T – Trans-European Transport Networks
TO – Thematic Objective
TSA – Tourism Sattelite Account
UAA – Utilised Agricultural Area
UNEP – United Nations Environmental Programme
UNIDO – United Nations Industrial Development Organisation
UWWTD – Urban Waste Water Treatment Directive
WEEE – Waste Electrical and Electronic Equipment
WFD – Water Framework Directive

# I. Executive summary: The road ahead; setting the agenda for a greener economy in Europe

## 1. Objectives

This overall policy analysis report aims at providing a synthesis of all policy-related work within GREECO and on the territorial dimension of the green economy in relation to policy development in Europe on European, national and regional level. In addition, it further validates the findings from previous policy-related analyses within the project. The report is above all based on results from previous tasks within GREECO and especially the analyses of the green economy sectors and the case studies. Key policy messages have been developed seeking to develop a policy pathway which enables a transition towards a greener economy taking into account local, regional and national governance levels. Because of the complexity of the green economy the policy messages are organised in a user-friendly way targeting sectoral policy-makers, different types of territories (national scale, regions and cities) as well as rural territories.

## 2. Territorial implication of a policy

European territories differ in their pre-conditions for a transition towards a green economy and differ also in the magnitude of possible effects, i.e. the green economy will be clearly differentiated in space because regions are inherently diverse. Subsequently, such policies are needed that can most efficiently transition these characteristics into qualities of green regional economies.

## 3. Choice of analysed policies

GREECO has focused on policies with a direct impact on green activities in general and on any of the economic sectors under analysis in particular. In order to limit the analysis to a manageable number of policies, priority has been given to policies with the 'biggest green economy implications on a territorial level'. Types of analysed policies include: EU Roadmaps; Thematic strategies; communications; green papers; white papers; EU directives; EU regulations; voluntary instruments with EU coverage; national legislation transposing the directives; national strategies; regional strategies; regional development programmes; structural and cohesion policy; taxes, levies, fees, charges; Subsidies, like tax credits or subsidised prices, including Environmentally Harmful Subsidies (EHS).

## 4. Methodology

Review of regions according to **'target and distance-to-target**' of a policy is available only for a number of policy instruments which contain important targets and where a correlation could be made between the distance to target and existing or future green economy activities.

The **territorial dimension of a policy** has been assessed in terms of the link between the policy and the NUTS 2 and NUTS 3 governance level. More concretely, the territorial dimension of a policy is stronger when regions and municipalities have stronger legal tools (leverages) for the implementation of the policy including

financing. There are also policies that are geographical by definition. The territorial dimension of a policy could be weak, average and strong.

GREECO has used the available literature to provide insights on the **effectiveness of a policy** for the major policies related to green economy. The effectiveness has been assessed based on the impact in the period after the launching of the policy.

Policies have also been assessed according to their **transformative character**. Policies are designed to achieve a certain objective which is associated with bigger or smaller transformation of individual and/or company behaviour. Policies have been categorised as reactive, incremental, radical and transformative.

The analysis of the **green economy implications of a policy** has been informed by the combination between the analysis of the distance to target, the policy effectiveness analysis and the analysis of the territorial dimension of a given policy. The green economy implication of a policy can also be measured through estimation of the following impacts: **Environmental (**reduced impact on environment compared to Business as Usual (BAU)); **Economic** (Nominal GVA or % of regional GDP); **Social** (Green job potential – expected or realised); **Territorial** (increased territorial cohesion – expected or realised).

# 5. Main EU territorial policies

In the Fifth Cohesion report the EC underlined that territorial cohesion reinforces the importance of sustainable development, 'functional geographies' and territorial analysis. Territorial cohesion suggests the need to pay attention to territorial impacts, territorial differences and performance when designing and implementing sector policies. Territorial approaches should be applied to optimise spatial impacts and the territorial interplay of policies. Synergies between them should be supported by their coordination at each territorial level.

## 5.1. Europe 2020 Strategy

Europe 2020 acts as a bridging policy concept at the interface of the economy (the current crisis), the environment (climate change, energy scarcity and ecosystem degradation) and society (the need for cohesion). As such, Europe 2020 calls for "smart, sustainable (green) and inclusive growth" to simultaneously propel a long-term and sustainable vision of development for the EU. The Sustainable Growth priority aims at promoting a more resource efficient, greener and competitive economy. The strategy reflects that economic growth is crucial to economic recovery and to an increase of Europe's competitiveness however it stresses that growth needs to be sustainable.

The EC has the ambition to mainstream green economy objectives into all policy areas including the Common Agricultural Policy, the Common Fisheries Policy, Cohesion Policy, energy infrastructure and trans-European networks, measures addressing the world markets for commodities and raw materials, water policies, climate change adaptation policies, etc.

The Europe 2020 Strategy needs to be implemented at different governmental levels, from local to European, to become effective. The contribution by regions and cities requires a placed-based integrated policy and a strong commitment and coordinated actions from policy makers at different geographical levels.

As demonstrated in the ESPON ATLAS project, in terms of implementation of the Europe 20202 Strategy there is a main division between the Centre-North and the rest of Europe in relation to the Europe 2020 indicators. Furthermore, cluster analysis of the mapped indicators shows that in addition to the European Centre-North most regions in Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovenia, Slovakia, Cyprus and Malta are on a promising move towards Europe 2020 objectives. While most regions of Portugal, Spain, Southern Italy, Romania, Bulgaria and Greece are rather challenged in terms of contributing or meeting the Europe 2020 objectives.

## 5.2. The EU Territorial Agenda 2020

The territorial agenda of the EU builds upon the European Spatial Development Perspective (ESDP) aiming at developing common objectives for the future development of the European territory that was adopted in 1999. The ESDP was followed up by the Territorial Agenda of the European Union (2007), which for the first time declared territorial cohesion as the most important aspect of territorial policies. The Territorial Agenda of the European Union 2020 (TA2020) from 2011 is closely linked to the Europe 2020 strategy stating that the objectives of smart, sustainable, and inclusive growth can only be achieved by taking into account the diverse territorial dimensions across Europe and each region's particular development opportunities.

The priorities of the Territorial Agenda 2020 include:

- ***Promoting polycentric and balanced territorial development*** as an important precondition of territorial cohesion and a strong factor in territorial competitiveness;
- ***Encouraging integrated development in cities, rural and specific regions*** to foster synergies and better exploit local territorial assets;
- ***Territorial integration in cross-border and transnational functional regions*** as a key factor in global competition facilitating better utilisation of development potentials and the protection of the natural environment;
- ***Ensuring global competitiveness of the regions based on strong local economies*** as a key factor in global competition preventing the drain of human capital and reducing vulnerability to external development shocks;
- ***Improving territorial connectivity for individuals, communities and enterprises*** as an important precondition of territorial cohesion (e.g. services of general interest); a strong factor for territorial competitiveness and an essential condition for sustainable development.
- ***Managing and connecting ecological, landscape and cultural values of regions***, including joint risk management as an essential condition for long term sustainable development.

The main green economy implication in the Territorial Agenda 2020 comes from the strong link to the Europe 2020 strategy and its priority of sustainable growth.

## 5.3. Structural and Cohesion Policy

The EU Structural and Cohesion policy has a very strong green economy implication as it is closely aligned with the Europe 2020 Strategy targets. It is designed with the

intention to deliver smart, sustainable and inclusive growth. Priority will be given to investments in low-carbon economy in all sectors, climate change adaptation and risk prevention and management, environmental protection, resource efficiency, sustainable transport and adequate network infrastructures.

The sustainable character of Cohesion policy investments is underlined in Article 8 (Regulation No 1303/2013 on ERDF, ESF, the Cohesion Fund, the EAFRD and EMFF) on sustainable development guaranteeing the mainstreaming of environment, resource efficiency, climate change mitigation and adaptation, disaster resilience and risk prevention and management are promoted in the preparation and implementation of Partnership Agreements and programmes.

The territorial implication of the Cohesion policy is incorporated by design as 'in order to strengthen its economic, social and territorial cohesion, the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, particular rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps.

**Key policy messages for Cohesion policy and Green economy**

- ✓ **MS should secure a robust mainstreaming of energy, environment and climate change into the Partnership Agreements with the Operational Programmes for 2014-2020 Programming period**. They should guarantee the same level of mainstreaming when it comes to concrete financing of projects including the most energy intensive ones. Countries should use the tool has been developed to measure the carbon impact of investments
- ✓ **Selected themes from the EU cohesion policy which are important from a green growth perspective include:** Territorial assets/territorial capital (e.g. cultural landscapes, natural and cultural heritage, trust etc.); Critical green mass: i.e. green networks, ecological corridors and preservation of areas of high ecological value; Balanced territorial development encompassing different types of territories; Quality of urban nodes, dynamism and competitiveness of cities, sustainability of their structures, their integrated development; Functional areas including urban rural co-operation, integration of border areas, coastal zones; Access to knowledge and diffusion of innovation. Regional clusters of competition and innovation; Greening of transport; Developing energy resources; Sustainability of tourism development.
- ✓ **Countries should find the right balance between security of implementation and innovativeness of projects.**
- ✓ **Integrated territorial investments and sustainable urban investments are a great opportunity for addressing and greening more than one sector of the economy in an integrated manner.**
- ✓ **Areas of intervention where Cohesion Policy will have the greatest effect include:** traditionally handled by local and regional institutions (existing competency or familiarity); where important territorial assets/capacities dictate potential; where regions make investments in public procurement; where new forms of local and regional collaboration between regions and municipalities can have the most impact; where new forms of local and regional collaboration between public authorities and private actors can have the biggest impact.

# 6. Sectoral policies. Recommendations to sectoral stakeholders

Besides the policies for territorial cohesion there are many different strands of policy at national and EU level that can have an impact on both green growth and territories. Within the sector analyses performed under GREECO, the specific policy measures within some of these economic strands was further analysed and the implications from a territorial perspective was made more explicit.

## 6.1. Bioeconomy

The EU bioeconomy policy framework can be divided between agricultural and fishery policies. The Common Agricultural Policy (CAP) is the major policy affecting the environmental concerns in EU agriculture for the past 60 years. Today, the CAP absorbs around 41% of the EU budget. Without it farmers would have no incentive to go beyond the measures that safeguard production and follow market signals. Relevant CAP priorities include: biodiversity and the preservation and development of 'natural' farming and forestry systems, and traditional agricultural landscapes; water management and use; and dealing with climate change. In the program period 2014-2020 this is manifested through priority 4 with an emphasis on ecosystem management (biodiversity), water management and soil quality; and priority 5 which emphasis reduced emissions of GHGs, improving energy efficiency, as well as producing biomass for other aspects of the bio-based economy. The emphasis on the development of the bioeconomy is also strengthened through the priority 1 of the second pillar; Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas.

The new legal framework, as laid down in the Council Regulation No 834/2007 on organic production and labelling of organic products is a valuable tool for greening the agricultural sector and promoting environmentally friendly production of high-quality products.

Four important policy steps have shaped the present EU fisheries, and on-going changes to the policy are important factors in shaping the characteristics of fisheries in the upcoming years; namely the UN Law of the Sea, Fisheries capacity and Total Allowable Catches (TAC) and the revision of the Common Fisheries Policy (CFP) in 2002 and 2013.

There is a strong territorial implication of the CAP as it is targeting mainly rural areas in Europe. The policy contributes to improving the competitiveness of agriculture and forestry; the environment and the countryside; and the quality of life and the management of economic activity in rural areas. The territorial implication of the CFP 2013 revision relates to the diversity and delegation of responsibility. The diversity is related to both large scale and local scale fisheries.

Support for organic farming is thought to have a large transformative power on the agricultural sector. Also the conservation oriented support is believed to influence the

way farmers perceive their role as stewards of the countryside and providers of public goods.

At the core of many of the failings of the CFP so far is a lack of trust between stakeholders and regulators combined with a dominant focus on short term versus long term policies. The transformative character of the TAC has been slow.

**Key policy messages for agricultural sector policy makers**

- ✓ **Reduce support that stimulates production with a too intensive use of fertilizers, pesticides or machinery.** *[Mainly national level of implementation. Relevant exclusively for rural areas]*
- ✓ **Make better use of investment support schemes and stimulate innovation** [*All governance levels*]
- ✓ **Support local and regional actors on many** levels in the multi-level stakeholder arena. [*Mainly local and regional governance levels*]
- ✓ **Further develop the urban-rural relations** within the greening of agriculture. [*All governance levels*]
- ✓ **Develop and sharpen the agri-environmental measures** to support less intensive production and provision of public goods. [*Mainly national level*]
- ✓ **Develop the labour force and skills** in the agricultural sector and improve the capacity for restructuring the agricultural sector. [*All governance levels but mainly regional and national levels*]
- ✓ **Improve consumer awareness and stimulate demand side changes**; higher share of consumption of organic products and less consumption of meat and dairy products. [*All governance levels*]
- ✓ **Reduce support that stimulates over-production of agricultural products**, or stimulates production with a too intensive use of fertilizers, pesticides or machinery. [*All governance levels*]

**Key policy messages for the fisheries sector policy makers**

- ✓ **The management of the stock through quota setting and distribution should make use of precautionary means** both in order to maintain existing stocks, but furthermore to ensure the "recovering" of stocks which have been depleted in the past. [*Mainly national level*]
- ✓ **A well-managed fishery is needed** in order to ensure a future for the industry and all those who depend on the fisheries for their livelihoods. [*Mainly national level*]
- ✓ **Investments are needed in order to ensure full recovery of the stocks and the biodiversity**. [*Mainly on regional and local levels*]
- ✓ **The symbiosis between small scale fisheries and coastal communities could be promoted** further ensuring the viability of both. [*Mainly local level*]
- ✓ **Consumers need to be partners in the process of generating sustainable fisheries and aquaculture.** [*Mainly national level*]

## 6.2. Energy

While EU energy policy includes different specific themes (often sector based) and two headline policies that characterise the green economy dimensions of the sector: Energy 2020 and the 'Climate and energy package,' from 2008. They are accompanied by the 20-20-20 targets; namely 20% of final energy consumption from RES, 20% reduction on GHG emissions and 20% reduction in primary energy

consumption by 2020. All four spheres of the green economy would benefit under a condition where a 20% improvement in energy efficiency takes place.

Positive implications of implementing the Energy 2020 strategy and the Energy Roadmap 2050 in terms of territory relate to the need for increased local and regional planning and management of energy services. This includes the local, place-based nature of RES potentials, the need for local planning in the implementation of community/district energy systems, the twinning of energy efficiency and renewable energy with urban development projects, improvements to the energy efficiency of Europe's building stock and to development of urban mobility systems that promote public transit, cycling and walking.

The Energy Roadmap 2050 does not necessarily reflect a paradigm shift but its targets of an almost a complete reduction (80-95%) of $CO_2$ emissions suggests a major shift in the way we think about environmental issues (not just socially, but also in terms of the ways in which the energy market acknowledges environmental protection). The 'Energy 2020: A Strategy for competitive, sustainable and secure energy' has a 'radical transformative' character. If its targets are achieved there will undoubtedly be a radically transformed market for green energy technologies, which will undoubtedly drive even further research and eco-innovation.

**Key policy messages for the energy sector policy makers**

- ✓ **Energy policy is inherently cross-sectoral** and must be further promoted as such. *[Mainly national level of implementation. Possibilities for mainstreaming exist on regional and local level as well]*
- ✓ **Energy poverty is a reality that must be acknowledged**. *[Mainly national level of implementation]*
- ✓ **RES development is a long-term, incremental process.** *[Mainly national level of implementation. Regional and local level have an impact through permitting, land use, etc. Relevant for rural areas as well]*
- ✓ **Europe has a global competitive advantage in RES and EE technologies, which needs continued support to be maintained.** *[Mainly national level of implementation]*
- ✓ **RES development requires new ways of thinking about energy production and consumption.** [*All governance levels. Relevant for rural areas as well*]
- ✓ **There is still an untapped potential for Industrial Symbiosis**. [*Mainly regional and local level. Relevant for rural areas as well*]

Measures could be developed simultaneously and only the strengthening of institutions precedes the others. There is no need for a staged approach but continued and sustained efforts. In a period of crisis the EU Cohesion policy funds play a very important role in financing energy efficiency and RES. Attention should be paid to not crowding out private funding in the area. The greening of the energy sector has a very wide impact on energy dependency and it is also a major factor for increasing the competitiveness of the economy as a whole.

## 6.3. Manufacturing

Manufacturing is fundamental in the transition towards a new growth model for the EU. Environmental policy is a driver for green manufacturing and innovation in the

production sector, especially when targets and emission limit values are strict. When it comes to greening manufacturing, there are two EU policy strands which set the frame: the environmental policy strand, aiming at protecting environment and the industrial policy strand aiming at increasing its competitiveness and making it more sustainable. The Industrial emissions directive (IED), successor of the IPPC directive, aims to "prevent, reduce and as far as possible eliminate pollution arising from industrial activities" and contributes directly towards greening manufacture. The Emission Trading System (ETS) is a cornerstone in the transition to a low carbon economy. The latest revision of the EU Eco-Management and Audit Scheme (EMAS) was initiated to fully exploit the scheme's potential for improving the resource efficiency of production processes.

The IED takes into account the need to consider specific local characteristics. In some MS it is regional authorities who grant permits. The EC communication 'An Integrated Industrial Policy for the Globalisation Era' acknowledges regional diversity and the need for place-based approaches to increase Europe's competitiveness.

When it comes to the Industrial Performance Scoreboard, MS have engaged in reforms to boost their competitiveness in five key areas: manufacturing productivity; export performance; innovation and sustainability; business environment and infrastructure; and finance and investment. In such a context, three main groups emerged: the group of 'consistent performers', who perform well in all dimensions; the group of 'uneven performers' who perform well in some and badly in others; the 'catching-up' group who still lag behind in most indicators.

The IED has a mainly incremental approach because of the fact that ELVs are linked to incremental improvement in technologies (through the BATs) and since it favours pollution prevention approaches and only foresees emission control when prevention is not possible. The ETS has rather a transformative approach and aims at cutting emissions with a broad and flexible approach.

**Key policy messages for the manufacturing sector policy makers**

- ✓ **Improve access to knowledge** for manufacturing industries on BAT and the potential impact of adopting such technologies on their finances in terms of resources saved. [All governance levels]
- ✓ **Raise public awareness** of sustainable consumption through information campaigns, marketing mechanisms (including control on green commercial claims), etc. [*All governance levels*]
- ✓ **Foster industrial symbiosis approaches**, inter alia, by spatial and area planning that in most cases fall directly within regional and local area of direct policy control and/or intervention. [*Mainly regional and local level*]
- ✓ **Lower financial burdens** through Market Based Instruments (MBIs), promoting benchmarking, tax reforms and subsidies targeting increased resource efficiency in manufacturing. [*Mainly national level*]
- ✓ **Strengthen RDI investments** to fill knowledge gaps in particular, further support to address the limits of BAT in strategic sectors within specific regions or territories. [*Mainly national level but regional and local funds can also be activated*]
- ✓ **Introduce eco-efficiency indicators for better monitoring**. [*Mainly national level of implementation*]

- ✓ **Increase policy support to the transition through exploiting the full potential of EU legislation.** [*Mainly national level of implementation*]

Measures could be developed simultaneously but compliance is the first task for lagging countries and regions. Efforts associated with knowledge and information sharing as well as with awareness raising take place on a sustained continuous basis. It is worth noting that in a period of crisis companies and policy makers might have the tendency to regard environmental policy as a constraint rather than as a driver for change.

## 6.4. Green Research and Innovation

Eco-innovation will be a driving force of the transition towards a greener economy and is deeply rooted in the EU 2020 strategy. It will enable traditional industries and companies to shift behaviour and pursue a sustainable strategy. The policy framework in the green research and innovation sector is primarily consisting of the Environmental Technologies Action Plan (ETAP) and the Eco-Innovation Action Plan (Eco-AP) in 2011. The Eco-AP foresees the need to work also with regions and milestones are set for each territorial level. Its potential for enhancing regional cohesion is significant. The geographical proximity matters in business performance and in the creation of innovation. At the regional level, geographical concentrations of linked industries, like clusters, are of increasing importance.

The Eco-AP is characterized as Transformative-Radical and seeks to overcome barriers to eco-innovation by using a wide variety of tools where the environmental policy and legislation is the key driver of eco-innovation.

**Key policy messages for the Green Research and Innovation sector policy makers**

- ✓ **Better pricing and a shift to environmental taxation** as prices do not reflect the real value of natural resources. [*Mainly national level of implementation*];
- ✓ **Overcome knowledge barriers through:** improving the access to qualified personnel and technological capabilities within the enterprise; improve access to external information and knowledge; improve collaboration with research institutes and universities; [*All governance levels*]
- ✓ Support eco-innovation with **tax incentives** and tailor-made financial tools and **funding mechanisms** to bridge the gap between eco-innovation and the market. [*All governance levels*]
- ✓ **Create a comprehensive policy mix to support eco-innovation** preferable to individual one-off support measures. [*All governance levels*]
- ✓ **Adjust eco-innovation support measures to the receptor** by identifying and providing differentiated messages for users, developers for in-house use and strategic developers for commercialisation. [*All governance levels*]
- ✓ **Stress the role of regions and cities in fostering eco-innovation** as regions have a great oversight of both local assets and environmental challenges. [*Mainly regional and local governance levels*]

## 6.5. Green building and construction sector

The building sector is widely understood as crucial for the MS to collectively reduce their GHG emissions to meet their GHG emission reduction commitments up to 2020.EU policy

supporting green building and construction includes thematic strategies, directives, financial incentives, regional funding and awareness campaigns. Firstly, the Directive on the energy performance of buildings discusses the need for public sector initiatives to lead by example for the market penetration of green building. The 2050 Roadmap for moving to a low carbon economy and the Energy Efficiency Plan 2011 also discuss the importance of using EU funds to invest in green building. The Buildings Directive has a strong positive impact on green economy as not only do policies directly supporting green building projects create green jobs right away, but they also generate up to a 500% return on investment because of the domestic eco-innovation, and local labour force.

The Directive on the energy performance of buildings has a strong territorial implication. Local and regional authorities are critical for the successful implementation of green building and should be consulted and involved in the development of programmes to provide information, training and awareness-raising. The National Energy Efficiency Action Plans of MS, which are mandated by the EU's 2011 Energy Efficiency Plan, should include measures supporting local and regional public authorities to become early adopters of energy efficiency improvements in building and their built environments.

The EU Buildings Directive is characterized as weak in effectiveness because we are still far from achieving the 20/20/20 goals and the overall energy consumption patterns in buildings are still much higher than they were in 2000. The EU Buildings Directive, like the all other EU policies supporting green building can be characterized as incremental because they lack a binding legislation governing the overall energy performance of new buildings.

**Key policy messages for the green building and construction sector policy makers**

- ✓ **Public authorities must lead by example** and this is especially crucial where green building and construction industries are not yet well-developed. [*All governance levels*]
- ✓ **Less-developed EU regions should use the opportunities presented by Cohesion Funds for investing in public and residential green buildings.**. [*All governance levels*]
- ✓ **Public support for greening buildings is a low risk investment** and must be promoted based on the supply of local green jobs it provides right away. [*All governance levels*]
- ✓ **EU policy schemes will be crucial in determining long term greenness of the building sector** and placing increased 'green guidelines' on the use of EU funds will have a significant impact on green building, particularly in those countries where green economies of scale are less developed. [*EU level and national level*]
- ✓ **More policy coordination is necessary** such as more information and monitored regarding resource efficiency in buildings, as well as stricter guidelines enforcing that ex-ante and ex-post evaluations of policy programmes are always a part of funded initiatives. [*Multi-level governance and coordination*]
- ✓ **Improve awareness and accountability through monitoring through collecting** good regional data to hold regions accountable to greening their build stock. [*Mainly national level*]

- ✓ **Proactive urban land use policy in urban regions is essential for maximising green building impacts through** emphasizing reduced land and using innovative information such as integrated land use. [*Mainly local governance level*]
- ✓ **Policy development at all levels must reflect the importance of engaging local actors**. [*All governance levels*]
- ✓ **Innovative funding models targeting the retrofit of existing buildings will be required to get EU regions 'over the top'** particularly via the formation of Energy Savings Companies (ESCO or ESCo). [*All governance levels and the private sector*]

Measures could be developed simultaneously and require a persistent long-term effort. Compliance with existing legislation is fundamental. Efforts on awareness-raising should be constantly aiming at triggering behavioural changes and standards in the sector. Member States should not miss the opportunity to programme wide and far-reaching investments into greener buildings through the Cohesion Policy.

## 6.6. Water

The EU water policy is a key driver for green economic growth in the sector. It has developed from purely addressing human and economy's water needs to a more holistic policy embracing the environmental impacts of water use and the needs of the ecosystem, which is a central aspect of the e.g. the Water Framework Directive (WFD). The WFD objective of efficient use of water resources is a backbone in a green economy. The wide approach to water management taken by the WFD has impacts many economic sectors as water is involved (and is a main factor) in a huge range of human activities. Investment into drinking water and waste water infrastructure, as promoted by the WFD, the Urban Waste Water Directive and the Ground Water directive, strongly supports green economy development as it provides an opportunity to create new jobs, especially in lagging MS.

The territorial dimension of policy and governance within the WFD is strong. The territorial approach of the WFD, to plan alongside geographical boarders rather than according to administrative, is novel in the EU policy framework. As such, regional and local institutions play a crucial role in constructing place-based policy approaches and ensuring that they are effectively implemented.

The water sector can largely be considered as an incremental policy and oriented towards pollution prevention, resource saving and risk reduction. However there are some radical aspects. The WFD applies a novel approach to water management and attempts to transform the way water is used and managed within Europe, using a "source-to-sink thinking".

**Key policy messages for the water sector policy makers**

- ✓ **Overall water efficiency needs to be significantly improved through reduction of water consumption and improvement of technology.** Water efficiency should be a criteria in Cohesion policy projects and other government investment. [*All governance levels*]

- ✓ **Investments into ecosystems are central** as they provide life-supporting services to Europe's economy and society which have an economic value counted in billions of EUR. [*All governance levels*]
- ✓ **Investment in water supply and waste water infrastructure can accelerate a transition to a green economy**. The potential for growth and jobs creation are significant in regions in the new EU MS. [*Mainly local and regional level*]
- ✓ **Better water pricing is needed** which would generate incentives to improve the efficiency of the use of water resources. [*Mainly local and regional level depending on the methodology for price setting. The methodology is usually defined on a national level.*]
- ✓ **Implementation of BATs has large potential of water savings** as Huge water quantities are wasted through leakage and inefficient consumption practices. [*Mainly local level*]
- ✓ **Innovation in the water management and technology sector needs to be further supported** as it would improve water performance and "greening" across sectors. [*Incentives are given on national level. Implementation is on local level.*]
- ✓ **Take advantage of waste water as a resource** for nutrients and heat energy.[*Mainly local and regional level*]

Measures could be developed simultaneously and there is no need for a staged approach. In a period of financial crisis in many of the EU countries Cohesion policy funds are and will remain one of the few certain sources of financing for water infrastructure. Significant work is needed on changing a mindset whereas water is considered as a quasi-free resource.

## 6.7. Waste

The EU waste policies developed in the past 20-30 years have changed the way waste is handled dramatically. Therefore the overall impact of waste-related policy on the green economy is significant – for example an entire economic sector of recycling has been created. The Waste Framework Directive and the Directive on Waste provide the overall frame and definitions for the EC approach to waste. They emphasize the importance of the waste hierarchy, recovery, recycling and use of BAT. There are several directives which address different waste treatment operations, others deal with major waste streams.

Municipalities and regions play an important role in waste management. Although EU directives do not specify this explicitly, in most cases individual municipalities are responsible for waste management. However, often regions are a suitable geographical level for coordinating the efforts of individual municipalities and setting up systems for integrated waste management.

The main target related to MSW comes from the Waste Landfill Directive – by 2016 biodegradable municipal waste (BMW) to landfill must be reduced to 35% of the waste quantity (1995 is a reference year). An assessment by an EEA study in Estonia, Germany, Finland, Italy, Hungary and Flanders (Belgium) has come with the conclusion that the Waste Landfill Directive has been very effective.

Waste policies did have a very transformative approach when they were introduced as they opened up a new attitude towards waste as having value that could be recovered. In the 2000s, EU policies also played a transformative role in the New

MS. Once these systems are in place and if the countries/regions adopt a compliance-only mode the improvements are only incremental. A new set of policies needs to be adopted for a new, radical transformation of waste management.

**Key policy messages for the waste sector policy makers**

- ✓ **Greening of the waste sector should be associated first and foremost with waste prevention** which should be stimulated through an array of policies including economic instruments, better design requirements, improvement of Integrated Product Policy and awareness raising**.** [*Mainly through national level policies*]
- ✓ **Product design plays a crucial role in the amount and type of waste generated** and t**here is a need to stimulate better design** including the cradle-to-cradle concept. [*Mainly through national level policies. Implementation is on the level of individual company.*]
- ✓ **Greening of the waste sector should also be closely associated with industrial ecology** where waste of one industry becomes raw material for another one. [*Mainly on regional and local level*]
- ✓ **Development of waste treatment infrastructure is a matter of policy drivers and available funding.** [*Mainly on regional and local level*]
- ✓ **The level of implementation of policy depends on the size and quality of the administration** and new policies should be accompanies by capacity building.[*Mainly on local level*]
- ✓ **Adoption of new policies should be accompanied with carefully designed economic instruments** which should send the right signals to the economic operators and stimulate waste treatment methods high on the waste hierarchy.[*All governance levels*]
- ✓ **Leading countries are in the position to go much beyond the EU binding targets for recycling** which they have anyway already reached. Their efforts should be on more transformative, system-wide and behavioural approaches leading the way for the rest. [*Mainly on national level*]
- ✓ **Cohesion policy 2014-2020 is an excellent opportunity for waste management interventions:** on one hand waste infrastructure will be completed but more importantly – good waste management could be integrated in interventions related to SMEs and innovation. [*All governance levels*]

## 6.8. Tourism

Recently, the very limited EU policy framework in tourism has started to support the greening of this sector. In 2010 the EC released a communication on tourism - **'Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe"**. The document emphasizes that sustainability is a main factor for the competitiveness of the European tourist sector. The Commission is working towards a "**European Tourism Label for Quality Systems**" in the form of a voluntary "umbrella" label which assesses and recognises tourism quality systems. Internationally recognized eco-certification programmes, such as **Green Globe** provide a framework for tourism operators to green their business by measures such as developing clean energy and waste management practices, using locally grown organic produce and by marketing their services as "green" and incorporating into the growing eco-tourism market.

In relation to green planning and management of tourism, land use planning is a key issue for maintaining a balance between tourism development and maintaining the qualities, ecological functions, and experiential attractiveness of the resource base.

**Key policy messages for the tourism sector policy makers**

- ✓ **The integration of sustainability in tourism policies and initiatives at the national, regional and local levels should be strengthened**. [*All governance levels*]
- ✓ **Including tourism destination planning and sustainable development strategies in the public planning systems at all levels** would increase the focus on sustainability and can contribute to better land-use planning and community integration. [*All governance levels*]
- ✓ **Government investment in public goods and services** is needed for the tourism sector to increase their environmental performance. [*National governance level*]
- ✓ **Increase consumer awareness and changing demand** play a central role for achieving a greener tourism sector in Europe. [*All governance levels*]
- ✓ **Increase industry awareness and involvement in greening of tourism sector** by **r**eaching out to a wide variety of small tourism businesses. [*All governance levels*]
- ✓ **Local networks and initiatives to support the transition of tourism SMEs by supplying information, education, and concrete practical tools for engaging in greening initiatives**. They would make the transition more likely if combined with schemes for financing the greening. [*Local and regional level*]
- ✓ **Better use of investment support schemes in tourism**. [*All governance levels*]
- ✓ **The indicators for sustainable tourism and the environmental criteria of tourism need to be further developed and implemented.** [*National governance level*]
- ✓ **Introduce reporting of a key environmental data through the Tourism Satellite Account (TSA) system**. [*All governance levels*]
- ✓ **Harmonise environmental labelling programs and include sustainability criteria in the "European Tourism Label for Quality Systems" (ETQL).** [*EU level*]
- ✓ **Coordination of greening of tourism with greening initiatives in other sectors.** Much of the greening initiatives are driven by each of the sectors and policy affecting the greening of tourism will in fact originate from policies primarily related to other sectors. Coordination of the greening initiatives across sectors is highly relevant for the tourism sector. [*All governance levels*]

## 6.9. Transport

The White Paper on Transport is a roadmap for the transport system in Europe. It contains the vision of the EU for a competitive and sustainable transport system, includes ambitious targets and defines the policy agenda. One of the goals of European transport policy is to use resources more efficiently. In practice, transport has to use less and cleaner energy, better exploit a modern infrastructure and reduce its negative impact on the environment and key natural assets like water, land and ecosystems.

Greening of transport seems to be in a dilemma between economic and environmental objectives. Any policy packages that would reduce the overall growth of mobility and the external effects of transport would potentially have an impact on the economic performance of the sector. It cannot properly be assessed whether a greening of the transport sector would also have net economic benefits or whether this would lead to economic problems of the vehicle industry and the transport operation sector.

The implications for territorial development of the White Paper on transport are widespread. If the planned transformation of the transport system will be realised, all territories will be affected by the different actions. There are also several elements of the roadmap for which the implementation is targeted to the national and/or regional level.

Some of the elements of the White Paper on transport are incremental such as many of the technological options and emission regulations foreseen, others are more radical such as the ban of conventionally fuelled cars from cities. However, as the White Paper does not change fundamentally the way transport is driven by demand, it cannot be seen as transformative, i.e. it does not aim at a complete paradigm shift.

**Key policy messages for the transport sector policy makers**

- ✓ **There is a strong need, but also a large potential to reduce energy use and GHG emission stemming from the transport sector.** [*EU* level]
- ✓ **A framework for developing a green transport sector in Europe should be based on the green growth strategy for the transport sector proposed by UNEP (2011).** [*All governance levels*]
- ✓ **Promotion of access instead of mobility** means to avoid or reduce trips through the integration of land use and transport planning to promote more compact or mass transit corridor cities and regions and by enabling more localised production and consumption patterns. [*All governance levels*]
- ✓ **Shift to less harmful modes of transport** includes in particular public and non-motorised transport for passenger travel and rail and water transport for freight. This should be enabled by shifts of financing priorities and coupled with strong economic incentives. [*All governance levels*]
- ✓ **Improvement of vehicles towards lower carbon intensity and pollution**. The development and widely application of green transport technology fostered by appropriate regulations for fuel and vehicles is seen as a priority to reduce air pollution and GHG gas emissions. [*National level*]
- ✓ **Broadly accepted long term vision for green transport necessary** that has to be translated in concrete policy action. [*EU and national levels*]
- ✓ **Less demand driven but green priority oriented infrastructure policy is necessary.** [*All governance levels*]
- ✓ **Transport policy together with integrated spatial planning has to address also the "avoid" part of a green transport strategy**. Important tasks in this are with integrated spatial planning at all levels of planning, from the European via the national and regional levels to the very local. [*All governance levels with a strong role of the regions*]

# 7. Multi-level governance for green economy development

Green economy policy efforts are implemented through multi-level governance. While the EU sets the overall directions and targets (through roadmaps, directives and regulations), the MS translate those to the national context. The regional role in policy definition and implementation is twofold – firstly regions are able to respond to national legislation/targets; secondly, it is through self-driven, proactive regional policies and vision. Strong territorial implication of policies means strong regional governance aspects and regional governments and municipalities often bear the responsibility for the implementation. Such policies also take into account the need to consider specific local characteristics for a successful implementation. This comes as recognition that regional diversity and the need for place-based approaches to increase Europe's competitiveness are central.

## 7.1. The role of the national level governance

Europe's member states need to transpose the EU directives into their national policy framework. The strategic vision and development directions of a country are formulated on a national level and the key strategic priorities are included in national level programmes which guide regional and local strategies. National level is responsible for coordinating the developing of strategic vision for the future of a specific sector of the economy. In the case studies GREECO identified a number of strong national policies steering the transition towards green economy such as: Germany - Energy Concept 2050 and Renewable Energy Sources Act (EEG); UK Cornwall's engaging business in the transition to a green economy; Denmark Zealand's rejection of nuclear power as a driver for radical transformation;

**Policy messages to national authorities**

- ✓ **National governments could embark on very transformative policy paths** similar to the German Energy Concept 2050 and to the Danish Energy Economy. All mechanisms and systems of the national government from research to funding and governance should be geared towards this transformative goal.
- ✓ **Well-thought national feed-in tariffs are one of the best policy approaches to stimulating development of the RES.** The level of the feed-in tariffs should be sufficient to serve as a business driver and incentive but not too big.
- ✓ The central national level has a **strong responsibility for stimulating technological development** across the sectors such as RES and energy efficiency but also water technologies.
- ✓ The initial momentum of **efforts related to access to knowledge and public awareness** should also be given by the national level then taken up by lower governance levels.
- ✓ Adopting **Market-based Instruments (MBIs) in different sectors** is within the remit of the national governments.
- ✓ Defining of a **smart approach towards R&D&I** is mainly driven by national governance especially in relation to programming the Structural and Cohesion Funds.

## 7.2. Regions as driving forces in the green economy

Regional governments are important in the green economy as they have a significant role in 'translating' EU policy objectives into concrete measure on the ground. Regions also have a great oversight of both local assets (e.g. renewable resources, clusters, know-how, etc.) and environmental challenges. They also provide a suitable governance level by reaching economies of scale.

GREECO identified a number of ways the role of the regions is manifested in the transition towards the green economy such as: governance overlaps with geography in waste and water management; cooperation between municipalities as a key to success; Green Cornwall Strategy: high ambition, measurable results, green infrastructure; Navarra (Spain) - strong and ambitious regional policies through wide consultation; Puglia (Italy) - Regional planning for RES and innovation: opportunity for an integrated approach and network contracts for innovation and development; Southern Estonia - Regional Strategy for Sustainable Tourism and relying on regional assets for green growth; Jämtland - coordination for higher efficiency and monitoring and data management – essential for efficiency; South Transdanubia (Hungary) – Regional Energy Strategy: the region as a bridge between the state and local authorities; Zealand (Denmark) – regions as coordinators and catalysts; physical planning and permitting are a key for RES development; public-private partnership role;

**Policy messages to regional policy-makers**

- ✓ **Regions have a particularly important role when the administrative governance overlaps with the geographical boundaries**. Regional cooperation and coordination is an important factor for greening a number of sectors including enforcement of legislation.
- ✓ **Regions should make use of the EU LEADER Community Initiative** and in such a way promote the participation of local actors. This is particularly suitable for agriculture and tourism.
- ✓ **Regional authorities are critical for the successful implementation of green building and in particular of the Directive on the Energy Performance of Buildings.** Municipal authorities are key actors because they are generally responsible for land use planning and development.
- ✓ Regions in countries with strong regional autonomy are key to **formulating higher regional ambitions** by setting up higher targets and by providing additional incentives. .
- ✓ **Regions have an important leverage in the field of innovation through the Regional Research and Innovation Strategies for Smart Specialisation (RIS3)** and are in the position to promote partnerships, networking and establish regional technology and innovation institutions.
- ✓ **Regions can easily rely on cultural and natural identity** and strengthen it additionally. This is very relevant for the tourism sector where certain regions can specialise in eco-tourism.
- ✓ **The regional councils have a strong responsibility in coordinating work and improving general efficiency of operation**. They are also in the

position to develop a monitoring system concerning the green economy and improve data management in general.

- ✓ **Regions' have an important role in development of RES through physical planning and permitting.**
- ✓ **Regions are extremely important when it comes to networking and coordination**. They could facilitate the coordination between universities, public and private research centres and other institutions in different areas such as technology development and transfer and innovation.
- ✓ **The PPPs are important instrument in the hands of regions.** Companies could participate in international innovation projects and raise the level of awareness on new opportunities for innovation.

## 7.3. Cities as major actors in the transition to green economy

Urban areas are growing in importance and most of Europe's GDP is produced in cities. People live, work, commute and consume in cities. Re-construction and construction of buildings are most intense in urban centers and a big part of tourism takes place in cities. Cities are also home to environmental problems such as air pollution, waste generation, water consumption and sewerage dismissal, noise, etc. In order to transition to green economy there is a need to capitalize on the role of cities and urban centers and to realize the opportunities that cities have in realizing this process.

**The local government are important for setting the conditions for the transition to the green economy**: legal system (in favour of environmental protection and social justice); institutional mandate (all sectoral and decentralized institutions tackle environment and a cross-cutting issue); public concern (public demands to address environmental degradation and to care for local environmental assets are significant); public and media advocacy (mass media and NGOs are able to raise difficult policy issues in relation to the green economy); leadership (local leaders are prepared to listen, to change policy and to be accountable); communication and transparency (there are different ways to access and share information about environment-economy links); Cooperation (there are shared initiatives and processes allowing actors to collaborate).

GREECO identified a number of possibilities for cities playing an important role in the transition towards a green economy: UK – local authorities' role increases after reform; Zealand (DK) – Covenant of Mayors and other voluntary agreements as instruments for increasing the ambition; Municipalities as enablers of industrial ecology: networks of companies for transformative waste management; Jämtland (Sweden) – crucial role of cities in green transport; greening the city administration; innovative local funding tools; green public procurement.

#### Policy messages to city policy makers

- ✓ **Communication:** Local government can use communication to stimulate community buy-in into the green economy transformation of societies.

- ✓ **Active involvement**: More and more often community groups can take up the initiative to deliver green economy actions.
- ✓ **Financial support:** Local government can help to set the context for new inclusive green businesses.
- ✓ **Cities have a number of instruments for influencing the greening of the economy through spatial planning and permitting.** Physical planning could make an impact on RES development, buildings and transport.
- ✓ ***Cities have a big leverage for change of paradigm in waste management.***
- ✓ **Local services to facilitate access SMEs to innovation knowledge.** SMEs will also depend even more on knowledge flows and institutional support available within their region.
- ✓ **Behavioural changes**. The transition to green economy will also depend on how fast firms and people learn to appreciate their added value. These changes and learning processes happen at the local level.
- ✓ **Cities can become a part of international networks** such as the Covenant of Mayors and national green economy commitment arrangements.

## 7.3. Particularities of rural territories in the transition to green economy

According to Eurostat, in 2012 around 23% of the EU population lived in rural areas and 35% lived in intermediate regions. Agriculture, tourism and fisheries are the key sectors in rural areas which remain of extreme importance to the European Union. Therefore, the greening of these sectors has to take place in rural areas.

GREECO has identified a number of ways the transition towards green economy in rural areas can take place such as: Southern Estonia: LEADER – bottom-up initiative for sustainable tourism; Community involvement and information; Vision for tourism in Gozo, Malta; Waste management in sparsely populated, rural regions; Treated sewage effluent as a cheaper source of water in Malta, Waste water recycling Moriso project; Potential for biomass production in Southern Transdanubia, Hungary and role of food industry; role of economic instruments; Jämtland - greening the transport sector as a key to greening the economy of a rural region; Lack of qualified labour as a major stumbling block to greening the bioeconomy sector.

**Policy messages to rural territories**

- ✓ **Rural regions should benefit fully from the European Agricultural Fund for Rural Development (EAFRD) by streamline environment and climate change into as many thematic objectives (TOs) as possible.** This is to be done through the Partnership Agreements and the Operational Programmes.
- ✓ **Rural territories will benefit significantly if the territorial approach of Cohesion policy is taken up through the Community-led Local Development (CLLD)** (designated as LEADER). Regional networks should be shifted more towards greening of agriculture from a supply/demand perspective at the same time strengthening rural and regional development agendas.

- ✓ **The Water Framework Directive (WFD) objective of efficient use of water resources is particularly relevant for agriculture** which is one of the biggest water users in the economy.
- ✓ **MSt should take advantage of waste water as a resource** and reuse of waste water and grey water is important for stimulating growth in water scarce regions.
- ✓ **MS should reduce agricultural production with intensive use of fertilisers and pesticides as well as an excess agricultural production.** These measures should be integrated in the reformed CAP but also within all relevant national and regional policies.
- ✓ **There is a big potential in modernising agricultural buildings and diversifying use of energy.** Support for this could come from the Cohesion Policy but also through other funds.
- ✓ **Develop the labour force and skills in the agricultural sector** and improve the capacity for restructuring the agricultural sector.
- ✓ **Further research is needed on the spatial implications of green energy production** in order to ensure that policy development across different sectors, and for different strategic planning goals, are mutually reinforcing.
- ✓ **There is a need to make tourists more sensitive towards the eco-labels for greener agricultural tourism**.
- ✓ **The food industry is a major opportunity for rural areas to create additional jobs outside of agriculture and forestry.** Local and regional policies should stimulate processing of agricultural products within the region.

# 8. Policy recommendations by regional typologies

## 8.1. Regions with pre-transition economies

Regions with pre-transition economies are defined according to their green economy performance. These regions could be additionally divided in regions with high green economy development potentials or those with average and low potentials. Potentials are dictated by environmental resources and a good mix of drivers and enabling conditions. In GREECO we have attempted to tailor **policy recommendations to all types of pre-transition regions**

- ✓ **Capitalise on a full, high-quality transposition of EU legislation** and integrate it in regional strategic frameworks and legal systems where relevant. Strengthening enforcement is primordial.
- ✓ **Increase the level of awareness** on the opportunities presented by a transition to the green economy.
- ✓ **Get the right level of prices** is of extreme importance for defining individual and business behaviour. Removing Environmental Harmful Subsidies in such regions would free up precious financial resources.
- ✓ **Consolidate and strengthen environmental institutions** is key for setting intelligent strategic vision, competent guidance and framing a new mindset through appropriate communication.
- ✓ **Regions without strong territorial assets should concentrate on these green economy sectors which are not directly dependent on natural endowments** and other drivers and enabling conditions that cannot be acted upon. Water and waste management, construction, manufacturing and eco-innovation are such sectors. The importance of strong institutions and human resource capacity is even higher.
- ✓ **For regions without strong territorial assets it is also possible to turn a**

**disadvantageous position into an advantage.** A severe shortage of one resource (e.g. water) can spur research and innovation and lead to development of new technologies which subsequently creates business opportunities.

### 8.2. Policy recommendations to all types regions with transition economies

The regions with transition economies have gone a long way greening their economies. They have capitalised on a good combination between natural assets and other drivers and enabling conditions.

- ✓ **Keep up the policy and performance ambitions that have made them green economy or sectoral leaders** and introduce even more innovative policies and in this way inform overall EU policy and processes.
- ✓ **Target-setting for transition regions should be more ambitious** and should not be constrained by easily achievable EU targets.
- ✓ **Involvement of regional stakeholders which needs to be further developed.** There is a possibility for even newer cooperation and synergies between sectors – public, private, non-governmental, academia – which capitalise on different expertise, knowledge and energies. Strengthening the links between research and business is important for of eco-innovations.
- ✓ **Institutional quality has been a factor of success for transition regions and it should not be compromised.** Enforcement of environmental legislation is closely related to the quality of institutions and rule of law.
- ✓ **The relatively high level of awareness in transition regions should be consolidated and utilised for behavioural break-throughs both on individual and business levels.** This might lead to radically different ways of physical planning and new perceptions of production and consumption leading to a much better resource use but also a smarter consumption. GPP has a huge potential leverage effect for the development of new products and services.
- ✓ **Successful regions need to secure political continuity for green, low-carbon development** which is translated in stable strategic framework, stable financial support and prices and maintaining or strengthening of relevant institutions.
- ✓ EU Structural funds are usually not significant in size in similar successful regions however, their role remains crucial because of their innovative character. **EU funds could be used for funding demonstration projects with high potential for replication.**

# II. Introduction

## 1. Objectives of the overall policy analysis report

This overall policy analysis report aims at providing a synthesis of all policy-related work within GREECO and on the territorial dimension of the green economy in relation to policy development in Europe on European, national and regional level.

The policy analysis report is above all based on the analyses of the green economy sectors and the case studies within GREECO. Moreover, a review of academic literature and stakeholder consultations also feed into the report. Based on the policy analysis, key policy messages have been developed that seek to develop a policy pathway which enables a transition towards a greener economy taking into account local, regional, national and European governance levels. Bacause of the complexity of the green economy the policy messages are organised in a user-friendly way targeting sectoral policy-makers (as per GREECO sectors), different types of territories (country scale, regions and municipalities) as well as an urban-rural divide.

## 1.1. Main questions

The main questions underpinning the overall policy analysis are the following:

- What role do the main EU territorial (e.g. EU cohesion policy) and sectoral policies play for the development of green economy within territories and which of them are the most useful?
- What role do explicit territorial policies (both national and regional/municipal) play in order to support the development of a greener economy within territories and which of them are the most useful?
- Are there specific sets of policies which are suitable for specific regional typologies?
- What innovative instruments are there and which are especially effective in boosting green growth in territories?

## 1.2. Green economy implication of a policy

Policies are of profound importance to the process of transiting to a green economy but they carry different potentials for change. **By the green economy implication of a policy GREECO understands the intersection of the policy's territorial relevance, the policy's current impact in terms of green economic development and the potential for green economic development in the future triggered by the policy.** The policy analysis has included characterization of policy instruments and tools and identification of green economy policy implications of main EU policies in the GREECO sectors. These green economy policy implications define the potential of main EU policies as well as national and regional policies to contribute to green economy development on territorial level. Within GREECO the definition of green economy is aligned with the main international definitions such as:

**Box 1 Green Economy definition**

*Green Economy comprises socio-economic growth that takes place vis-à-vis a more sustainable use of natural resources, preservation of environmental capital and fewer environmental risks* (OECD 2011a; OECD 2011b; UNEP 2011b; UNEP 2012). *Analogously, GREECO understands the green economy as one that results in enhanced regional competitiveness and cohesion over the long term, while not*

*exposing territories to significant environmental risks and degradation. This is foreseen to take place through the implementation of an economic approach that combines and enhances place-based and mutually supportive socio-economic and environmental policy.*

### 1.3. Territorial implication of a policy

According to OECD (2001b), public policies aimed at promoting territorial development and limiting territorial disparities should first and foremost help areas to develop their territorial capital. These principles constitute the very foundations of the new territorial development policy, which is primarily aimed at finding more effective means of strengthening economic dynamism in the present-day economy. Accordingly, achieving balanced and sustainable development requires preparing territories to support economic and social activities at the same time; geographical (re)distribution of infrastructure and public services across the territory; and management of natural and cultural resources embedded in each part of the territory.

The territorial analysis aspects of policy focus on why territory matters from a policy perspective when considering green growth, and which EU policies have already been developed that both include a territorial dimension and are important within the pursuit of a greener economy in Europe and its regions.

In this framework, GREECO acknowledges that:

- territorial factors condition the economic development potential based on green(er) activities, and;
- promotion of green economy based on the development of green(er) activities will have territorial effects, especially in a context of interplay between different levels of multi-level governance.

European territories differ in their pre-conditions for a transition towards a green economy and differ also in the magnitude of possible effects, i.e. the green economy will be clearly differentiated in space because regions are inherently diverse. **Subsequently, such policies are needed that can most efficiently transition these characteristics into qualities of green regional economies.**

Accordingly, GREECO elaborates on the most relevant territorial aspects that can be drawn from the abovementioned green economy definition in order to identify specific regional potentials of pursuing green growth through environmentally friendly or environmentally enhancing goods and services and related jobs.

## 2. Criteria for selection of the analysed policies

The GREECO project has focused on policies with a direct impact on green activities in general and on any of the economic sectors[1] under analysis in particular. National and regional policies have mainly been subject for analysis through the case studies.

In order to limit the analysis to a manageable number of policies, focus has been given to those policies that have the 'biggest green economy implications on a territorial level' (as defined earlier). (e.g. Waste Landfill Directive has a much bigger green economy implication than the Batteries Directive because of its overall impact. It also has a stronger territorial implication).

**Table 1 Policy hierarchy and short description**

| European Policies | Short description |
|---|---|
| ***EU Roadmaps*** | EU roadmaps (EC communications) take a prominent place and although they do not have a binding legal character they give the style of the coming EU policy (i.e. A Roadmap for moving to a competitive low carbon economy in 2050) |
| ***Thematic strategies*** | EC thematic strategies are not legally binding but have a strongly recommended character (i.e. Thematic Strategy on Prevention and Recycling of Waste, 2005) |
| ***Other important communications*** | Policies that are not as prominent as the roadmaps but because of the process of their drafting (through wide inter-institutional consultation) they reflect the thinking and the legislative intentions within the European Commission. |
| ***Green papers (only important ones)*** | Green papers are widely discussed sectoral reports prepared by the EC that aims to stimulate discussion and consultation. |
| ***White papers*** | Documents containing proposals for Community action in a specific area. They usually follow a Green Paper. |
| ***EU Directives*** | Binding texts which have to be transposed by each individual MS taking into consideration the specific legal set-up |
| ***EU regulations*** | Binding texts which are directly applicable and which do not require transposition |
| ***Voluntary instruments with EU coverage*** | Instruments which allow companies to commit to certain levels of performance voluntarily (i.e. EMAS), rating or labelling programmes as well. |
| **National and Regional Policies** | **Short description** |
| ***National legislation transposing the directives*** | Either in the form of specific laws or parts of already existing laws. |
| ***National strategies*** | Spelling out the national vision of sectoral development. |
| ***Regional strategies*** | Translating the national vision of sectoral development to regional circumstances. |
| ***Regional development*** | RDPs are the blueprint for the development of the region and additionally they reflect (at least in theory) the views of local |

[1] The green economy sectors analysed in the project are: Bioeconomy, Building and construction, Eco-innovation, Energy, Manufacture, Transport, Tourism, Water and Waste.

| | |
|---|---|
| ***programmes*** | stakeholders. RDPs lead to subsequent financing for priority sectors and other incentive measures. |
| **Financial Mechanisms and Economic instrument** | **Short description** |
| ***Structural and cohesion policy*** | Main EU financial instrument |
| ***Incentives**, like grant programmes* | EU, national or regional financial incentives for green economy activities. |
| ***Taxes, levies, fees, charges**, including price-based environmental taxation.* | Economic instruments aiming to modify the response of economic actors. |
| *Subsidies, like tax credits or subsidised prices, including **Environmentally Harmful Subsidies** (EHS)* | EHS are a 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.'* These can be fossil fuel subsidies, transport subsidies. (OECD). |

# 3. Methodology for policy analysis

The policy analysis undertaken within GREECO includes the following aspects:

## 3.1. Target and distance to target

Review of regions according to 'target and distance-to-target of a policy through comparison of EU legislative targets and regional indicators. This type of analysis is available only for a number of policy instruments which contain important targets and where a correlation could be made between the distance to target and existing or future green economy activities. Even if it is practically not possible to carry out this analysis policy by policy within GREECO, in principle this is a way to estimate specific sectoral performance, distance to compliance, etc.

**Table 2 Characterisation of policies according to distance-to-target**

| Characterisation factor | Group 1 (regions) | Group 2 | Group 3 |
|---|---|---|---|
| Target and distance to target – in these analytical step regions will be split according to distance to target for those sectoral policies selected for analysis. | FAR from target | AVERAGE distance to target | CLOSE to target |
| | Less than 30% of target | 30%-60% of target | >60% of target |

## 3.2. Territorial dimension

The territorial dimension has been assessed in terms of the link between the policy and the NUTS 2 and NUTS 3 governance level. More concretely, the territorial

dimension of a policy is stronger when regions and municipalities have stronger legal tools (leverages) for the implementation of the policy including financing. There are also policies that are geographical by definition.

**Table 3 Characterisation of policies according to their territorial dimension and territorial implication**

| Characterisation factor | Group 1 (policy) | Group 2 | Group 3 |
|---|---|---|---|
| Territorial dimension of policy.<br>In this analytical approach policies will be split in groups depending on the territorial dimension of the policy | WEAK | AVERAGE | STRONG |
| | Lack of strategic, institutional, financing territorial relevance and policy's benefits have weak territorial correlation | Average role of regions for implementation of the policy in terms of strategic and institutional framework and average correlation between regional efforts and benefits of policy | Regions play an absolutely key role for the implementation of the policy and the policy benefits are manifested on a regional level |

## 3.3. Policy effectiveness

An assessment of the policy effectiveness of the most relevant policies driving or hindering green growth is a part of GREECO's policy analysis. The effectiveness of an environmental policy instrument in fostering green innovation can be assessed on the basis of a few criteria or properties. These include (i) dynamic efficiency, i.e. whether it creates incentives for searching continuously for cheaper abatement options, (ii) stability, i.e. whether the instrument creates a clear, credible and fairly predictable signal about the long-term policy objectives, (iii) flexibility, i.e. to what extent the instrument gives leeway as regards the technology used to achieve environmental objectives, and (iv) incidence, i.e. to what extent the instrument is directly targeted at the externality it seeks to address, as opposed to an input or output used as a proxy. The effectiveness can also be assessed based on the measured impact in the period after the launching of the policy (Johnstone and Hascic, 2009). GREECO has not performed policy effectiveness analysis per se but has relied on other papers and analysis or on stakeholder feedback.

## 3.4. Evaluation of policies according to their transformative approach towards social and economic transition

Policies are designed to achieve a certain objective which is associated with bigger or smaller transformation of individual and/or company behaviour. This analysis is complementary to the policy effectiveness analysis and provides an additional insight into policy dynamics and impacts. Naturally, any policy mix is (and should be) a combination of different policies (between reactive and transformative). However, where possible we have tried to provide insights on the necessary balance between reactive and incremental policies on one hand and radical and transformative policies on the other hand.

**Table 4: Characterisation of policies according to their transformative characteristics**

| Type of innovation | Description |
|---|---|
| **Reactive** | Improvements in compliance, minor resource optimisation (i.e. tightening water quality requirements); |
| **Incremental** | Some alignment with growth, pollution prevention, addresses issues of cost, risk and carbon footprint, resource conservation |
| **Radical** | Focuses policies and efforts on shifting traditional ways of thinking about social and environmental issues and on changing institutions and frameworks. May create better alternatives but does not change fundamentally the way the industries function. (e.g. electric car, solutions for the poor) |
| **Transformative** | Aims at complete paradigm shift, new markets, energy positive buildings, mobility solutions. |

Source: EC, DG Regional and Urban Policy, 2012, Connecting Smart and Sustainable Growth through Smart Specialisation

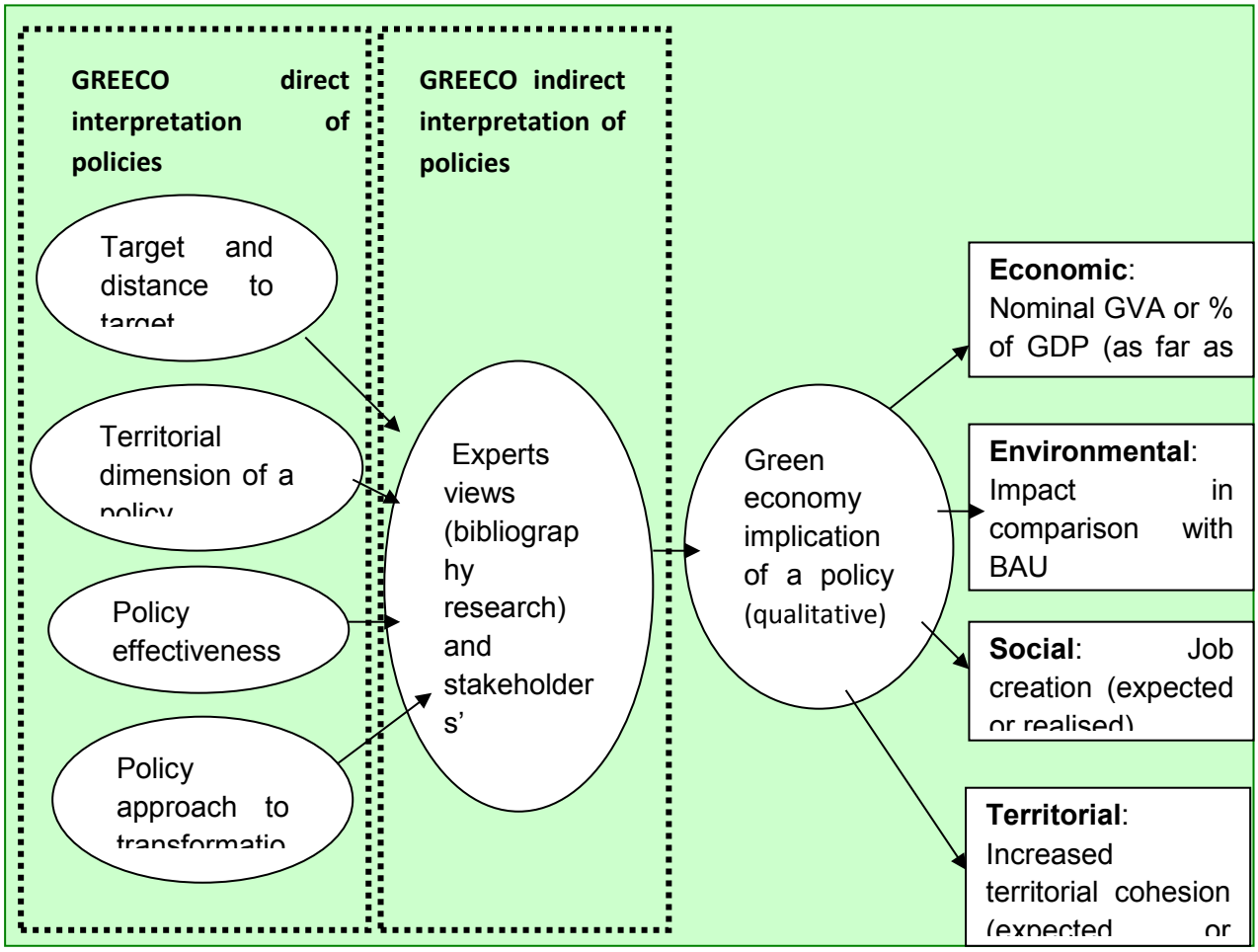
## 3.5. Green economy implications of policies

The combination between the analysis of the distance to target (based on the indicators), the policy effectiveness analysis and the analysis of the territorial dimension of a given policy, on top of external interpretations of policies form experts and stakeholders have informed the analysis of the green economy implications of a policy. The green economy implication of a policy can be measured through estimation of the following impacts:

- **Environmental:** reduced impact on environment compared to Business as Usual (BAU)
- **Economic:** Nominal GVA or % of regional GDP;
- **Social:** Green job potential – expected or realised.
- **Territorial:** increased territorial cohesion – expected or realised

The below illustration presents a graphical representation of the GREECO policy analysis and its main steps towards the characterisation of green economy policies, as introduced above:

**Figure 1: Characterisation and assessment of green economy implications of policies within GREECO**




# III. Overview of main EU territorial policies with GREECO relevance

While broad consensus on how to define the green economy is still emerging, it is nonetheless possible to survey the current policy landscape and analyse its contributions towards a green(er) economy.

The Fifth Cohesion report the Commission underlined that territorial cohesion reinforces the importance of sustainable development, 'functional geographies' and territorial analysis. Territorial cohesion suggests the need to pay attention to territorial impacts, territorial differences and performance when designing and implementing sector policies. Territorial approaches should be applied to optimise spatial impacts and the territorial interplay of policies. Synergies between them should be supported by their coordination at each territorial level.

This section aims to provide an overview of the selected multi-sectoral, territorial policies such as the Cohesion policy, Europe 2020 strategy, Territorial agenda 2020, their territorial dimensions and their potential to contribute to the development of green economy on territorial level. These strategies foster sustainable and smart development, knowledge based economy, networks, along with economic and social

cohesion through territorial strategies. They all aim at establishing a common policy framework for addressing territorial matters in the EU. Since GREECO is focused on the territorial dimension of the green economy transition, these strategies provide a framework, or context, to promote green economy, by taking regional particularities into account (on the contrary to place-blind approaches).

# 1. Europe 2020 Strategy

## a. Green economy implication

In the EU, the green growth agenda is reflected in the growth strategy Europe 2020. It acts as a bridging policy concept at the interface of the economy (the current crisis), the environment (climate change, energy scarcity and ecosystem degradation) and society (the need for cohesion). It is structured in the same manner as the sustainable development concept where economy, environment and society are not only viewed in parallel, but diverse feedbacks and synergies are also considered as mutually reinforcing priorities. As such, Europe 2020 calls for "smart, sustainable (green) and inclusive growth" to simultaneously propel a long-term and sustainable vision of development for the EU. The Sustainable Growth priority aims at promoting a more resource efficient, greener and competitive economy. The strategy reflects that economic growth is crucial to economic recovery and to an increase of Europe's competitiveness. It however stresses that growth needs to be sustainable which is meant both to be a sustainable path of growth in terms of a more competitive economy and a resource efficient, low carbon, greener economy. Priorities include using low-carbon technologies, enhanced development of renewable energy production, and increasing energy efficiency. These priorities are all included in the "Resource Efficient Europe" Flagship initiative that contains the strategic transformations of the European economy through its objectives:

- boost economic performance while reducing resource use;
- identify and create new opportunities for economic growth and greater innovation and boost the EU's competitiveness;
- ensure security of supply of essential resources;
- fight against climate change and limit the environmental impacts of resource use" (EC 2011g p.3).

The Europe 2020 Strategy builds on lessons learned from the Lisbon Strategy, recognising its strengths (the right goals of growth and job creation, etc.) but addressing its weaknesses (poor implementation, with big differences between EU countries in the speed and depth of reform).

In light of the Europe 2020 strategy several long-term roadmaps (2050) have been developed; for the transition to a low carbon economy and the corresponding energy and transport systems of Europe. For the medium term (2020) the integrated energy and climate policy was adopted in 2009-10 and a range of additional plans and proposals for legislation are put forward (EC 2011g), including an energy efficiency plan (EC 2011b) and a proposal for a new energy efficiency directive (EC 2011f), a biodiversity strategy (EC 2011d) and a strategy for the EU circular economy.

The Commission has also the ambition to mainstream green economy objectives into all policy areas and has submitted proposals, reviews and plans on a long range of policy areas, including the Common Agricultural Policy, the Common Fisheries Policy, Cohesion Policy, energy infrastructure and trans-European networks, measures addressing the world markets for commodities and raw materials, water policies and climate change adaptation policies.

The “Innovation Union” is another flagship initiative under the Europe 2020 that is influential to the green economy development. Innovation is a key facilitator of the green economy transition, through knowledge, skills and more efficient technologies and processes. The Flagship Initiative: "An industrial policy for the globalisation era" encourages the industry to a transition to better resource efficiency and encourages the development of such technologies (ESPON Atlas 2013).

In order to meet the challenges in reducing climate change and improving energy efficiency, the EU has developed an integrated energy and climate policy aiming at “increasing security of supply, ensuring the competitiveness of European economies and the availability of affordable energy and promoting environmental sustainability and combating climate change” (Council of the European Union 2007). The resulting EU legislation includes the so called 20-20-20 legislation, the strategic technology action plan (SET-plan) and the nuclear safety directive (EU Directive 2009/71/EURATOM (Nuclear safety) 2009). These policies have also been linked with more general economic policies such as the European Economic Recovery Plan 2010-2013 and the Europe 2020 strategy adopted by the European Council in March 2010.

The 20-20-20 legislation aims at reaching the three targets for 2020: 20% lower GHG emissions than in 1990, 20% renewable energy in final energy consumption and 20% lower final energy consumption. The most important directives with binding targets include the European Trading Scheme Directive (EU Directive 2009/29/E) and the Renewable Energy Directive (EU Directive 2009/28/EC (Promotion of the use of energy from renewable sources) 2009). The energy efficiency target is not binding, but promoted by technical requirements laid down in directives and regulations (EU Directive 2010/31/EU (Energy performance of buildings) 2010; EU Directive 2010/30/EU (Energy labelling) 2010; Commission regulation (EC) No 859/2009 (Light bulbs) 2009).

## b. Territorial implication

The Europe 2020 Strategy needs to be implemented at different governmental levels, from local to European, to become effective. Regional development policies as well as sector specific policies at different levels play an important role. Achieving the objectives of a smart, sustainable and inclusive growth of the Europe 2020 Strategy has a clear territorial dimension. In late 2011, the EC underlined that it is not expected that all regions can or should reach the national 2020 targets. The EC recognises the diversity of European regions and that for some issues it is neither realistic nor desirable that all regions reach the same target (ESPON Atlas 2013). **Policy-makers should therefore take into account the specificities of their**

**territory in the implementation of policies contributing to the Strategy.** The contribution by regions and cities requires a placed-based integrated policy and a strong commitment and coordinated actions from policy makers at different geographical levels.

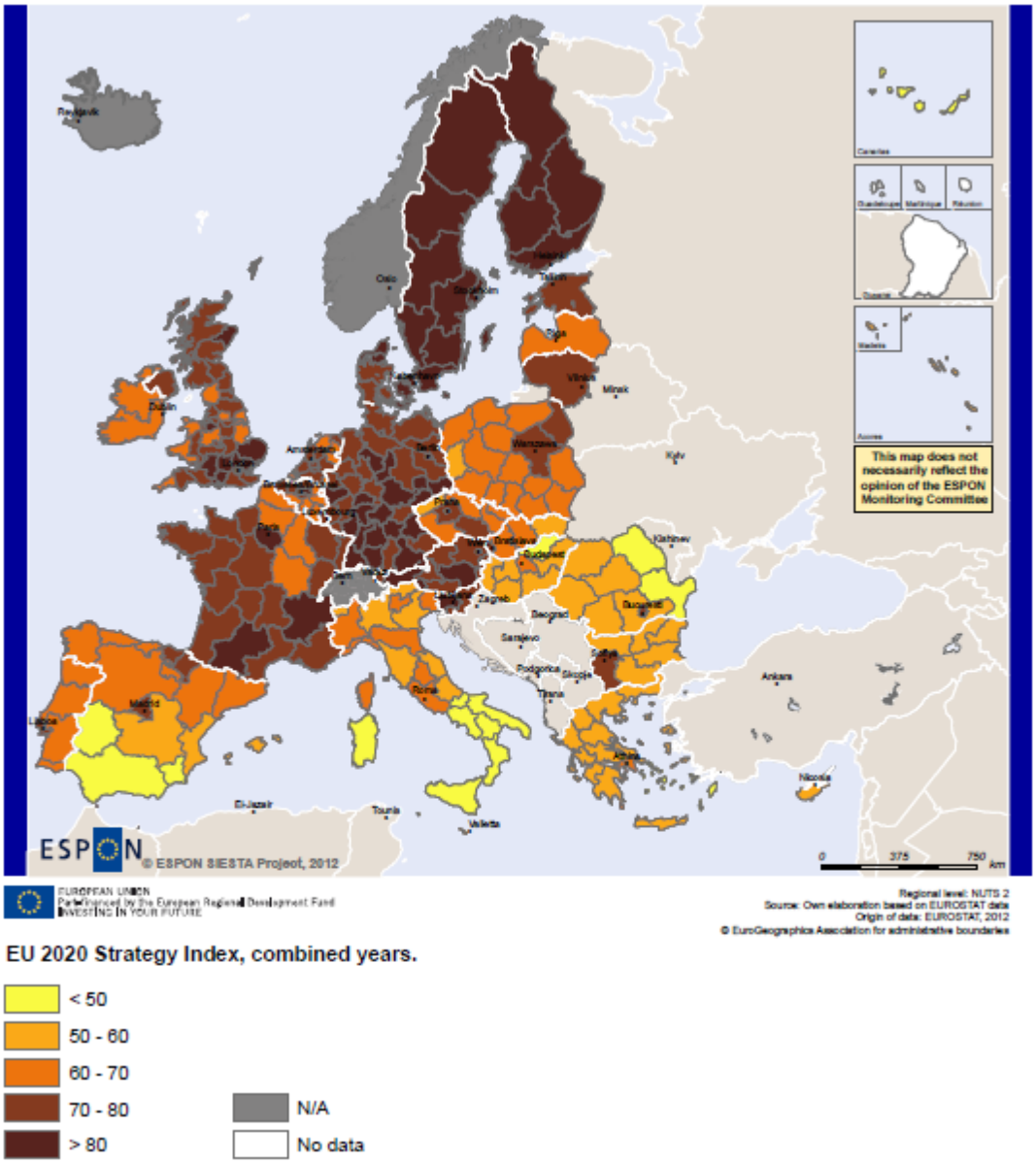
The 7th Progress Report on Economic, Social and Territorial Cohesion assesses how, in the context of Cohesion Policy, regions and cities can contribute to smart, sustainable and inclusive growth and Europe 2020 headline targets. “Investing in Europe’s Future” (EC, 2010b) is the European Commission’s Fifth Cohesion Report and it highlights the contribution that regions, and Cohesion Policy, can make to meet the objectives of the Europe 2020 Strategy (EC, 2010b). The report maintains that headline targets of Europe 2020 will not be achievable by policies formulated at the EU or national level alone. In contrast, overcoming territorial disparities through the right mix of national, regional and local governing structures will play critical roles in defining and implementing policy measures based on territorial specificities (EC, 2010b).

## c. Distance to target and policy effectiveness

The Europe 2020 strategy sets high ambitions for the regions. Some regions are already reaching one or several of the targets while other regions are lagging behind and will have difficult to attain both national and EU targets. The ESPON ATLAS (2013) has developed an aggregate index to assess the overall fulfillment of the Europe 2020 Strategy, by measuring the distance of regions from eight headline targets. As shown in the aggregated map, there is a main division between the Centre-North and the rest of Europe in relation to the Europe 2020 indicators. Furthermore, cluster analysis of the mapped indicators shows that in addition to the European Centre-North most regions in Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovenia, Slovakia, Cyprus and Malta are on a promising move towards Europe 2020 objectives. While most regions of Portugal, Spain, Southern Italy, Romania, Bulgaria and Greece are rather challenged in terms of contributing or meeting the Europe 2020 objectives.

The map shows a highly aggregated situation and regions showing a similar score in the index can be in very different and varying situations implying different reasons for their position. However, the map can still provide an interesting reflection of the general fulfillment at the regional scale and show main patterns of the territorial achievement of the Europe 2020 goals (ESPON ATLAS, 2013).

**Map 1 Regional Europe 2020 Strategy aggregate index, 2009 to 2010**




*Notes:* A region scores 100 if it has reached all eight targets, while a region farthest away from all eight targets scores 0. The targets are those officially set at European level as the targets nationally set are highly inconsistent. This aggregate index is represented for 2009-2010, taking into account that there are three headlines which are only available at the member state level (the "20/20/20") and a fourth one with different scales depending on the country (people at-risk-of-poverty or social exclusion).
*Source:* ESPON ATLAS

## 2. 2030 Framework for climate and energy policies

On 22January, 2014 a 2030 framework for climate and energy policies was presented by the European Commission. The target for reduction of GHG emissions has increased to 40% below the 1990 level. The new target for the share of renewable energy becomes 27% of the EU energy consumption by 2030. There is no concrete target for energy efficiency but it will be elaborated in a review of the Energy Efficiency Directive. The review of the EU Emission Trading Scheme (ETS) is also on

the political agenda with a suggestion to establish a market stability reserve at the beginning of the next ETS period in 2021. (http://ec.europa.eu/clima/policies/2030/index_en.htm) It is clear that realizing that the 2020 targets will be achieved the European Commission has raised its policy ambition. It is yet to be analysed how this moving target will impact the national economies of the countries. It is certain though that this reform will act as a powerful driver for greening of different economic sectors in the years until 2030.

# 3. The EU Territorial Agenda 2020

## a. Green economy implication

The territorial agenda of the European Union builds upon the European Spatial Development Perspective (ESDP) aiming at developing common objectives for the future development of the European territory that was adopted in 1999. The ESDP was followed up by the Territorial Agenda of the European Union (2007) (TAEU), which for the first time declared territorial cohesion as the most important aspect of territorial policies. The Territorial Agenda of the European Union 2020 (TA2020) from 2011 is closely linked to the Europe 2020 strategy and it states that the objectives of smart, sustainable, and inclusive growth can only be achieved by taking into account the diverse territorial dimensions across Europe and each regions particular development opportunities. It sets out a so-called 'action oriented policy framework' with a time horizon of 2020 that aim to integrate the territorial dimension within different policies at all levels of governance. It characterises territorial cohesion as “a set of principles for harmonious, balanced, efficient, sustainable territorial development” that “enables equal opportunities for citizens and enterprises, wherever they are located, to make the most of their territorial potentials” (EU, 2011a, p. 4). The TA2020 stresses that it is important to ensure that the territorial dimension is taken into account in different policies and EU Cohesion Policy in particular. It states: “The objective of the TA2020 is to provide strategic orientations for territorial development, fostering integration of territorial dimension within different policies at all governance levels and to ensure implementation of the Europe 2020 Strategy according to territorial cohesion principles.”

**Box 2 Priorities of the EU Territorial Agenda 2020**

1. ***Promoting polycentric and balanced territorial development*** as an important precondition of territorial cohesion and a strong factor in territorial competitiveness.
2. ***Encouraging integrated development in cities, rural and specific regions*** to foster synergies and better exploit local territorial assets.
3. ***Territorial integration in cross-border and transnational functional regions*** as a key factor in global competition facilitating better utilisation of development potentials and the protection of the natural environment.
4. ***Ensuring global competitiveness of the regions based on strong local economies*** as a key factor in global competition preventing the drain of human capital and reducing vulnerability to external development shocks.
5. ***Improving territorial connectivity for individuals, communities and enterprises*** as an important precondition of territorial cohesion (e.g. services

of general interest); a strong factor for territorial competitiveness and an essential condition for sustainable development.

6. ***Managing and connecting ecological, landscape and cultural values of regions***, including joint risk management as an essential condition for long term sustainable development.

From a TA2020 perspective achieving these objectives calls for the adoption of place-based policy approach to territorial cohesion that contributes to unleash territorial potential through "development strategies based on local and regional knowledge of needs, and building on the specific assets and factors which contribute to the competitiveness of places. Within this logic, places can utilize their territorial capital to realise optimal solutions for long-term development, and contribute in this way to the achievement of the Europe 2020 Strategy objectives which contribute to the competitiveness of places" (ibid., p 2).

The main green economy implication in the Territorial Agenda 2020 comes from the strong link to the Europe 2020 strategy and its priority of sustainable growth. The TA2020 however also explicitly mentions that climate change might lead to green economy development opportunities such as within agriculture or renewable energy production. It also states that the challenges of climate change draw attention to the territorial coordination of policies, especially climate, energy, water management, agriculture, housing, tourism and transport. With regard to the green growth process the TA2020 underlines that territorial cohesion should be understood among other things as a prerequisite for making the most of territorial potentials to develop green economy (development should be best tailored to the specificities of an area).

## b. Territorial implication

Regions and cities are facing different combinations of development challenges and growth potentials. There are rather differentiated territorial patterns and specific territorial characteristics, influencing the development of regions. The Territorial Agenda 2020 takes this aspect into consideration by promoting 'place-based strategies developed locally to address local conditions'.

Some challenges highlighted in the TA2020 that will have geographically diverse impact include:

- ***Climate change and environmental risks***: the impacts of climate change vary across Europe and call for territorially diverse responses. The challenges of climate change draw attention to "territorial coordination of policies" e.g. within climate, energy, water management, housing, tourism and transport.
- ***Energy challenges threaten regional competitiveness:*** certain regions face increased challenges of energy supply and are heavily dependent on energy import. Some territories, such as e.g. islands, remote and sparsely populated areas are more vulnerable to energy shortage.
- ***Loss of biodiversity, vulnerable natural landscapes and cultural heritage*****:** natural and cultural landscape is part of the territorial capital and identity. Overexploitation of these issues may threaten territorial development.

### c. Distance to target and policy effectiveness

It is difficult to assess the distance to target as there are no concrete targets included in the TA2020. Rather it would be needed to look into how various key policies are addressing the territorial perspective in formulating priorities and measures and how they are implemented.

## 4. The Cohesion Policy

### a. Green economy implication

The EU Structural and Cohesion policy has a very strong green economy implication as it is closely aligned with achievement of the Europe 2020 Strategy targets. This is valid for all funds covered by the Common Strategic Framework (CSF) (EUR 366.4 billion for 2014-2020 programming period) - the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). Cohesion policy is designed with the intention to deliver smart, sustainable and inclusive growth. Priority will be given to investments in low-carbon economy in all sectors, climate change adaptation and risk prevention and management, environmental protection, resource efficiency, sustainable transport and adequate network infrastructures.

Out of the 11 thematic objectives valid across all funds, objective (1) “Strengthening research, technological development and innovation” is in close relation with the eco-innovation and the manufacturing sectors. The same is valid for Objective (3) “Enhancing the competitiveness of small and medium-sized enterprises, the agricultural sector (for the EAFRD) and the fisheries and aquaculture sector (for the EMFF)”,where the effort is to make enterprises improve their resource efficiency including energy efficiency, more use of RES, etc.. The overall greening of the economy across the sectors but mainly targeting the energy sector is ensured in Objective (4) “Supporting the shift towards a low-carbon economy in all sectors”. Support for RES development and energy efficiency will come mainly through this objective. GREECO is not dealing intensively with climate change but having in mind that climate change mitigation is a major component in greening almost all sectors it is worth mentioning objective (5) “Promoting climate change adaptation, risk prevention and management”. Waste and water management will be mainly financed from Objective (6) “Protecting the environment and promoting resource efficiency” while transport – through Objective (7) “Promoting sustainable transport and removing bottlenecks in key network infrastructures”. It is expected and hoped for that Objective (8) “Promoting employment and supporting labour mobility will cater to the green job aspect of the green economy”.

In order to concentrate finance and clout the regulation has provided for the principle of thematic concentration which is one of the main differences with the 2007-2013 programming period.

A large portion of the funds is invested in the so called major projects whose total cost is more than 50 million EUR. Major projects have to undergo an Environmental Impact Assessments (EIA) which is a good and useful instrument if properly used.

Programmes should be subject to a Strategic Environmental Assessment (SEA) which, in order to be effective, should be carried out at the same time as the design of the programmes so that it can influence it.

The sustainable character of Cohesion policy investments is underlined in Article 8 (Regulation No 1303/2013 on ERDF, ESF, the Cohesion Fund, the EAFRD and EMFF) on sustainable development guaranteeing the mainstreaming of environment, resource efficiency, climate change mitigation and adaptation, disaster resilience and risk prevention and management are promoted in the preparation and implementation of Partnership Agreements and programmes.

## b. Territorial implication

The territorial implication of the Cohesion policy is incorporated by design as 'in order to strengthen its economic, social and territorial cohesion, the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, particular rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps.

Additionally, territorial cohesion is equally important for Cohesion policy as economic and social cohesion and 'it is necessary to address the role of the cities, functional geographies and sub-regional areas facing specific geographical or demographic problems'. GREECO has also made the efforts to analyse the role of different levels of governance in leveraging green economic efforts, investments and transformations.

The territorial approach of Cohesion policy is also taken up in the Community-led Local Development (CLLD), which is designated as LEADER local development in relation to the EAFRD. It should be focused on specific sub-regional territories and they should take into consideration local needs and potential. The development of local development strategies is also closely linked to GREECO focus as they should 'analyse the development needs and potential of the area'. Cohesion policy will support operations under the local development strategies but also 'preparation and implementation of cooperation activities of the local action groups'.

The fifth cohesion report was the first cohesion report to include the territorial dimension alongside social and economic dimensions within EU Cohesion Policy. It also pays more attention to climate change and the environment by emphasizing the ways in which territorial specificities play concrete roles in shaping green development opportunities. For example, it emphasizes achieving the Europe 2020 target for renewable energy production will require very different responses, ranging from a focus on solar, wind or biofuels depending on socio-economic and natural conditions in different regions. It also points to the significant potential for increased energy efficiency, especially in buildings and transport in urban areas, and it raises specific concerns in Eastern Member states; particularly in terms of waste and water management.

During the 2007-2013 program period regional policy will have invested either directly or indirectly roughly 30% (EUR 105 billion) of structural and cohesion funds toward

the theme of sustainable growth (EC, May 2011). In order to ensure that this funding is directed as efficiently as possible, as well as to help coordinate the next funding period, the European Commission released the communication, 'Regional policy contributing to sustainable growth in Europe 2020' (EC, 2011). As such, it represents an official dialogue of the impacts and effects of Cohesion Policy on sustainable growth, and it highlights a number of ways in which Cohesion Policy can aid in the materialization of sustainable growth within European Regions. Each of these potential impacts generally falls under the umbrella of directly providing funding for sustainable growth investment and increasing local and regional governance capabilities to facilitate the inclusion of place-based sustainable growth opportunities.

It is clear that EU development policy is tightly connected to wider notions of green growth as developed by international institutions such as the OECD. This is evident in terms of short term development policy (the priorities of Europe 2020), long term strategies (Roadmap for moving to a competitive low carbon economy in 2050) and clear targets governing the consumption of key natural resources (the 20/20/20 strategy and an 80% reduction of GHG emissions by 2050). However, the ultimate aim of strengthening local and regional governance for sustainable growth is to induce green investment and materialize green growth.

## c. Key policy messages for Cohesion policy and Green economy

- ✓ Currently different services of the European Commission are reviewing the draft Partnership Agreements with the Member States as well as the different Operational Programmes. Securing a robust mainstreaming of environment and climate change is one significant aspect of the review. On one hand these efforts for improving the programming documents give certain guarantee for greening the Structural and Cohesion policy but on the other hand, the real test for the Member States will come when concrete financing of projects is launched.
- ✓ The thematic objectives are very much in line with the dimensions (drivers/enablers) which are introduced in the context of the green growth process. They are overlapping since many of them are a prerequisite for a growth process and for a multi-dimensional sustainability process. Selected themes from the EU cohesion policy which are important from a green growth perspective include:
    - Territorial assets/territorial capital (e.g. cultural landscapes, natural and cultural heritage, trust etc.);
    - Critical green mass: i.e. green networks, ecological corridors and preservation of areas of high ecological value;
    - Balanced territorial development encompassing different types of territories;
    - Quality of urban nodes, dynamism and competitiveness of cities, sustainability of their structures, their integrated development;
    - Functional areas including urban rural co-operation, integration of border areas, coastal zones;
    - Access to knowledge and diffusion of innovation. Regional clusters of competition and innovation;

- Greening of transport;
- Developing energy resources;
- Sustainability of tourism development.

✓ There is a contradiction between the necessity to build a number of environmental infrastructures on one hand and decrease impact on emissions and climate change on the other hand. Hence, there should be an intensification of the efforts to mainstream environment and climate change in all types of investments including the most energy intensive ones. In this connection, the countries should use the tool has been developed to measure the carbon impact of investments.

✓ One weakness of Cohesion policy projects is that in general, they are risk-averse. While in theory projects should be innovative, very often project proponents choose a safe approach as they need to demonstrate success while every innovation inherently contains risks. During the new programming period countries should find the right balance between security of implementation and innovativeness.

✓ According to Article 5 of the regulation, for each programme the Member States should organise partnership with a wide number of regional and local stakeholders for the sake of 'respecting the principle of multi-level governance'. This concerns the preparation and the implementation of the programmes.

✓ There is a provision for carrying out integrated territorial investments where 'an urban or territorial development strategy requires an integrated approach'. The integrated territorial investments and sustainable urban investments are a great opportunity for addressing and greening more than one sector of the economy in an integrated manner.

**EU Box 3 Areas of intervention where Cohesion Policy will have the greatest effect**

- Traditionally handled by local and regional institutions (implied an existing competency or familiarity);
- Where important territorial assets/capacities dictate potential;
- Where regions make investments in public procurement;
- Where new forms of local and regional collaboration between regions and municipalities can have the most impact;
- Where new forms of local and regional collaboration between public authorities and private actors can have the biggest impact.

# IV. Sectoral policies. Analysis of territorial and green economy implications of policy mix. Recommendations to sectoral stakeholders

This section provides an overview of the key sectoral policies of the green economy, their territorial dimensions and potential for green economy development. Each sectoral chapter finishes with key policy recommendations for policy makers.

Besides the policies for territorial cohesion there are many different strands of policy at national and EU level that can have an impact on both green growth and territories. An analysis made by EEA looks into the potential territorial dimension of EU policies and stated that some policies have an explicit territorial dimension, e.g. energy and transport; employment and social affairs, regional development policies, agricultural and regional development policy. Some policies are believed to have more indirect impacts, e.g. education; culture and research. Some EU policies are deemed to have no territorial dimension when it comes to environment, e.g. health and consumer policies; taxation and customs union; and competition policies.

Within the sector analyses performed under GREECO, the specific policy measures within some of these economic strands was further analysed and the implications from a territorial perspective was made more explicit. The below section provides a short overview of the policy aspects of the economic sectors studied, with a focus on their green economy and territorial aspects.

# 1. Bioeconomy

## a. Green economy implication of policy

The EU bioeconomy policy framework can be divided between agricultural and fishery policies.

The Common Agricultural Policy (CAP) is the major policy affecting the environmental concerns in EU agriculture for the past 60 years. Today, the CAP absorbs around 41% of the EU budget. Without this policy farmers would have no incentive to go beyond the measures that safeguard (short run) production and follow market signals. Externalities would not be taken into consideration and the transformation to green agriculture would be mainly up to consumer demand or short run economic interests, which are distorted by asymmetric information and bounded rationality.

The CAP has identified three priority areas for action to protect and enhance the EU's rural heritage. These are in line with a green growth perspective even though they should be seen more in the light of the prevailing discourse on sustainability (of agriculture and rural areas). The priorities includes: biodiversity and the preservation and development of 'natural' farming and forestry systems, and traditional agricultural landscapes; water management and use; and dealing with climate change. In the current program period 2014-2020 this is manifested through priority 4 with an emphasis on ecosystem management (biodiversity), water management and soil quality; and priority 5 which emphasis reduced emissions of GHGs, improving energy efficiency, as well as producing biomass for other aspects of the bio-based economy.

The new legal framework, as laid down in the Council Regulation No 834/2007 on organic production and labelling of organic products is a valuable tool for greening the agricultural sector and promoting environmentally friendly production of high-quality products. Organic farming is perhaps the most operational scheme for promoting a greening of the agricultural sector. Also the EC Communication on Biodiversity Action Plan for Agriculture [COM(2001) 162] includes a commitment to achieve sustainable development in the areas of Conservation of Natural Resources, Agriculture, Fisheries, and Development and Economic Cooperation. Biodiversity protection in agriculture has biological, social, cultural and economic implications in relation to the green economy.

In the current programing period of 2014-2020 the emphasis on the development of the bioeconomy is also strengthened through the priority 1 of the second pillar; Fostering knowledge transfer and innovation in agriculture, forestry, and rural areas. This measure is supposed to horizontally impact all other measures of the pillar and, together with the EIP (European innovation partnership), develop the sector within the new EU ambition of the bio-based economy.

Four important policy steps have shaped the present EU fisheries, and on-going changes to the policy are important factors in shaping the characteristics of fisheries in the upcoming years; namely the UN Law of the Sea, Fisheries capacity and Total Allowable Catches (TAC) and the revision of the Common Fisheries Policy (CFP) in 2002 and 2013. In terms of greening the EU fisheries the reforms in 2002 and 2013 initiated by the decline of fish stocks in European waters, have focused on recovering of the stocks, fleet adjusted to the resources, increased diversification in both fleet and catches and focus on community development. As in agriculture diversity has also become a core issue in the fisheries. Partly recoveries of the North East Atlantic fish stocks have opened up for a more diverse fisheries, and focusing on communities in the management moves the policy aspects a further step towards both qualities parallel to quantities. The TAC and the UN Law of the Sea have by themselves relatively limited implications on green economy development besides regulating the fishing fleet and distributing the TAC between the EU countries to protect the fish stock. It, however, has created a better management of the fish resource within EU waters and enabled fisheries to become better adjusted to the stocks. In this connection ecosystem based management has become the crucial approach in greening the sector and eventually provide both sustainable fisheries and – as in Agriculture – ensure more sustainable livelihoods for the people involved in the bio-economy sectors.

## b. Territorial implications of policies

There is a strong territorial implication of the CAP as it is targeting mainly rural areas in Europe. The policy contributes to improving the competitiveness of agriculture and forestry; the environment and the countryside; and the quality of life and the management of economic activity in rural areas. Previously LEADER has been the operational vehicle for improving the governance of rural policy and making sure that policy is placed within the place-based perspective. In the current period this is

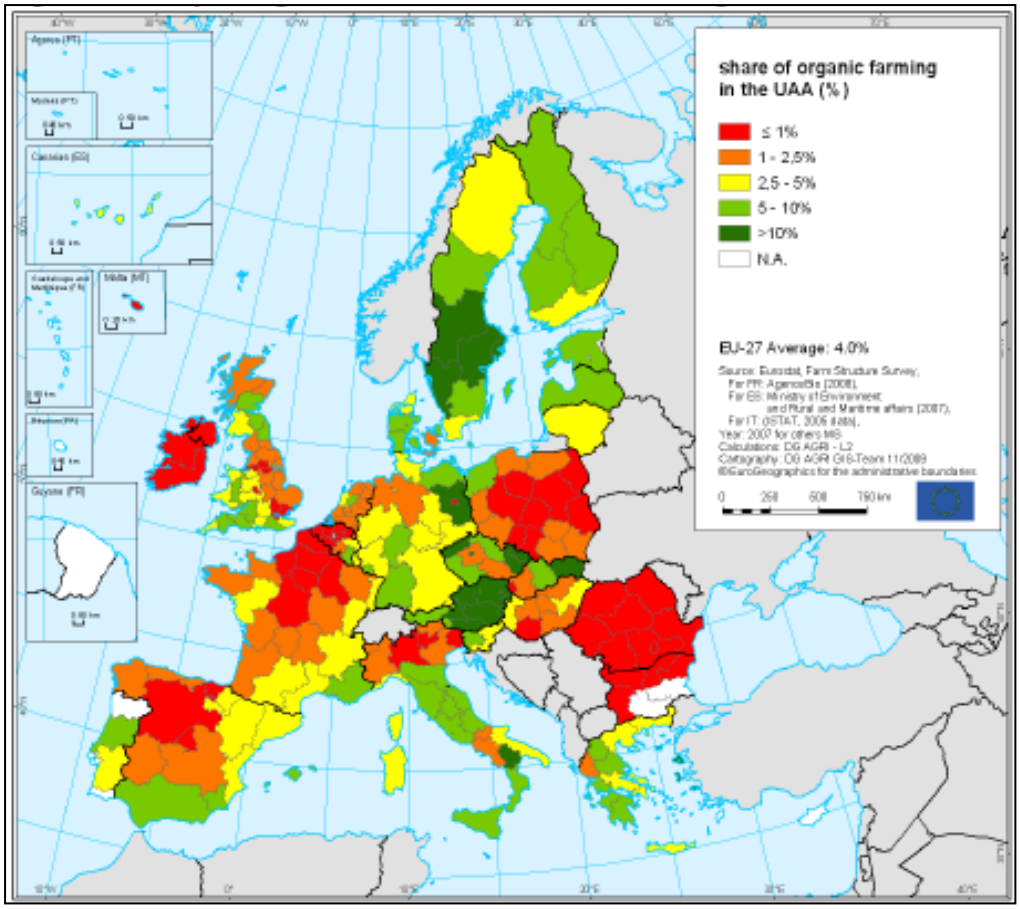
strengthened by the CLLD (community led local development) which is supposed to integrate policy implementation also between the structural funds targeting regions – hence having an impact on the local (governance aspect). Some member states might also choose to implement the implantation mechanism of ITI (integrated territorial investments) further strengthening the territorial implication of policies.

With regards to fisheries, the 2002 revision of the CFP has led to a decrease in capacity and a focus on healthy and viable communities provided a change in focus from quantity to quality. The territorial implication of the CFP 2013 revision relates to the diversity and delegation of responsibility. The diversity is related to both large scale and local scale fisheries. In order to compensate for restrictions on expansion possibilities in national and EU waters the fleet has to some extend moved into international water, and for most countries aquaculture has become a major contributor to food security.

## c. Distance-to-target and policy effectiveness

Under the CAP, targets are not explicitly spelled out at the EU level. Each country has some targets for specific aspects of the policy; like amount of hectares covered by agri-environmental schemes – or the amount of businesses getting support for diversification. Although there is no EU wide target for area under organic farming many MS have targets in between 10 and 20 %. The map below shows the current state of organic production across the EU. The EU-27 average is 4 % but we see that in some regions the share is now above 10% (dark green colour).

**Map 2 Share of organic area in total UAA in 2007**




*Source: Eurostat farm structure survey*

The target of a healthy fish stock is quite distant in the Northeast Atlantic although improvements have taken place. While most of the stocks are under very unhealthy conditions – half of them collapsed and only 15-20% are rebuilding – most of the catches are in stocks that are either rebuilding or developing, and only a small proportion are in overexploited or collapsed stocks. The efficiency of the CFP revisions show an improving trend and the EU policies have since 1983 added to an improving of the situation for fisheries. There is however still a long way to go before the fish stocks in the Northeast Atlantic can be characterised as stabilized. At the core of many of the failings of reaching the CFP targets is a lack of trust between stakeholders and regulators combined with a dominant focus on short-term versus long-term policies. The involvement of stakeholders and communities in the management may become an important factor in the future. It is still too early to say what the outcome of the latest revision will be, but it is evident that many of the included issues are recognized as important to include in a sustainable development.

The uptake of the UN Law of the Sea has been rather slow; it represented a basic step towards greening of the sector but was challenged by the path dependency of the sector. I.e. the combination of international definitions of access and ownership the principles were accepted, but the question of control required measures of control. The TAC has been effective to some extent. The first approaches to both quota and technology definition and management system was developed but

required firm control. Especially issues such as catches of immature fish and by-catches required control both on sea and in harbours.

## d. Transformative approach

Support for organic farming is thought to have a large transformative power on the agricultural sector. Also the conservation oriented support is believed to influence the way farmers perceive their role as stewards of the countryside and providers of public goods. The transformation into a diversified agriculture is also due to policy measures for investment and information campaigns.

The CFP has transformed from top-down to top-down and bottom-up integration. At the core of many of the failings of the policy so far is a lack of trust between stakeholders and regulators combined with a dominant focus on short term versus long term policies. The transformative character of the TAC has been slow. The fisheries sector has had problems in adjusting to the new conditions, and the regulation therefore required considerable measures of control.

## e. Key policy messages for Agriculture:

**Box 4 Key policy messages for agriculture sector policy makers**

1. **Reduce support that stimulates an over-production of agricultural products, or stimulates production with a too intensive use of fertilizers, pesticides or machinery**. The general support to agriculture has been decoupled from production over the last decades, but still intervention schemes on some products, as well as export subsidies, stimulates an excess in some markets and encourages intensive production which is not sustainable in the long run. This goes directly against the work of greening the agricultural sector and act as a force in the opposite direction to environmental sustainability. Removing these types of measures in the first pillar of the CAP is one of the most important aspects of greening agriculture in the long run, and these funds should be used for other interventions for greening of agriculture as described below. *[Mainly national level of implementation. Relevant exclusively for rural areas]*
2. **Make better use of investment support schemes and stimulate innovation**. Modernisation of agricultural buildings and equipment holds great potential in reducing emissions, waste and diversifying the on-farm use of energy. And innovation within the bio-based economy can improve both the performance of agriculture and support greening within other sectors of the economy. Public support is motivated for investments which are not productive in the short run and where market failure distorts incentives or financial markets. Innovation and pilot facilities within the bio-based economy is vital and the future EIP (European Innovation Partnership) within the program period 2014-2020 is a vital platform for cooperation between various actors involved in this process. [*All governance levels*]
3. **Support local and regional actors on many levels in the multi-level stakeholder arena**. From a policy perspective the setting up of regional networks to deal with rural development strategies has partly been manifested through LEADER in the second pillar of the CAP. These

measures have focused primarily on rural development issues and should be shifted more towards greening of agriculture from a supply/demand perspective. Further, various actors should be engaged in the innovative and entrepreneurial processes of linking up the agricultural (and forestry) sector to the development of the European bioeconomy. The integration of the CLLD and EIP tools in the current program period should be one important vehicle for such processes and regions should develop based on the notion of smart specialisation. CLLD also offer the possibility[*Mainly local and regional governance levels]*

4. Further develop the urban-rural relations within the greening of agriculture. [*All governance levels*]
5. **Develop and sharpen the agri-environmental measures to support less intensive production and provision of public goods.** These measures are instrumental in providing both positive externalities and to the mitigation of direct negative externalities from agriculture. It is important that these measures are developed in line with what is being asked from a greener agriculture. In the period 2014-2020 emphasis in priority 4 of the second pillar is on biodiversity, water and soil; whereas priority 5 emphasise mitigating climate change, improving energy efficiency, as well as producing biomass. This is important and seems to be well in line with the greening of agriculture as well as other sectors; however the protection of landscapes for recreation and tourism (as well as resilience to future climate change) should not be forgotten. When the support moves towards climate change and innovation for the bio-based economy there is a risk of policy being less territorial and "on the ground". [*Mainly national level]*
6. **Develop the labour force and skills in the agricultural sector and improve the capacity for restructuring the agricultural sector**. Labour and skills development - and the availability of capacity in a region for the restructuring of the agricultural sector – are important factors for a transition to a green economy. This amounts to both courses for farmers and to making sure that the advisory services and knowledge of greening processes are available within the regions. Innovation does not have to be from within a region – but the application of innovation and the adaption of it to local circumstances have to be. This applies both for greening of agriculture and for developing new activities that supports greening of energy, construction, chemical processes, etc. within the bio-based economy. [*All governance levels but mainly regional and national levels]*
7. **Improve consumer awareness and stimulate demand side changes; higher share of consumption of organic products and less consumption of meat and dairy products**. On the "consumption side" the EU is already working with awareness programs, web-portals and certification schemes. This work should be intensified and the use of economic instruments should be considered. For instance, the OECD suggests the further implementation of trading schemes for water rights and carbon emissions from food products; such instruments would provide the price mechanisms for consumers to reduce the consumption of commodities with negative environmental impacts.[*All governance levels*]
8. **Reduce support that stimulates over-production of agricultural products, or stimulates production with a too intensive use of fertilizers, pesticides or machinery**.
   Agricultural interventions are to a larger extent decoupled from production. However, some distorting support persist, as well as export subsidies, which stimulates an excess in some markets and encourages intensive production which is not sustainable in the long run. This goes directly against the work of

greening the agricultural sector and is neither economically or environmentally sustainable. Removing these types of schemes in the first pillar of the CAP is one of the most important aspects of greening agriculture in the long run. Therefore it is positive that the first pillar of the CAP will be greener in the policy period 2014-2020. [*All governance levels*]

## f. Key policy messages for the Fisheries sector:

**Box 5 Key policy messages for the fisheries sector policy makers**

1. In a sustainable fishery the target fish populations are judged to be at healthy levels. The management of the stock through quota setting and distribution should **make use of precautionary means both in order to maintain existing stocks, but furthermore to ensure the "recovering" of stocks which have been depleted in the past**. In this connection some measures have already been taken in order to reduce excess fleet capacity. But additional measures in relation to issues such as environmental harmful equipment would generate further future advantages. Many fisheries are recognized as being well managed and sustainable, and it would be important to use these examples as basis for inspiration. [*Mainly national level*]
2. **A well-managed fishery is needed in order to ensure a future for the industry and all those who depend on the fisheries for their livelihoods**. The FAO Code of Conduct for Responsible Fisheries is generally considered being the 'bedrock' on which fishery certification or assessment is based, implying:
    a. A regular assessment of the stock,
    b. A management regime based on sound science and with the capacity to adapt to stock fluctuations including the potential impact of on-going changes in climate,
    c. And that fishing operations should ensure that the habitat or ecosystem is maintained.

    [*Mainly national level*]
3. In recognition of the fact that most stocks in European waters are depleted, over-exploited or challenged, **investments are needed in order to ensure full recovery of the stocks and the biodiversity**. At the same time it is important to maintain fisheries as a viable economic activity as a healthy stock could ensure vital incomes to the fisheries depending communities in the future. [*Mainly on regional and local levels*]
4. **Small scale fisheries** are often an important part of coastal communities, both in relation to direct income to the communities and as part of the **increasing experience economy**. The **symbiosis between these two sectors could be promoted further, ensuring both viable communities and fisheries**. It is furthermore advantageous as the use of heavy equipment and fuel is limited, and thereby contributing to a de-linking of the activity from fossil fuels and harmful impact on the environment. [*Mainly local level*]
5. **Consumers need to be partners in the process of generating sustainable fisheries and aquaculture.** The *labelling* of products according to environmental, economic, and social standards is an important tool in ensuring the consumer partnership in the aim towards a Greening of the

sector. Labels complying with FAO Code of Conduct for Responsible Fisheries, the recommendations from the Marine Stewardship Council and other organisations can serve as inspiration for future EU policy both in relation to fisheries and aquaculture within EU and in relation to imported and landed products from 3rd countries. In this process it is important that consumers are not only informed, but involved in the process. [*Mainly national level*]

# 2. Energy

## a. Green economy implication of policy

While EU energy policy includes a diverse collection of more specific themes (often sector based), two headline policies that characterise the green economy dimensions of the sector: Energy 2020 and the 'Climate and energy package,' from 2008. Today, these policy goals are accompanied by the 20-20-20 targets; namely 20% of final energy consumption from RES, 20% reduction on GHG emissions and 20% reduction in primary energy consumption by 2020.

All four spheres of the green economy would benefit under a condition where a 20% improvement in energy efficiency takes place. Energy efficiency is absolutely essential to EU meeting its short-, medium- and long-term climate change goals. Socially, we become more resilient to fluctuating energy prices, just as we are less dependent on foreign energy sources. Urban systems are likely put in focus for their energy efficiency benefits and these are marketed on their parallel benefits for social well-being. Economically, Europe is investing in green technologies that are not only energy efficient for us at home, but we are able to export these goods and services at the global scale.

Development of renewable energy is crucial for reducing the carbon intensity of our energy supply. As such, the mandated uptake of renewables is established through the EU RES strategy. Achieving this strategy relies on regional knowledge and strategies for development of renewables through endogenous resource potentials. This is part and parcel with the nature of RES as part of decentralised energy strategies, which has been a core rationale of the Intelligent Energy Europe Programme and the associated establishment of Regional Energy Agencies throughout Europe.

It is perhaps too early to suggest the economic implication of the EU RES development policy. On one hand, RES technology is essential for transitioning to a low-carbon economy, but only time will tell if this type of economic strategy will help keep Europe as a world economic leader. On the other hand, an improved environment means improved social welfare, but it is crucial that RES development takes place in a way that allows for all regions to adapt to a new energy paradigm. Without EU coordination, varying impacts will cause winners and losers, and subsequent increases in energy poverty will go against the goals of social cohesion in Europe. The ESPON project ReRisk suggests that energy poverty is not only a concern in Europe, but is also a reality. As such, development of more sustainable

energy solutions across all sectors will have to mitigate the reality that energy is already a burdening expense for some people in many Member States.

Despite these important changes in European energy policy, Member States are ultimately responsible for their national energy mix and exploitation of endogenous energy resources. This implies that the EU as an institutions has no direct power over the EU's combined energy mix,(Solorio Sandoval & Morata, 2012).

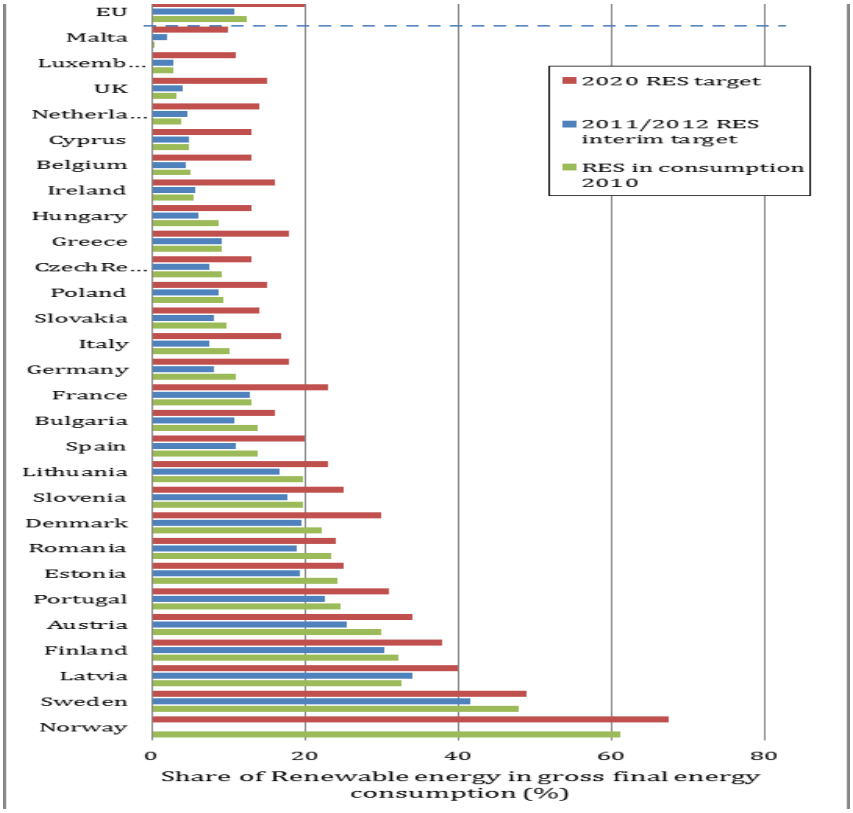
## b. Territorial implications of policies

Positive implications of implementing the Energy 2020 strategy and the Energy Roadmap 2050 in terms of territory relate to the need for increased local and regional planning and management of energy services. Not least, this includes the local, place-based nature of renewable energy potentials, the need for local planning in the implementation of community/district energy systems, the twinning of energy efficiency and renewable energy with urban development projects, improvements to the energy efficiency of Europe's building stock and to development of urban mobility systems that promote public transit, cycling and walking. Again, the continued development of regional energy agencies is crucial for identifying and acting upon local potentials in a proactive and integrated way.

## c. Distance-to-target and policy effectiveness

The 'Renewable energy progress report' is a key component of Energy 2020 and serves to benchmark progress as the MS level. It mentions that 2010 renewable energy shares of 20 MS and the EU as a whole were at the level of or above 2010 commitments set out in the respective national plans and above the first interim target for 2011/2012. However, further EC-funded analysis reveals that the cumulative 2020 target may not be reached.

**Figure 2 2020 targets in RES in Gross Final Energy Consumption 2010**




Source: European Union, 2012

## d. Transformative approach

The Energy Roadmap 2050 does not necessarily reflect a paradigm shift but its targets of an almost a complete reduction (80-95%) of $CO_2$ emissions. This clearly suggests that energy issues will involve a major shift in the way we think about environmental issues (not just socially, but also in terms of the ways in which the energy market acknowledges environmental protection). This is why the 'Energy 2020: A Strategy for competitive, sustainable and secure energy' has a 'radical transformative' character. If its targets are achieved there will undoubtedly be a radically transformed market for green energy technologies, which will undoubtedly drive even further research and eco-innovation.

## e. Key policy messages for the Energy Sector

**Box 6 Key policy messages for the energy sector policy makers**

1. **Energy policy is inherently cross-sectoral and must be further promoted as such:** At the most basic level, we must always maintain the understanding that energy issues penetrate all sectors – both economic and non-economic, and operate at all scales – from the global, through the local and all the way to the individual. Therefore, successful energy policy will not only be comprehensive, but a core focus will be on integrating it with policy development in other sectors. In the future, these cross-sector linkages

should be better identified within policy discourse. *[Mainly national level of implementation. Possibilities for mainstreaming exist on regional and local level as well]*

2. **Energy poverty is a reality that must be acknowledged:** The ESPON project ReRisk suggested that energy poverty is a significant concern in many regions of Europe. This is not only the case in terms of new Member States to the east, for countries s heavily stricken by the economic crisis, but it is also true for under-privileged socio-economic groups in all Member States. The development of all sustainable energy solutions will have to acknowledge this reality in order to promote the EU's fundamental objectives of Cohesion. *[Mainly national level of implementation]*
3. **Institution building is a main role for the EU:** The establishment of regional energy agencies through the ERDF has been a lasting achievement of the EU, especially in such as new member states and rural regions. This should be maintained and further prioritised by the EU. *[Mainly regional level of implementation]*
4. **RES development is a long-term, incremental process:** First, this implies that it will take place within the confines of existing market conditions, and therefore the consistency of appropriate financial policy drivers is necessary. At the same time, recent withdrawals of feed-in tariffs in Germany and Spain create significant consumer distrust for political programmes, which will hamper investment in the future. *[Mainly national level of implementation. Regional and local level have an impact through permitting, land use, etc. Relevant for rural areas as well]*
5. **Europe has a global competitive advantage in RES and EE technologies, which needs continued support to be maintained:** While some would argue that at some point green economic sectors need to be released from the protection of policy support the reality is that Europe's competition these sectors is growing. If we are to maintain this position we must face head on the fact that countries like China are moving rapidly forward in order to take advantage of potential competitive advantages – and are doing so with heavy state support. . *[Mainly national level of implementation]*
6. **Renewable energy development requires new ways of thinking about energy production and consumption**: For instance, production and consumption is no longer always separated in time and space, and when this is coupled with innovations in terms of smart devices and mobile technology, there is great potential for new products and services that can engage energy consumers in exciting ways. Furthermore, improving energy consciousness should continue to be prioritised through labelling, public sector leadership, information campaigns and youth education programs. For each of these, the roles and expectations of regional energy agencies can be further strengthened. [*All governance levels. Relevant for rural areas as well*]
7. **There is still an untapped potential for Industrial Symbiosis:** Underutilised and undervalued residual resources from one type of economic activity (materials, energy and water) can be recovered and reused elsewhere in the industrial and municipal network. This can have multiple benefits: companies producing these resources save on disposal, storage and transport costs, and can even generate sales by creating value out of waste resources. The spatial implications of green energy development needs further investigation: within a 'brown energy paradigm' urban regions consume the vast majority of energy, but centralised energy production also takes place within, or near to, urban areas. What are the implications of this in a 'green(er) energy paradigm'? While energy consumption will become increasingly concentrated in urban areas, rural regions, as well as other regions with territorial specificities (such as coastal regions, mountain regions,

remote regions, etc.), will be called upon as key territories for green energy production. Therefore further research is needed on the spatial implications of green energy production in order to ensure that policy development across different sectors, and for different strategic planning goals, are mutually reinforcing. Particularly important fields of interest will be in terms of transport impacts of rural energy development, the bioeconomy, coastal impacts of RES and the impact of rural demographic changes on green economy development. [*Mainly regional and local level.Relevant for rural areas as well*]

**Modality of implementation**:

The above mentioned measures could be developed simultaneously and probably only the strengthening of institutions precedes the other measures in time. For the rest there is no need for a staged approach and most of them are associated with continued and sustained efforts. In a period of crisis (or post-crisis) the EU Cohesion policy funds play a very important role in financing energy efficiency and renewables. Utmost attention should be paid to not crowding out private funding in the area. The greening of the energy sector has a very wide impact on energy dependency and it is also a major factor for increasing the competitiveness of the economy as a whole. Both issues are in the centre of the public debate on energy.

# 3. Manufacturing

## a. Green economy implication of policy

As highlighted in the Europe 2020 Strategy, manufacturing is fundamental in the transition towards a new growth model for the EU. Environmental policy is a driver for green manufacturing and innovation in the production sector, especially when targets and emission limit values are strict.

When it comes to manufacturing, there is not one single policy which is more influential or predominant. There are a number of different policies, different in type, and in scope, which, in combination, aim for a greener manufacturing sector. When it comes to greening manufacturing, there are two EU policy strands which set the frame: the environmental policy strand, aiming at protecting environment and boosting the environmental pillar of sustainable development as a whole and the industrial policy strand, focused on Industry/Manufacturing and aiming at increasing its competitiveness and making it more sustainable.

For the last decade, the policies dealing with manufacturing in the EU have been mainly oriented to:

- Limiting environmental damage; such as the Industrial Emissions Directive, Emissions Trading Scheme (ETS);
- Creating jobs. E.g. An Integrated Industrial Policy for the Globalisation Era;
- Increasing productivity. E.g. Some Key Issues in Europe's Competitiveness, Thematic Strategy on the sustainable use of natural resources.

The Industrial emissions directive (IED) 2010/75/EU is the successor of the IPPC directive[2] and aims to "prevent, reduce and as far as possible eliminate pollution arising from industrial activities" and contributes directly towards greening Manufacture. It has an integral approach to avoid shifting of pollution from one environmental medium to another. In addition, the reference to emission limits achievable by Best Available Techniques (BAT).

The Emission Trading System (ETS) (Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community), is a corner stone in the transition to a low carbon economy. By capping overall greenhouse gas emissions from major sectors of the economy, the EU ETS creates an incentive for companies to invest in technologies that cut emissions. The higher market price of allowances - the 'carbon price' – the greater incentive to reduce emissions.

As part of the EU Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy the European Commission initiated the latest revision of the EU Eco-Management and Audit Scheme (EMAS) in order to fully exploit the scheme's potential for improving the resource efficiency of production processes. Sustainable growth based on a more resource-efficient, greener and competitive economy is also part of in the Europe 2020 strategy (the economic reform strategy of the EU) and the flagship initiative on resource efficiency. The rationale behind EMAS is that the interest in environmental performance is increasing for companies, because proceeding without considering the environmental implications is no longer acceptable. Since EMAS is a voluntary scheme, the companies participating are those which have a proactive approach to environmental challenges look for ways to continually improve their environmental performance.

In addition, the EC communication COM (2010) 614 - An Integrated Industrial Policy for the Globalisation Era - is devoted to fostering the sustainability transition. It acknowledges regional diversity and the need for place based approaches and aims at supporting growth and job creation in the Manufacturing sector.

### *b. Territorial implications of policies*

The IED takes into account the need to consider specific local characteristics. It is for Member States to determine the approach for assigning responsibilities to operators of installations provided that compliance with this Directive is ensured. In some Member States it is regional authorities who grant permits. The EC communication 'An Integrated Industrial Policy for the Globalisation Era' acknowledges regional diversity and the need for place-based approaches to increase Europe's competitiveness; e.g. modernisation of EU's industrial base by means of Regional Policy and CAP; the need to enhance harmonization of different legal environments; and promoting "smart specialization" through EU Regional policies; etc.

Inversely, the territorial implication of the ETS is limited. The ETS is applied by companies and anyone with an account in the EU registry can buy or sell allowances, whether they are a company covered by the EU ETS or not. Trading can be done directly between buyers and sellers, through several organised exchanges or through

[2] IPPC Directive will be repealed with effect from 7 January 2014 by Directive 2010/75/EU on industrial emissions

the many intermediaries active in the carbon market. The EC sees the EU ETS as an important building block for developing an international network of emission trading systems

### c. Distance-to-target and policy effectiveness

In the case of the IED, the target is to comply with emission level values (ELVs). Most of the MS have complied with the January 2013 deadline for transposing the directive (20th June 2012 data). The IED has great potential to limit environmental damage from industrial activities.

When it comes to the Industrial Performance Scoreboard, Member States have engaged in reforms to boost their competitiveness in five key areas: manufacturing productivity; export performance; innovation and sustainability; business environment and infrastructure; and finance and investment. In such a context, three main groups emerged:

- The group of 'consistent performers': Germany, Denmark, Finland, Sweden, Austria, Ireland, the Netherlands, the United Kingdom, Belgium and France, who perform well in all dimensions.
- The group of 'uneven performers': Estonia, Slovenia, Spain, Italy, Portugal, Greece, Malta, Cyprus and Luxembourg, who perform well in some and badly in others.
- The 'catching-up' group: Bulgaria, Romania, the Czech Republic, Poland, Hungary, Slovakia, Latvia and Lithuania, who still lag behind in most indicators.

The impact of the EU ETS directive is illustrated by the figures below, showing that ETS is genuinely contributing to reducing the EU's GHG emissions. However, it should be noticed that the main drop took place when the economic crisis hit first and it is still early to distinguish between the drop due to the policy initiative or the drop due to a reduced industrial activity because of the crisis.

**Figure 3: Annual emissions of all EU ETS installations (in millions of tonnes)**

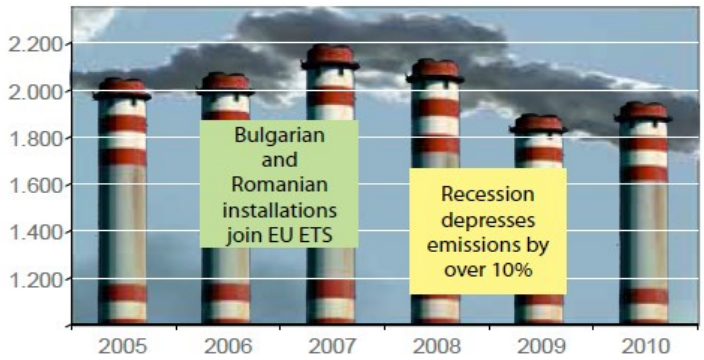
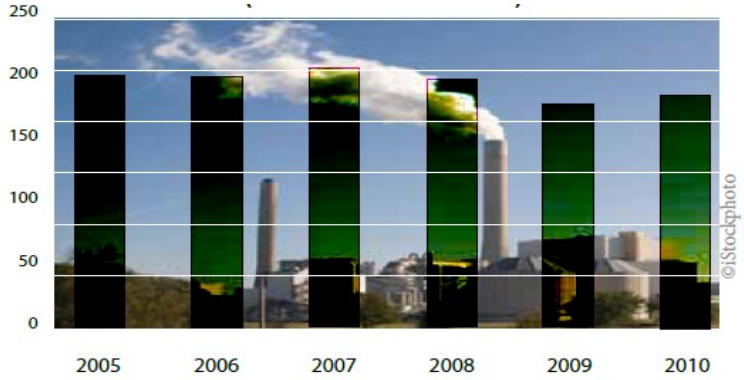



**Figure 4: Average annual emissions per installations (in '000 of tonnes)**




The number of organizations (and sites) registered in EMAS has been growing steadily since 1997. Currently, more than 4,500 organizations and approximately 7,800 sites are EMAS registered, of which almost 1,300 are companies in leading industries, as defined by EMAS.

## d. Transformative approach

The IED has a mainly incremental approach because of the fact that ELVs are linked to incremental improvement in technologies (through the BATs) and since it favours pollution prevention approaches and only foresees emission control when prevention is not possible. The ETS has rather a transformative approach and aims at cutting emissions with a broad and flexible approach. The need to purchase or draw on their reserves of allowances and credits creates a permanent incentive for companies to reduce their emissions. But companies can also sell allowances and credits, if they judge they have more than they need. These flexibilities in the system allow companies to choose the most cost-effective options to address their emissions.

The Integrated Industrial Policy for the Globalisation Era communication seeks a "fresh approach" in terms of bringing together a horizontal basis and sectoral application. It can be characterized as transformative-radical as it considers the whole value and supply chain, from access to energy and raw materials to after-sale services and the recycling of materials. The EMAS is rather incremental and devoted to minimizing environmental impacts at organization level, preferably by preventing damage.

## e. Key policy messages for the manufacturing sector

**Box 7 Key policy messages for the manufacturing sector policy makers**

1. **Improve access to knowledge**: One of the more often quoted barriers for manufacturing industries is the lack of access to information and knowledge among industrial actors. Quite frequently, companies are not informed of the best available environmental technologies that can be applied within specific production chains, and therefore are not aware of the potential impact that adopting such technologies might have on their finances in terms of resources saved. Therefore, measures improving the access to knowledge and facilitating knowledge spillovers would be very beneficial, e.g. creation and support of knowledge networks, reinforce the linkages between all actors, dissemination of good practices, etc.[*All governance levels*]
2. **Raise public awareness:** meeting consumer demand is one of the most

powerful drivers of any demand-driven economic activity. In such a context, advocating more sustainable consumption leading to an increase in the demand of more environmentally-friendly products can be a key leverage in fostering transitions towards a greener manufacturing. Information campaigns, marketing mechanisms (including control on green commercial claims), etc. designed to foster green consumption can be powerful tools. Likewise, companies themselves have to be targeted by information campaigns spreading the message that increasing resource efficiency is in the interest of manufacturing industry itself. The key message is that the transition towards a greener manufacturing should and will eventually take place either if the motivation is "sustainability-driven" or "profit–driven". Another relevant message is that, to a certain extent, the transition will involve a paradigm shift with strong multiplier effects on industrial supply chains and ancillary businesses, as shown for example by the renewable energy transition and subsequent infrastructure requirements (Geyer et al. 2003) As a consequence, such transitions will also require a strong public commitment and support. [*All governance levels*]

3. **Foster industrial symbiosis approaches:** one of the most promising areas of intervention at the regional and local levels when it comes to greening manufacturing processes and the manufacturing sector as a whole is industrial symbiosis. Industrial symbiosis (and similar approaches such as 'cradle-to-cradle' initiatives) reinforces spatial relations between companies "engaging traditionally separate industries into a collective approach to competitive advantage" (van Berkel 2006)[3]. As a result, industrial symbiosis can be fostered, inter alia, by spatial and area planning that in most cases fall directly within regional and local area of direct policy control and/or intervention. [*Mainly regional and local level*]
4. **Lower financial burdens:** Market Based Instruments (MBIs) have the capacity to compensate for the lack of financial incentives that hinder the green transformation within a number of manufacturing branches. Promoting benchmarking, tax reforms and subsidies targeting increased resource efficiency in manufacturing can thus be a very efficient tool to unleash the transformative capacity of nearly all manufacturing processes. Combining such interventions with direct incentives such as green procurement approaches could create the conditions for the greening of supply chains, by improving access to finance and funding that, inter alia, facilitate the adoption of green innovations within companies.[*Mainly national level*]
5. **RDI investments to fill knowledge gaps:** Some manufacturing subsectors (e.g. steel) are technologically very mature. Consequently current technologies are reaching performance limits in many sectors, where the potential for resource optimization are almost fully exploited. In such a context, and related to the aforementioned financial burdens, RDI investments are needed for designing new technological and innovation breakthroughs. In particular, further support to address the limits of best available technologies in strategic sectors within specific regions or territories could be particularly effective allowing for the adaptation of mature sectors within the a new green paradigm. [*Mainly national level but regional*

[3] van Berkel R, Bossilkov A, and Harris S, 2006. Opportunities and Constraints for Regional Resource Synergies in Minerals Processing Regions. Paper presented at the Green Processing 2006 Conference, 5-6 June 2006, Newcastle, Australia, Australasian Institute of Mining and Metallurgy, pp. 113-122. Available online at: http://www.c4cs.curtin.edu.au/resources/ publications/2006/gp2006vanberkeletal.pdf

*and local funds can also be activated*]

6. **Introduce eco-efficiency indicators for better monitoring:** So far, progress towards a green and more sustainable manufacturing has rested on the measurement of consumption intensity of natural resources. However, there is much progress to be made on developing appropriate indicators to monitor resource efficiency within industrial supply chains and life cycle assessment. These eco-efficiency indicators would enable to set a cross-cutting measurement framework to monitor progress towards resource efficiency within entire supply chains that would allow policy makers at different scales of operation to design tailor-made interventions tackling specific nodes within the supply chain of a given product. [*Mainly national level of implementation*]
7. **Increase policy support to the transition through exploiting the full potential of EU legislation:** All in all, the existing EU policy framework has been designed to promote green transitions and discourage "business as usual" behaviours. However, in some sectors and territories it has been found that regulation is not implemented and/or exploited to its full potential e.g. for encouraging material recovery from Waste Electrical and Electronic Equipment (Rademaekers et al. 2011b and UNIDO 2011b). Accordingly, before implementing new measures or regulations, it is of utmost importance to exploit the full potential of the EU policy framework to its very limits. This approach should be complemented in any case with the implementation of regular policy impact assessment, monitoring and evaluation schemes at different levels allowing for the adoption of the reforms needed to tackle those issues or areas for improvement found within the policy implementation cycle. [*Mainly national level of implementation*]

**Modality of implementation**:

The above mentioned measures could be developed simultaneously. Naturally, compliance with existing legislation is the first task for countries and regions which are lagging in this respect. All efforts associated with knowledge and information sharing as well as with awareness raising take place on a sustained continuous basis. Further development of indicators for monitoring eco-innovation is within the remit of the EC, the European Environmental Agency (EEA) or such supra-national organisations. Regions and cities are well-placed to develop industrial symbiosis systems. It is worth noting that in a period of crisis companies and policy makers might have the tendency to regard environmental policy as a constraint rather than as a driver for change.

# 4. Green research and innovation

## a. Green economy implication of policy

Eco-innovation will be a driving force of the transition towards a greener economy and is deeply rooted in the EU 2020 strategy. Eco-innovation will on the one hand, enable traditional industries and companies to shift behaviour and pursue a sustainable strategy. On the other hand, it consists of the eco-industry sector.

**Box 8 Importance of environmental legislation for stimulating eco-innovations**

Environmental legislation has been the main engine driving eco-innovation and the surge of strong industries in the EU in the fields of water, air pollution, waste management, recycling, and climate change mitigation. If it was not for environmental legislation, incentives for a resource-efficient economy are scarce.

It has been demonstrated by experience that eco-innovative companies are better off financially because of reduced costs on one hand but also through improved markets and better position on the value chain.

The policy framework in the green research and innovation sector is primarily consisting of the Environmental Technologies Action Plan (ETAP) that was launched already in 2004 by the European Commission and the Eco-Innovation Action Plan (Eco-AP) in 2011. The Eco-AP seeks to boost environmental technologies while strengthening economic growth and competitiveness and puts forward actions and subsequent milestones necessary to speed up eco-innovation.

Regardless the novelty of the Eco-AP, there are already a number of initiatives promoting eco-innovation and thus the transition to a more sustainable, resource-efficient, greener Europe. In this context, it is worth highlighting the European Innovation Partnerships (EIPs), which are theme/challenge specific and pursue to bring together relevant actors (at various levels) and coordinate existing instruments (e.g. investments, strategies) to speed up research outcomes as well as the Competitiveness and Innovation Framework Programme (CIP) Eco-innovation programme that seeks to provide funding for projects in various sectors that mitigate environmental impacts or promote a more efficient use of resources. Within the framework of CIP, Eco-innovation supports the first application and further market uptake of some of the best eco-innovative products and services in Europe, and helps overcome those critical barriers that still hamper their commercial success. The initiative contributes to the implementation of the Eco-AP.

Moreover, environmental policy can also direct research and development efforts and set the pace of technological change, e.g. the REACH regulation lists substances of very high concern (SVHC) and chemical companies across the world follow the REACH when developing products which should meet the requirements of EU markets (European Commission (EC) 2011b). However, a non-flexible regulatory framework may also be counter-productive and create lock-ins and barriers to eco-innovation. Therefore, legislation should be so that it provides incentives and a predictable framework to foster investments.

## b. Territorial implications of policies

The Eco-AP foresees the need to work together with not only Member States, but also regions and milestones are set for each territorial level. The Eco-AP potential for enhancing regional cohesion is significant, since the Commission has proposed a strong innovation component within the provisions of the 2014-2020 Cohesion Policy. However, most countries have not implemented a policy framework to support eco-innovation, since it is still perceived as an emerging field (EIO 2013).

The 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). 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).

## c. Distance-to-target and policy effectiveness

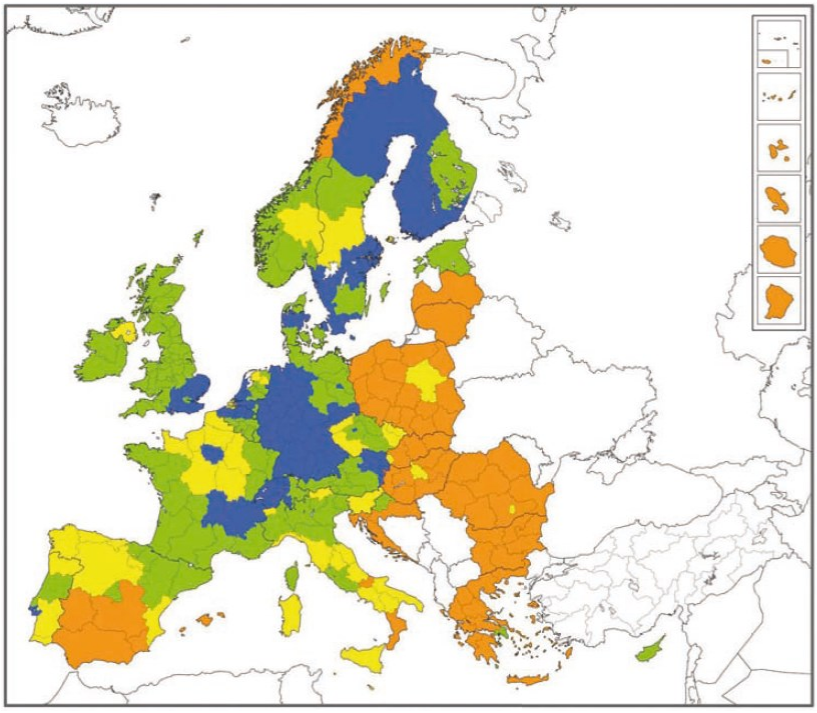
It is too early to assess the effectiveness of the Eco-AP as it was recently launched. Nonetheless, it is expected to be highly effective for green economy development since it takes into account synergies with other EU-wide policies and instruments.

To date, most EU countries view eco-innovation as a new and emerging field, but few have addressed the need for a more systemic approach to public support to eco-innovation. Eco-innovation is not yet considered as a strategy for social and economic transformation. So far, the overwhelming focus has been on providing financial support for research on and deployment of environmental technologies, without a more fundamental effort to adapt overall framework conditions and to create a level playing field for eco-innovators. There are very few public initiatives in Europe that explicitly support system eco-innovations.

Since the CIP eco-innovation programme was launched, the participation has steadily increased and has had a very good answer from market and in reaching SME's.

The Regional Innovation Scoreboard (RIS) provides a picture of innovation performance across EU, Croatia, Norway and Switzerland regions at NUTS 2 level. Most of the top regional performers are located in country leaders and followers, as identified by IUS, that is to say, Austria, Belgium, Denmark, France, Germany, Finland, Ireland, Netherlands, Sweden, Switzerland and UK. Most of the moderate and modest innovators are found in Eastern and Southern Europe. However, it should be noted that innovation followers are also observed in countries which are predominantly low performers, e.g. Czech Republic, Italy, and Spain. All in all, most countries have regions at different levels of performance, which underlines the need of regional, tailored policies to foster innovation.

**Map 3 Regional Innovation Scoreboard** (*Source: RIS 2012*)




The EU Member States Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta are not included in the RIS analysis. Group membership shown is that of the IUS 2011(Cyprus, Estonia and Luxembourg are innovation followers, Malta is a moderate innovator and Latvia and Lithuania are modest innovators). Map created with Region Map Generator.

## d. Transformative approach

The Eco-AP is characterized as Transformative-Radical and seeks to overcome barriers to eco-innovation by using a wide variety of tools where the environmental policy and legislation is the key driver of eco-innovation.

## e. Key policy messages for the Green research and Innovation sector

**Box 9 Key policy messages for the Green Research and Innovation sector policy makers**

1. **Better pricing and a shift to environmental taxation:** Prices do not reflect the real value of natural resources. As a result, incentives for 'spontaneous' in-firm resource efficiency transformations based on eco-innovation are rather scarce. Therefore, policy support is needed to adjust the economic and fiscal framework in which companies operate, as a way of progressing towards a more integrated pricing system in which prices of environmental resources reflect their real costs. Policy intervention may include, among others:
    - Adjusting the fiscal framework providing incentives to become more resource efficient. From a greening perspective, in most cases it is more efficient to tax the (over)use of natural resource (while lowering taxation of labour accordingly) before goods for final use have been actually produced, instead of applying value-added taxation mechanisms. [*Mainly national level of implementation*]
    - Progress towards a gradual reduction of EHS. In particular, these subsidies should be totally eradicated from regional and local policies in the mean term (5 to 10 years). [*Mainly national level of implementation*]
    - Generally speaking, implementing an internal analysis of the implications on the tax model on eco-innovation at the regional and local levels could be a good starting point towards the development of

new or alternative taxing mechanisms that enable and support transitions towards more resource efficient regional and local economies. [*Mainly regional and local level of implementation*]

2. **Overcome knowledge barriers:** When the right networking framework is in place (e.g. clusters, associations, formal networks, etc.), knowledge spillovers occur maximising innovation impact and outputs. However, when this is not the case, the lack of knowledge may be a prominent deterrent of green research and eco-innovation. This may take place in the following manners:
    - Lack of qualified personnel and technological capabilities within the enterprise;
    - Limited access to external information and knowledge, including a lack of well-developed technology support services;
    - Lack of collaboration with research institutes and universities;
    - Technical and technological lock-ins (e.g. old technical infrastructures);

    This is the main reason why supporting eco-innovation with **tax incentives** and tailor-made financial tools and **funding mechanisms** is essential to bridge the gap between eco-innovation and the market. [*All governance levels*]
3. **Comprehensive policy mix to support eco-innovation:** Differentiated research traditions across Europe have shaped national, sectoral, regional and technological differences in innovation systems. In particular, regulation has played a key role in promoting the use of eco-innovation. In most cases, the policy focus has been oriented towards abatement of GHG emissions, recycling and renewable energy provision and efficiency. Areas such as material efficiency, radical eco-design and the provision of new eco-materials fall behind. Therefore, **a comprehensive policy mix to support both the demand and supply of eco-innovation is preferable to individual one-off support measures** (European Commission (EC) – DG REGIO (2012)). Clearly, smart policy support is needed in terms of creating adequate framework conditions for supporting eco-innovation deployment and major sustainability transformations. There is real policy urgency for bridging those critical steps for innovations to reach the market. [*All governance levels*]
4. **Adjust eco-innovation support measures to the receptor:** There are two types of eco-innovator: on the one hand those developing emerging and break-through technologies; on the other hand those focusing on more consolidated technologies. The former operate on a highly uncertain and risky environment. The latter operate in a more stable but potentially less profitable market. The distinction between both types of agents has been neglected by the vast majority of policy interventions in this area. Similarly, most research and policy advice in this field has not made a clear differentiation between eco-innovation users and developers. Current approaches fall short because of an inadequate understanding of innovation and environmental strategies of firms at the micro level. **Accordingly, smart policy advice should be able to identify and provide differentiated messages for, at least, three main groups of eco-innovators: users, developers for in-house use, and strategic developers for commercialisation** – yet these groups are to some degree complementary. The first group is represented by those firms (mostly active in manufacturing) that adopt innovations developed elsewhere in order to improve the efficiency within their production processes and thereby increase profitability. The second group shares the same motivation, but deploys it through R&D and engineering efforts in order to develop new or adapt existing eco-innovations. The third group includes eco-innovators that develop new technology that has been entirely designed for external use,

making profit by bringing innovation to the market (Montalvo et al. 2012). [*All governance levels*]

5. **Stress the role of regions and cities in fostering eco-innovation:** Regions are increasingly becoming important engines of economic development and innovation policy is increasingly designed and implemented at regional level. Even if a number of policy instruments (e.g. taxes, legislation) sometimes fall out of the scope of regional stakeholders, regional authorities play a leading role in fostering regional economies through supporting the birth and consolidation of local and regional eco-innovation systems, e.g. through purchasing policies. (EURADA 2009). In addition regions have a great oversight of both local assets (e.g. renewable resources, clusters, know-how, etc.) and environmental challenges. In such a context, eco-innovation strategies may better strengthen regional economies and reduce regions' dependency on non-renewable resources and thus increases resilience (Massard et al. 2012). These tools can be directly linked to (and the main measures channelled through) the Smart Specialization Strategies (RIS3) advocated by the European Commission. Equally to RIS3, eco-innovation strategies should capitalise on local strengths and address local challenges by means of policy instruments available at the regional level, e.g. green public procurement, regional R&D systems, etc. (European Commission (EC) – DG REGIO (2012)). [*Mainly regional and local governance levels*]

**Modality of implementation**:

Most of the proposed measures are not one-off and they take years to implement. A gradual implementation of an environmental fiscal reform is one of these and it needs a strong political will. Overcoming of knowledge barriers is also a long-term persistent policy using diverse tools and approaches. Regions and cities are well-placed to foster research and innovation but this potential could be realised simultaneously with improving regional and urban governance and with legal instruments being adapted to this role.

# 5. Green building and construction sector

## a. Green economy implication of policy

The building sector is widely understood as crucial for the EU Member States to collectively reduce their GHG emissions to meet the Community's GHG emission reduction commitments up to 2020.Therefore, EU policy supporting green building and construction includes thematic strategies, directives, financial incentives, the availability of regional funding and awareness campaigns. First and foremost, this includes the Directive on the energy performance of buildings (2010/31/EU), which among other things, discusses the need for public sector initiatives to lead by example for the market penetration of green building. This is achieved by ensuring that resource efficiency is a guiding principle of all public investment in buildings. Just like other strategies, such as the 2050 Roadmap for moving to a low carbon economy and the Energy Efficiency Plan 2011, this directive also discusses the importance of using available European funds via the ERDF, ESF, etc. to invest in green building. With the share of Cohesion funds directed towards promoting the low carbon economy increasing during the 2014-2020 period there is a clear opportunity for the building sector. It also lays down more concrete actions for realizing the great

potential of energy efficiency in buildings, and reducing the large differences between MS' in this area. MS's are therefore obliged to set their own minimum requirements for energy performance.

Due to the nature of the buildings sector, the implications of factors taken up in the buildings directive have a strong positive impact on green economy. A huge share of the economy (jobs and GVA) almost immediately become green when existing building practices are transitioned into greener ones; people will be living in more enjoyable and functional spaces (society) and both emissions and energy consumption will be reduced (environment). In addition, achieving the policy goals will require that local growth potentials are acknowledged and that developments in the sector are largely internalized in the local economy and the local built environment. For instance, not only do policies directly supporting green building projects create green jobs right away, but they also generate up to a 500% return on investment because of the domestic eco-innovation, and local labour force they rely on. This is in contrast to investment in other sectors, which are often exposed to import leakage – where policy investments are exported to other countries when domestic markets cannot supply appropriate green technologies. And not least, additional jobs are created to handle the share of buildings that need to undergo an energy retrofit. It would require that local authorities are stimulated to create local action plans related to resource efficient land use and building development.

## b. Territorial implications of policies

The Directive on the energy performance of buildings has a strong territorial implication. Local and regional authorities are critical for the successful implementation of green building and should be consulted and involved in the development of programmes to provide information, training and awareness-raising, and, in general, the implementation of this Directive at national or regional level. Such consultations also promote the adequate guidance to local planners and building inspectors to carry out the necessary tasks.

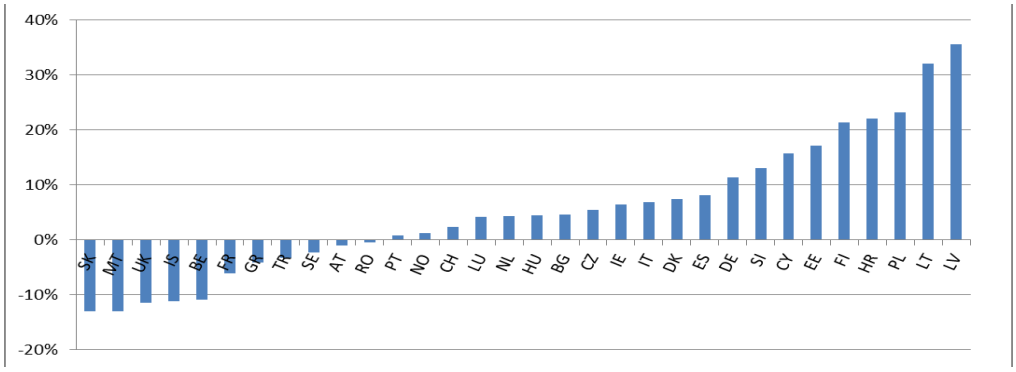
The National Energy Efficiency Action Plans (NEEAPs) of Member States, which are mandated by the EU's 2011 Energy Efficiency Plan, should include measures supporting local and regional public authorities to become early adopters of energy efficiency improvements – both in terms of their building and their built environments. This is due to the fact that local and regional authorities are key actors in at least two regards. First, they are usually responsible for land use planning and development. Public authorities should lead by example and endeavour to implement the recommendations included in energy performance certificates. Second, local and regional public authorities often own significant shares of the building stock, including public housing, public administration buildings and public service buildings. As such, public buildings either occupied by public authorities or frequently visited by the public should set an example by showing that environmental and energy considerations are taken into account. Information on energy performance should be enhanced by clearly displaying energy performance certificates and other relevant information to the public.

## c. Distance-to-target and policy effectiveness

The EU Buildings Directive has effectively provided a platform of understanding and expectations for how the sector can become greener. This is absolutely necessary due to the extremely decentralized nature of land use and built environment management in Europe, and therefore the wide number of actors involved in the process, in both the public and private sector. However, the EU policy framework for the building sector lacks a truly binding legislation governing the overall energy performance of new buildings, and this is left up to individual MS's (and the subsequent regional and local authorities) to decide. However, in communication with a number of local authorities with responsibility for the building and planning, it is clear that the directive acts as a guiding principle.

At the same time, the policy is characterized as weak in effectiveness because we are still far from achieving the 20/20/20 goals and the overall energy consumption patterns in buildings are still much higher than they were in 2000 (See figure below). Based on data from the last ten years it shows that reductions in residential energy consumption are taking place only in a few countries. In contrast, many countries show significant increases.

**Figure 5** Change in energy consumption in the residential sector between 2000 and 2009, corrected to temperature variations between the years.




Source: Eurostat, EU average: +5.32

## d. Transformative approach

The EU Buildings Directive, like the all other EU policies supporting green building, can be characterized as incremental because they lack a binding legislation governing the overall energy performance of new buildings. However, in communication with a number of local authorities with responsibility for the building and planning, it is clear that the directive acts as a guiding principle.

The recast Directive 2010/31/EU – foresees that nearly zero-energy buildings will be mandatory for all new buildings by 2021, and long term targets suggest upwards of a 90% reduction in $CO_2$ emissions from building by 2050 (EC, 2011d). In addition, the Energy Roadmap 2050 (December 2012) which acts as a scenario analysis of policies packages that extend the horizon of the EC's energy strategy to 2050, states that nearly zero-energy buildings will be the norm in 2050 and that the key drivers will be much greater access to capital for consumers and new, innovative business

models that will help transition investment behaviours. This represents a radical approach of the sector.

## e. Key policy messages for the Green Building and Construction Sector

**Box 10 Key policy messages for the green building and construction sector policy makers**

1. **Public authorities must lead by example:** While this is true for all types of regions, it is especially crucial where green building and construction industries are not yet well-developed – typically in lagging EU regions and in many areas outside large urban centres. Therefore, at the bottom of the policy ladder, leadership by public authorities not only markets green building techniques and living patterns to the public, but it also creates a demand for local construction businesses to invest in transitioning their skill sets. [*All governance levels*]
2. **Less-developed EU regions should use the opportunities presented by Cohesion Funds for investing in public and residential green buildings:** The Cohesion Funds represent a significant financial resource which, especially in New Member States, amounts to a significant share of all public investments in energy efficiency of buildings. The requirement for earmarking a portion of the expenditures for climate change mitigation investments is yet another incentive for greening the building stock. New innovative projects could be funded through Cohesion Funds which would serve demonstration purposes. It should be kept in mind that Cohesion Funds spending should be designed in such a way as to avoid crowding out private funding. [*All governance levels*]
3. **Public support for greening buildings is a low risk investment:** With many regions of Europe still in an economic crisis, green building investment must be promoted based on the supply of local green jobs it provides right away. The local aspect of the jobs and innovations used often results in relatively high returns on investment, which is in contrast to investment in other sectors that rely on foreign technologies. [*All governance levels*]
4. **EU policy schemes will be crucial in determining long term greenness of the building sector:** Following Spain, the seven countries with the largest construction sectors (are New Member States (Hungary, Romania, Bulgaria, Slovakia, Cyprus and Latvia). This likely reflects the jolt national investment in the immediate years leading up to accession as well as the additional availability of European funds directly following membership to the EU. Similarly, GVA from the building and construction sector in more established Member States is neutralized in the 8-10% range. This implies that the availability of European funds is a formidable driver of greening the building and construction sector. As such, placing increased 'green guidelines' on the use of EU funds will have a significant impact on green building, particularly in those countries where green economies of scale are less developed. [*EU level*]
5. **More policy coordination is necessary:** Bureaucratic processes attached with acquiring EU funds appear to be a constraint for regions, so efficiency of the allocation process should be prioritised. Likewise, additional information on the effectiveness of policy schemes is also needed. This requires that more information and monitored regarding resource efficiency in buildings, as well as stricter guidelines enforcing that ex-ante and ex-post evaluations of policy programmes are always a part of funded initiatives. [*Multi-level*

*governance and coordination*]

6. **Improve awareness and accountability through monitoring:** When attempting to trace the resource efficiency performance of the building and construction sector, one of the critical observations was the overwhelming lack of good regional data. Given the high regional variations that were observed, coupled with the fact that greening potential of the sector is directly related to existing performance, this lack of data is a major limitation creating comparable information for holding regions accountable to greening their build stock. [*Mainly national level*]
7. **Proactive urban land use policy in urban regions is essential for maximising green building impacts:** Due to the tight connection between green building and green urban mobility, any building investment in urban regions that doesn't adhere to the principles of integrated land use planning will fail to maximise it positive impacts. Therefore, urban policy must further emphasize reduced land take as a policy priority through brownfield and greyfield development. This implies the importance of using innovative information such as integrated land use / transport modelling more actively within the formulation of policy, planning practices at all levels of government. [*Mainly local governance level*]
8. **Policy development at all levels must reflect the importance of engaging local actors:** Not only is the firm structure of the construction sector extremely decentralized, local (especially municipal but also regional) governments are the ones essentially responsible for coordinating green building development on the ground. This is due to the fact that municipal/regional governments of Europe hold the main competency for land use development in Europe, and are thus responsible for making planning-related decisions on how the built environment shall be developed. National and international funding schemes must continue to provide support for initiatives that are translated actions by local and regional authorities. [*All governance levels*]
9. **Innovative funding models targeting the retrofit of existing buildings will be required to get EU regions 'over the top':** The top of the ladder in any policy chain is when new innovations become commonplace and policy incentives are no longer necessary for supporting the development of the sector. The final, most important policy measure will thus be nationally-based financial models that reduce the capital requirements of green building investments for home and building owners. Termed as 'the golden rule' in the U.K. or 'pay as you save' by other authorities, these financial models go beyond tax incentives or subsidies by providing building owners with capital to invest in greening their buildings, which is then paid off as energy savings are achieved. While a number of logistical and bureaucratic hurdles stand in the way of such policies, notable progress is being made in the U.K. and in Ireland. a Green building and construction is no different. Therefore, all Member States must take up the difficult discussions on innovative funding schemes – particularly via the formation of Energy Savings Companies (ESCO or ESCo) for developing funding mechanisms that transfer investment costs to the payback period of the investment. In a territorial perspective this will be especially important in existing large urban centres which typically have relatively high shares of old buildings that perform poorly in terms of resource efficiency. [*All governance levels and the private sector*]

**Modality of implementation**:

All of the above measures could be developed simultaneously and require a persistent long-term effort. Compliance with existing legislation is fundamental. the first task for countries and regions which are lagging in this

respect. Efforts on awareness-raising should be constantly aiming at triggering behavioural changes and standards in the sector. Member States should not miss the opportunity to programme wide and far-reaching investments into greener buildings through the Structural and Cohesion Policy. This is already happening through the Partnership Agreements and Operational Programmes being drafted but the good intentions should be turned into concrete projects in all types of buildings – private and public.

# 6. Water

## a. Green economy implications of policy

The EU water legislation is a key driver for green economic growth in the sector. The EU water policy has developed from purely addressing human and economy's water needs to a more holistic policy embracing the environmental impacts of water use and the needs of the ecosystem, which is a central aspect of the e.g. the Water Framework Directive (WFD). The role of water in green economy has received an increasing attention in the EU policy framework and has through the concept of resource efficiency received a central position.

The WFD is the key legislative act, setting the course for the EU water policy. It is complemented by other regulations in certain areas such as the Groundwater Directive (2006) and the Environmental Quality Standards Directive (2008). In addition, related previous legislation includes The Urban Waste Water Directive (1991), The Nitrates Directive (1991) and the new Bathing Water Directive (2006). More recent legislation in the water sector includes the Floods Directive (2007) and the Marine Strategy Framework Directive (2008).

The WFD objective of efficient use of water resources is a backbone in a green economy. The wide approach to water management taken by the WFD has opportunity to impact many economic sectors as water is involved (and is a main factor) in a huge range of human activities, and therefore in the policies applied to regulate them.

The WFD establishes the principle of the recovery of the costs of water services, 'including environmental and resource costs' which effectively recognises the value of ecosystem services."

Investment into drinking water and waste water infrastructure, as promoted by the key water directives; WFD, the Urban Waste Water Directive and the Ground Water directive, strongly supports green economy development as it provides an opportunity to create new jobs, especially in new MS which have bigger gaps in implementing the directives. Providing adequate quality and quantity of water also leads to big opportunities of costs savings as e.g. improved waste water treatment reduces the cost borne by society due to improved health as well as it provides a basis for economic activities.

### *b. Territorial implications of policies*

The territorial dimension of policy and governance within the WFD is strong. The territorial approach of the WFD, to plan alongside geographical boarders rather than according to administrative, is novel in the EU policy framework. The water sector reflects a clear and fairly well-defined multi-level governance and policy perspective. Water directives (WFD, UWWTD, Drinking water directive) are transposed by national governments into overall frameworks, which are then implemented by local and especially regional governance structures. As such, regional and local institutions play a crucial role in constructing place-based policy approaches and ensuring that they are effectively implemented. These explicitly take into account territorial specificities and local concerns and where cities and regions should get bigger responsibility in developing a sustainable and "adaptive" water policy in the context of fiscal consolidation, social, technological and environmental transformation, in response to climate change, demographic and urbanisation pressures.

The WFD applies a river basin approach to governance and planning and the measures proposed in the directive are explicitly territorial:

- The Directive establishes governance by natural geographical units, river basin districts. Identification of water bodies is central;
- A river basin management plan (RBMP) shall be established for each river basin in the EU analysing the water bodies characteristics and drawing up a programme of measures to address major problems;
- it calls on Member States to cooperate on cross-boundary RBDs;
- the Directive establishes a planning system at the level of RBDs, and calls for public participation in river basin planning;
- Consideration of natural boundaries and areas (RDB and water bodies) is key; (EEA, territorial dimension of environmental sustainability.

### c. Distance-to-target and policy effectiveness

Much of the achievements in improving water resource management in Europe (high level of public water supply of good quality and a high level of sanitation) can be attributed to the strengthened EU policy. The objective of good status of water bodies will not be achieved for a number of countries. The EEA State of Water report and the Commission's assessment of the RBMPs show that the WFD objective of good ecological status is currently achieved in 43 % of the reported freshwater bodies and that the additional measures included in the plans are expected to increase this to 53 % by 2015 (EC, 2012a).

The Water Policy Fitness Check (2012) concluded that wastewater treatment all over Europe has improved during the last 20 years as a result of the UWWD. A few countries have fully implemented the UWWD, including Austria, Germany and the Netherlands. As for the EU-12, implementation of the Directive is subject to transition periods up to 2018. The Directive presents major challenges which relate both to the establishment (or improvement) of waste water collection systems and to the development of the necessary levels of treatment to comply with the Directive.

Availability of resources to cover investments remains a bottleneck for compliance. Therefore, cost-effective innovative technical solutions should be promoted.

## d. Transformative approach

The water sector can largely be considered as an incremental policy and oriented towards pollution prevention, resource saving and risk reduction. However there are some radical aspects. The WFD applies a novel approach to water management and attempts to transform the way water is used and managed within Europe, using a "source-to-sink thinking". The main objective is to "achieve the desired quality of the water resources and to ensure that there is enough clean water for different uses." The WFD also makes the case for the use of economic instruments and establishes the principle of the recovery of the costs of water services, 'including environmental and resource costs' which effectively recognises the value of ecosystem services and can be considered as a radical approach within the water policy.

## e. Key policy messages in the Water Sector

**Box 11 Key policy messages for the water sector policy makers**

1. **In a green economy, overall water efficiency needs to be significantly improved through reduction of water consumption and improvement of technology. Hence, abstraction will be reduced**. Water of adequate quality and quantity is a prerequisite for virtually all economic sectors. The lack of water of appropriate quality and quantity can therefore be (or might become) a significant hinder to development, leading to tangible social, environmental and economic costs. If water efficiency is increased through policy and technologies, more water would be available for other purposes such as manufacturing etc., resulting e.g. in job creation in other sectors. Decoupling water use from economic activity needs to be a key factor. Policy improvements of water management need to be implemented across sectors and across territories. Water efficiency is closely related to setting the right price for water thus stimulating businesses and households to change their behaviour. Water efficiency should be a criteria in Cohesion policy projects and other government investment. [*All governance levels*]
2. **Investments into ecosystems are central.** Water ecosystems provide life-supporting services to Europe's economy and society which have an economic value counted in billions of Euro, such as: provisioning and regulating services (e.g. water purification and carbon absorption by wetlands). It is important to have a fair approach to water abstraction that fulfils not only the needs of competing economic sectors but also the requirements of healthy and resilient freshwater ecosystems. [*All governance levels*]
3. **Investment in water supply and waste water infrastructure can accelerate a transition to a green economy**. Improved drinking water service and waste water treatment and the related water infrastructure can provide significant returns both for the economy and the environment as well as it reduces costs to society stemming from poor water and sanitation services. At the same time it contributes to the achievement of objectives in the Europe 2020 strategy of creating new jobs and stimulating growth. The potential for growth and jobs creation are especially significant in regions in the new EU Member States as there are still large gaps to the EU acquis and where the transition period for the Urban Waste Water Treatment Directive

spans until 2015 (for most new MS) and 2018 (Romania). A better water infrastructure could improve water management in industry, building, agriculture and tourism and decrease the environmental pressures of the sectors and it could in addition create new dynamics within the sectors. [*Mainly local and regional level*]

4. **Better water pricing is needed.** Today, water prices do not normally reflect the true value of water while charging for the full cost of resource use would generate incentives to improve the efficiency of the use of water resources. Pricing can also be an effective awareness-raising tool for consumers and combines environmental with economic benefits, while stimulating innovation. It can generate revenue for financing investments into sustainable water management. It should however be noted that all individuals have the right to adequate water provision, irrespective of their available financial resources. Adoption of new policies in the water sector should be accompanied with carefully designed economic instruments. Economic instruments are major drivers of greening the water sector. Today there is a lack of market incentives for sustainable water management which can negatively affect behaviour in ways that set the economy on an unsustainable path (or conversely missing growth opportunities). [*Mainly local and regional level depending on the methodology for price setting. The methodology is usually defined on a national level.*]
5. **Implementation of best available technique has large potential of water savings**. It is estimated that 20-40% of Europe's water is wasted and water efficiency could be improved by 40% through technological improvements alone. Huge water quantities are wasted through leakage and inefficient consumption practices. With a large part of Europe's water infrastructure being up for renewal it is vital to use this opportunity for technological improvements instead of sustaining inefficient solutions. In addition, water savings have the potential to avoid additional investments into water supply infrastructure, reduce sewage and waste water discharge as well as limit the need to capture new water sources. Moreover, it would also reduce energy consumption, electricity bills and $CO_2$ emissions. [*Mainly local level*]
6. **Innovation in the water management and technology sector needs to be further supported**. Innovation could increase efficiency throughout the water management cycle creating jobs and providing value added to the economy as a whole in European territories. Innovation can include water saving techniques, prevention and reuse approaches, clean processes, end-of-pipe treatments, system design, IT-tools for management, monitoring and control systems, flood forecasting techniques, ecological engineering, appropriate technologies, desalination, etc and should also carry with them the framework conditions – institutional settings and governance – to be effectively deployed. As water is a horizontal sector, innovation would improve water performance and "greening" across sectors. EU policy has a key role to play here. [*Incentives are given on national level. Implementation is on local level.*]
7. **Take advantage of waste water as a resource**. Waste water is not waste but a resource. Waste water is a source for nutrients and heat energy. Reuse of waste water and grey water is important for stimulating growth in water scarce regions, and treated waste water can be used for irrigation which is being increasingly used in certain countries. Water re-use is considered to have lower environmental impact than other alternative water supplies such as desalination or water transfer. The composition of waste water is enabling energy recovery and, for instance, biogas can be produced from the sludge to reduce the plants energy dependency.[*Mainly local and regional level*]

**Modality of implementation**:

All of the above mentioned measures could be developed simultaneously and there is no need for a staged approach. In a period of financial crisis in many of the EU countries Cohesion policy funds are and will remain one of the few certain sources of financing for water infrastructure and therefore they should be fully used. Significant work is needed on changing a mindset whereas water is considered as a quasi-free resource. However, experience shows that higher prices spur innovation hence water prices could be higher even in a period of crisis. Currently, the needs are pressing with regards to implementation of already existing EU legislation especially in the countries of Eastern and Southern Europe. Countries from Southern Europe with significant water stress are faced with much more urgent need to implement all of the above.

# 7. Waste

## a. Green economy implications of policy

The EU waste policies developed in the past 20-30 years have changed the way waste is handled dramatically. Therefore the overall impact of waste-related policy on the green economy is significant – for example an entire economic sector of recycling has been created. Due to the variety in waste types and the way it is handled the European Union has adopted a relatively big number of waste acquis.

The Waste Framework Directive 2008/98/EC and the Directive on Waste 2006/12/EC provide the overall frame, philosophy and definitions for the EC approach to waste. Both documents emphasize the importance on the waste hierarchy, recovery, recycling and use of Best Available Technique (BAT). While waste prevention is a more complex and long-term effort, recycling has brought numerous benefits to societies such as job creation and GVA generation. Without setting explicit targets the Thematic Strategy on the Prevention and Recycling of Waste has been the strategy which inspired a number of concrete directives down the line. It states clearly that increased recycling creates jobs: recycling 10 000 tonnes of waste need up to 250 jobs compared with 20-40 jobs needed if the waste is incinerated and about 10 for landfilling.

There are several directives which address different waste treatment operations. The Waste Landfill Directive 1999/31/EC emphasizes the importance of preventing bio-waste from landfill and also bans the landfilling of such waste streams as tyres and ELV. The Waste Incineration Directive 2000/76/EC sets up strict exploitation standards for incineration plants whose environmental impact had been contradictory for a long time.

A number of directives deal with major waste streams: Packaging Directive 94/62/EC, End-of-life Vehicles Directive 2000/53/EC, Waste from Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC, Batteries and accumulators 2006/66/EC, Construction and demolition waste Directive 2008/98/EC. These directives are effective because of the recycling targets in them which oblige countries to sharpen their collection, separation and recycling systems.

Waste from extractive industries is addressed in Directive 2004/35/EC on Environmental liability with regard to the prevention and remedying of environmental damage. Among other things the Industrial Emissions Directive 2010/75/EU tackles industrial waste management.

## b. Territorial implications of policies

Local municipalities and regions play an important role in waste management in a number of countries. Although EU directives do not specify this explicitly, in most (if not all) cases individual municipalities are responsible for waste management. However, regions are a suitable geographical level for coordinating the efforts of individual municipalities and setting up systems for integrated waste management. Modern waste management has started on municipal level but countries have realized that in many cases regions are the more cost-effective governance level establishing an integrated system.

Additionally, cities are the main generator of Municipal Solid Waste (MSW) and industrial waste as the population density is high and cities or industrial parks next to the cities are home to a number of industries. An urban setting, which tends to support a diverse and compact pattern of production and consumption, is further advantageous to advance the notion of 'industrial ecology' whereas waste from one production is used by another industry (Lowe and Evans 1995). Therefore, cities and regions hold the key to many more exciting policy innovations.

## c. Distance-to-target and effectiveness

The main target related to MSW comes from the Waste Landfill Directive – by 2016 biodegradable municipal waste (BMW) to landfill must be reduced to 35% of the waste quantity (1995 is a reference year). In principle, countries from the North and West are performing much better in this aspect, compared to countries in South and Eastern Europe. What is important in this regard is the prohibition of landfilling untreated waste which is in place in a big number of countries. A number of targets have been set by the Packaging Directive. Countries are well on track to fully complying with the targets for the different waste streams – plastic, paper, metal. Compliance is on a relatively high level for end-of-life vehicles regulated by the ELV Directive.

An assessment by an EEA study in Estonia, Germany, Finland, Italy, Hungary and Flanders (Belgium) has come with the conclusion that the Waste Landfill Directive has been very effective. The Landfill Directive's success is due to long-term and intermediate targets providing a good framework for countries to innovate and landfill less biodegradable municipal waste. The directive's flexibility has allowed Member States the possibility to try out alternative policies, adjust measures to match national and regional realities (including existing waste management practices, institutional structures and environmental conditions), and adapt policies in the light of experience (EEA, 2009, Diverting waste from landfill). The directives dealing with individual waste streams (packaging, ELV, C&D, WEEE, batteries) have already been evaluated as very effective or at least have the potential to become such.

## d. Transformative approach

In general, waste policies did have a very transformative approach when they were introduced as they opened up a new attitude towards waste and it started to be regarded as having value that could be recovered. In the 2000s, EU policies also played a transformative role in the New Member States where on one hand a big number of dumpsites had to be closed and on the other hand there was a need to build new sanitary waste infrastructure and to set up national systems for recycling of different waste streams. Once these systems are in place and if the countries/regions adopt a compliance-only mode the improvements are only incremental.

A new set of policies needs to be adopted for a new, radical transformation of waste management. It is possible that these new transformative policies would not come from the EU level but rather - from those countries that are the most advanced in the sector. The new policies would target mainly prevention through Integrated Product Policy (IPP), circular economy and waste-to-energy.

## e. Key policy messages in the waste sector

**Box 12 Key policy messages for the waste sector policy makers**

1. **Greening of the waste sector should be associated first and foremost with waste prevention which should be stimulated through an array of policies including economic instruments, better design requirements, improvement of Integrated Product Policy and awareness raising.** Only when this is not possible greening the waste sector should be understood with moving waste management from methods low on the waste hierarchy (landfilling) to methods high in the waste hierarchy (recycling). [*Mainly through national level policies*]
2. **Product design plays a crucial role in the amount and type of waste generated**. The EU Eco-design (2009/125/EC) sets a framework for specifying eco-design principles and requirements for energy-related products, including design principles related to resource use and waste. Yet the focus in implementation so far is clearly on energy aspects. The EU Ecolabel is another instrument to guide design towards more resource-efficiency but it has had only limited influence on the overall market. **There is a need to stimulate better design** including the cradle-to-cradle concept which requires the use either of non-toxic, non-harmful synthetic materials that have no negative effects on the natural environment and can be used in continuous cycles as the same product without losing their integrity or quality, or of organic materials that, once used, can be disposed of without negative environmental impacts (Braungart and McDonough, 2002). The type of materials used is crucial for the recyclability of the product. [*Mainly through national level policies. Implementation is on the level of individual company.*]
3. **Greening of the waste sector should also be closely associated with industrial ecology** where waste of one industry becomes raw material for another one. Industrial ecology can be stimulated and coordinated by regional and local authorities. EU and national funding could earmark funds for this progressive approach to waste management. Closely related terms include ‘closed-loop’ system, circular economy and zero-waste system. Treating the waste close to the place of origin is also an important aspect of greening the waste sector. Therefore, regions and cities have a key role to play in setting up industrial ecology systems. [*Mainly on regional and local level*]

4. **Development of waste treatment infrastructure is a matter of policy drivers and available funding.** For example, with the support of Cohesion policy, New Member States have recently built significant sanitary landfill capacities. Without any doubt a sanitary landfill is better than wild dumping or non-sanitary landfills. However, this development is ambiguous as available sanitary landfill capacities might divert policy attention to landfilling instead of other waste treatment options. Designing the right gate fees (landfill and incineration) will determine to a big extent the demand for the waste treatment method on one hand and the supply of capacity on the other hand. [*Mainly on regional and local level*]
5. **The level of implementation of policy depends on the size and quality of the administration.** With the adoption of each new waste policy a respective administrative backing should be secured. Policy implementation is closely dependent on business and citizen awareness therefore it should not be underestimated. **New policies should be accompanies by capacity building**.[*Mainly on local level]*
6. **Adoption of new policies should be accompanied with carefully designed economic instruments** which should send the right signals to the economic operators and stimulate waste treatment methods high on the waste hierarchy.[*All governance levels]*

**Modality of implementation**

The waste policy mix depends on the stage of development of waste management. In the 2000s countries in Eastern Europe have mainly focused on closeing illegal dumpsites and building an appropriate waste management infrastructure for landfilling. Indeed, this process needs to be completed but waste prevention and recycling efforts should be intensified. Leading countries are in the position to go much beyond the EU binding targets for recylcings which they have anyway already reached. Their efforts should be on more transformative, system-wide and behavioural approaches leading the way for the rest. In Europe, there are excellent examples of circular economy which should be capitalised upon. Cohesion policy 2014-2020 is an excellent opportunity for waste management interventions: on one hand waste infrastructure will be completed but more importantly – good waste management could be integrated in interventions related to SMEs and innovation.

# 8. Tourism

## a. Green economy implications of policy

Tourism sector falls mainly under the Member State competencies but currently the very limited EU policy framework has started to support the greening of this sector.

In 2010 the EC released a communication on tourism - 'Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe". The document emphasizes that sustainability is a main factor for the competitiveness of the European tourist sector. The document promotes the diversification of tourism based on the cultural and natural resources of the destinations. Initiatives such as the European cycle routes or pilgrimage routes which have a clear trans-national character are found here while there are plans to expand the actions to include the

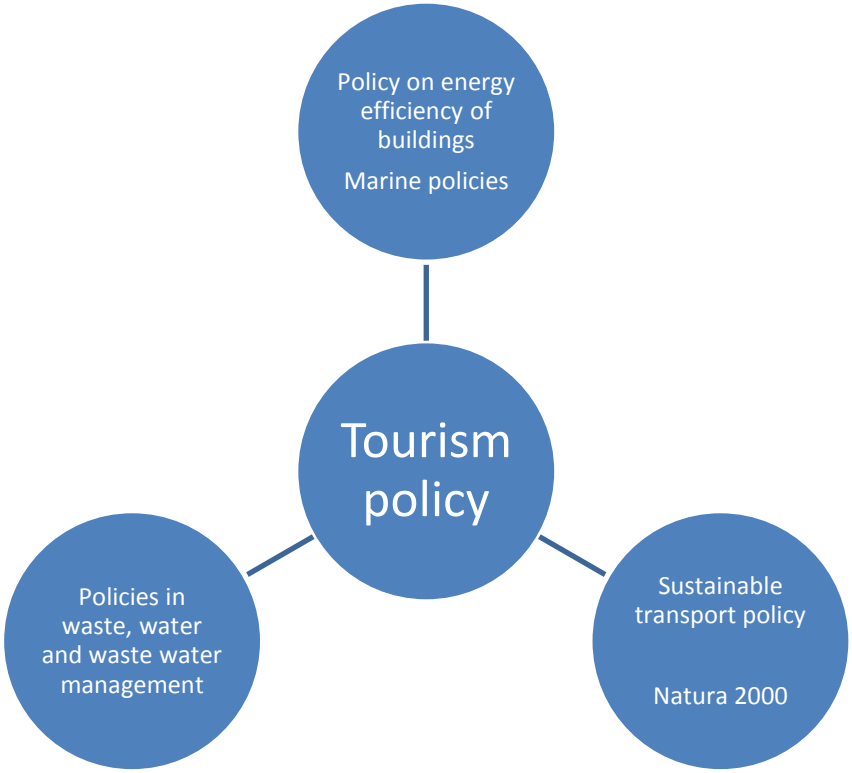
Natura 2000 network. It also promotes the development of sustainable, responsible and high-quality tourism including the responsible use of natural resources, pressures on water, waste production, biodiversity, the use of clean energy, and preservation of natural and cultural integrity. The EC has introduced a number of tools to facilitate the sound environmental operation of the industry such as the Network of European Regions for a sustainable and competitive tourism (NECSTouR) and the European Destinations of Excellence (EDEN). The EU Eco-label and the Community Eco Management and Audit Scheme (EMAS) are closely related instruments.

The Commission is working towards a "**European Tourism Label for Quality Systems**" in the form of a voluntary "umbrella" label which assesses and recognises tourism quality systems. A stakeholder consultation took place in 2012, and the Commission foresees to present a proposal for the European Tourism Label for adoption by the Commission during 2013. In the criteria mentioned in the consultation document, sustainability of the tourist operation is however missing.

Internationally recognized eco-certification programmes, such as Green Globe provides a framework for tourism operators to green their business by measures such as developing clean energy and waste management practices, using locally grown organic produce and by marketing their services as "green" and incorporating into the growing eco-tourism market.

The EU Structural and Cohesion policy also includes some support for development of sustainable tourism.

**Figure 6** **Link between tourism policy and other sectoral policies**



## b. Territorial implications of policies

In relation to green planning and management of tourism, land use planning is a key issue for maintaining a balance between tourism development and maintaining the qualities, ecological functions, and experiential attractiveness of the resource base. Also issues of nature protection and establishing more parks and protected areas for biodiversity and visitor experiences and interpretation is an issue here including marine parks as tourism is highly oriented to the sea.

## c. Distance-to-target and effectiveness

There are very few targets in the tourist policies per se. Therefore, when we discuss the issue of compliance with policies and distance-to-target we have to refer to targets in other policies such as waste management, water and waste water treatment, improvement in energy efficiency of buildings, etc. Compliance with these targets is more challenging in the tourist sector as tourism is not evenly distributed in time. Therefore, the relevant infrastructures should be adapted to peak season numbers.

The effectiveness of tourist policy (at least on the EU level) depends on the success of the many initiatives within the framework and it is too early to assess a number of these. There is an Implementation Rolling Plan to ensure the successful implementation of the Tourism Communication with regular updates by the EC.

## d. Transformative approach

Overall, the 2010 Communication is providing a framework for a number of actions with high potentials for transforming the tourism industry in several ways, including greening. But the small number of tourism enterprises with eco-labels or EMAS certificates seems to indicate that the tourism sector has so far not been stimulated to participate in these programs or the greening of tourism. According to the ECORYS (2009:V) report, eco-innovation has hardly entered the tourism industry and the low absorptive capacity for innovation among SMEs, as well as limited knowledge about the concept of and need for innovation in many SMEs, makes the promotion and adoption of innovative practices a real challenge in a tourism industry dominated by SMEs (and especially microenterprises). A transformation towards greening will be linked to successful involvement of the many SMEs and microenterprises in the process.

## e. Key policy messages in the Tourism sector

**Box 13 Key policy messages for the tourism sector policy makers**

1. **The integration of sustainability in tourism policies and initiatives at the national, regional and local levels:** The development of more sustainable tourism has increased in priority in the EU and particularly the 2010 Communication points to a number of actions to increase sustainability in tourism. Furthermore, the progress of implementation can be followed through a Rolling Implementation Plan. However, to become more widespread, the issue of sustainability need to be integrated in policies and initiatives at all levels down to the destination level. [*All governance levels*]
2. **Including tourism destination planning and sustainable development**

**strategies in the public planning systems at all levels** would increase the focus on sustainability (i.e. assessment of the existing conditions and setting goals of greening). It can contribute to better land-use planning and community integration. [*All governance levels*]

3. **Government investment in public goods and services:** The availability of state-of-the-art infrastructure such as tertiary wastewater treatment plants, waste handling and recycling systems, public transport etc. is needed for the tourism sector to increase their environmental performance (as well as the impacts from the overall community). Currently, much wastewater is discharged untreated into the sea and negatively affecting bathing water quality, biodiversity etc. Providing these basic systems and public services is a community issue beyond the individual enterprise.[*National governance level*]
4. **Increase consumer awareness and changing demand:** Consumer awareness and changing demands play a central role for achieving a greener tourism sector in Europe. Consumption patterns are generally more excessive in tourism (e.g. higher per person water consumption and waste production) and there is high potential for reductions. [*All governance levels*]
5. **Increase industry awareness and involvement in greening of tourism sector.** Among the key obstacles for the tourism industries to engage in greening is the highly fragmented nature of the industry and the high number of microenterprises and SMEs with limited resources (finances, time and knowledge) to get involved. Reaching out to a wide variety of small tourism businesses is a difficult task. Small enterprises need to see some obvious benefits and quite immediate results. [*All governance levels*]
6. **Local networks and initiatives to support the transition of tourism SMEs by supplying information, education, and concrete practical tools for engaging in greening initiatives**. The focus could be on promoting such tools as environmental management systems and certification as well as Corporate Social Responsibility and measures such as triple bottom line reporting. Destination cooperation and networks may provide support for this and stimulate the individual enterprises to join. In addition to knowledge, the provision of neutral consultancy and a concrete plan for greening of enterprises would make the transition more likely if combined with schemes for financing the greening. [*Local and regional level*]
7. **Better use of investment support schemes in tourism**. The development and spreading of simple investment support schemes for greening could be a good option for the small tourism enterprises, which would allow them to install the green technologies and keep paying their current expenses (or a bit less as an incentive) for energy, water, waste and waste water treatment until the environmental investments are paid for, and then gain the full savings. [*All governance levels*]
8. **The indicators for sustainable tourism and the environmental criteria of tourism need to be further developed and implemented.** Overall, the development of indicators for sustainable tourism such as the European Tourism Indicator System for Sustainable Destinations (DG Enterprise and Industry 2013) is a valuable tool but needs implementation. Having a consistent set of indicators will improve measurement of the baseline situation and the progress of greening in a comparable way across EU territories. The existing measures of the performance of the tourism industry at national and EU-level are primarily of the socio-economic aspects (e.g., capacity and occupancy of tourist accommodation), while environmental aspects and 'greenness' of the tourism sector are not measured or reported systematically. Moreover, tourism is highly cross-sectorial in nature and relates to most of the other sectors (e.g., building and construction, energy,

water management, transport), which makes it challenging to measure its direct impact on the economy. [*National governance level*]

9. **Introduce reporting of a key environmental data through the Tourism Satellite Account (TSA) system** which is already collecting information on tourists and the economics of tourism activities in most member countries. This could for example be the yearly consumption of water and energy in each tourism facility which may be extracted from energy and water bills. Also the level of waste water treatment at the facility the enterprise is linked to could be reported, as well as the waste handling systems. This would provide the opportunity for clarifying the per-guest-night consumption of water and energy and the residual waste (BOD5) not retained by wastewater treatment systems, and the amounts of waste per guest night. These data on consumption patterns and related outputs to the environment (e.g. waste water quality after treatment) could help identify where the impacts of tourism are highest and where 'greening' initiatives in tourism would lead to the greatest improvements. This would also help increase awareness of the environmental issues in tourism, as the expenses and potential savings become visible. A systematic reporting of environmental data in tourism would allow the EU statistical office to increase the environmental reporting on tourism issues and obtain more of a triple bottom line reporting. [*All governance levels*]
10. **Harmonise environmental labelling programs.** The proliferation of certification schemes in tourism is confusing to both tourists and the tourism industry. Currently, there are over 140 tourism supply chain certification schemes worldwide. Initiatives have been taken by the Partnership for Global Sustainable Tourism Criteria (GSTC Partnership - a coalition of more than 50 organizations working together to foster increased understanding of sustainable tourism practices) to establish **global criteria for sustainable tourism**. The different certifications can then achieve GSTC recognition if their standards align with the Global Sustainable Tourism Criteria. This could be an option of the different European labeling schemes to use this global label as a tool for harmonisation. The EU Ecolabel (Flower) has a few hundred certified tourism enterprises but with approx. 202,380 hotels and similar establishments and 270,603 other collective accommodation establishments there is great opportunities for expanding environmental certification and obtain the savings (environmentally and economically). Studies of the greening of tourism indicate that there are high potentials for positive gains from greening of the tourism sector. [*EU level*]
11. **Include sustainability criteria in the "European Tourism Label for Quality Systems" (ETQL).** This has been analysed (CEPS 2012) for 3 different options: Option A: provision of information on participation in an environmental scheme, such as the EU Ecolabel or EMAS. Option B: inclusion of specific environmental criteria inspired by other EU initiatives (e.g. the EU Ecolabel) and tailored to the tourism sector. Option C: compulsory participation in an environmental sustainability scheme. Choosing more mandatory options such as B or C would increase focus on sustainability. [*EU level*]
12. **Coordination of greening of tourism with greening initiatives in other sectors.** Tourism is highly cross-sectorial in nature and related to other sectors such as transport, building and construction, energy, water management, and waste management as well as marine affairs, biodiversity etc. Much of the greening initiatives are driven by each of the sectors and policy affecting the greening of tourism will in fact originate from policies primarily related to other sectors. Coordination of the greening initiatives

across sectors is highly relevant for the tourism sector.[*All governance levels*]

# 9. Transport

## a. Overall text on green economy implications of policy

The White Paper on transport is a roadmap for the transport system in Europe. It contains the vision of the European Union for a competitive and sustainable transport system, includes ambitious targets to be achieved and defines the policy agenda for the next years.

The White Paper emphasises the important role transport has for the European economy and citizens, thus accepting growing transport volumes and mobility as "curbing mobility is not an option" (EC, 2011a, 5). At the same time, the White Paper tries to handle this with objectives and measures for strictly greening the performance of the transport system. "The paramount goal of European transport policy is to help establish a system that underpins European economic progress, enhances competitiveness and offers high quality mobility services while using resources more efficiently. In practice, transport has to use less and cleaner energy, better exploit a modern infrastructure and reduce its negative impact on the environment and key natural assets like water, land and ecosystems" (EC, 2011a, 5). By doing so, the transport system is expected to clearly reduce its oil dependency and to reach a 60% reduction of greenhouse gas emissions by 2050 compared to 1990.

Other parts of the vision elaborated in the White Paper on transport include efficient core networks for multimodal intercity travel and transport, considerations for long-distance travel and intercontinental freight by air and maritime, expectations for clean urban transport and commuting and a set of ten goals for the transport system (see below).

The implementation strategy outlined in the White Paper is very comprehensive. It is organised in four main pillars, a single European transport area as framework for transport users and operators, innovation in technology and behaviour, modern transport infrastructure including smart pricing and funding, and finally the external dimension of transport. The White Paper includes a list of 40 initiatives foreseen, most of them subdivided in several parts. Those initiatives are to be taken into consideration in the ongoing decade to move from the vision to future reality (see also EC, 2011c).

TEN-T is a new network of major transport corridors which is supposed to remove bottlenecks, upgrade infrastructure and streamline cross-border transport operations for passengers and businesses throughout the EU. It is expected to improve multi-modal connections and contribute to the EU's climate change objectives.

TEN-T is seen "as an essential tool for transport policy to meet the overall target to reduce by 60% emissions from transport by 2050" (European Commission, 2013, 7). The expectation is that the TEN-T network as multimodal network will induce a substantial shift of passengers and freight from road to rail and other transport modes. However, it can also be expected that new transport infrastructure induces

new demand. In any case, new transport infrastructure has negative environmental implications in terms of land take and fragmentation.

Expectations for impacts on the economy and territorial cohesion are positive. However, it depends on the type of infrastructure whether the economic impact has a "green" component.

Currently, the transport sector development is not fully on a green path. Some environmental improvements have been achieved but transport volumes have grown; modal shares are dominated by less environmental modes; transport was the only sector in which $CO_2$ emissions went still up in times in which other economic sectors made already good progress in the reduction of GHG emissions. However, $CO_2$ emissions are slightly going down now in Europe. Technological improvements for more energy-efficient vehicles were implemented, but in terms of the overall performance of the transport sector such improvements were outweighed by growing transport volumes and the trend to larger engine sizes. Signs of decoupling of the energy use of transport and its $CO_2$ emissions from economic development visible during the last years cannot simply be attributed to success of policies and behavioural changes, but might also be the outcome of the economic crisis.Greening of transport seems to be in a dilemma between economic and environmental objectives. Any policy packages that would reduce the overall growth of mobility and the external effects of transport would potentially have an impact on the economic performance of the sector. It cannot properly be assessed whether a greening of the transport sector would also have net economic benefits or whether this would lead to economic problems of the vehicle industry and the transport operation sector as claimed by transport lobby organisations.

The discussions on greening the transport sector have reached official European policy. Several initiatives, legislative decisions and the development of a long-term roadmap are outcome of these. However, expectations to the transport sector from other parties are even more demanding.

### b. Territorial implications of policies

The implications for territorial development of the White Paper (Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport) on transport are widespread. If the planned transformation of the transport system will be realised, all territories will be affected by the different actions. There are also several elements of the roadmap for which the implementation is targeted to the national and/or regional level.

### c. Distance-to-target and effectiveness

As the White Paper on transport is only two years in place and the targets are set for the next four decades, it is too early to make an assessment of the effectiveness of the policy.

### d. Transformative approach

Some of the elements of the White Paper on transport are incremental such as many of the technological options and emission regulations foreseen, other are more radical such as the ban of conventionally fuelled cars from cities. However, as the

White Paper does not change fundamentally the way transport is driven by demand, it cannot be seen as transformative, i.e. it does not aim at a complete paradigm shift.

## e. Key policy messages in the Transport sector

**Box 14 Key policy messages for the transport sector policy makers**

1. **There is a strong need, but also a large potential to reduce energy use and GHG emission stemming from the transport sector.** The transport sector is a strong economic sector which has a tremendous importance in some European regions and for Europe as a whole. The transformation of the output generated by this sector towards environmental friendly vehicles and more public transport vehicles and other freight transport vehicles than lorries is a huge challenge. [*EU* level]
2. **A framework for developing a green transport sector in Europe should be based on the green growth strategy for the transport sector proposed by UNEP (2011).** For the greening of the transport sector, a fundamental shift in investment strategies is required. It should be based on three elementary principles, namely avoid, shift and improve: [*All governance levels*]
3. **Promotion of access instead of mobility.** This means to avoid or reduce trips through the integration of land use and transport planning to promote more compact or mass transit corridor cities and regions and by enabling more localised production and consumption patterns.
4. **Shift to less harmful modes of transport.** This includes in particular public and non-motorised transport for passenger travel and rail and water transport for freight. This should be enabled by shifts of financing priorities and coupled with strong economic incentives such as taxes, charges and subsidy reforms.
5. **Improvement of vehicles towards lower carbon intensity and pollution**. The development and widely application of green transport technology fostered by appropriate regulations for fuel and vehicles is seen as a priority to reduce air pollution and greenhouse gas emissions.

The main lessons learned from the analysis of the green performance of the transport sector in Europe and its regions and the transport policies in place can be summarised as follows:

6. **Broadly accepted long term vision for green transport necessary.** The White Paper on transport contains a roadmap for the development of transport in Europe for the next forty years. It defines a range of objectives and actions to be taken in the next decade that definitely work in the direction of greening the transport sector. $C0_2$-free passenger transport and logistics in cities, multimodal transport networks, shift to more energy-efficient modes of transport, greenhouse gas reduction targets for air and shipping and traffic information and management systems will clearly enhance the environmental performance of the transport system. However, such a long term vision at the European level is not sufficient in two respects. First, more aspects of the vision than now have to be translated in concrete policy action. In particular, to achieve the long term targets, concrete policy actions have to be approached now as it is foreseen by the EC. Second, such a long term vision has to be shared by the member states. The European Union has only limited implementation power to approach its transport related objectives. Thus, member states and regions are required to share such a vision and to

develop and implement policies supporting the way to reach the targets. [*EU and national levels*]

7. **Strong environmental legislation at EU level important.** The environmental performance of the transport sector is strongly driven by regulations and directives of the European Union. Without that the green performance of the transport sector in Europe would be much worse. The continuous increase of emission standards of new vehicles did not only improve air quality in Europe, but was also a major driver of innovation in the automotive industries. However, automotive industries, their lobbies and the member states having important automotive industries often acted as stakeholders to decelerate progress in environmental standards. [*EU level*]
8. **Less demand driven but green priority oriented infrastructure policy necessary.** For decades, infrastructure policy simply followed demand. When transport volumes increased, the infrastructure based solution was always to build more infrastructures to increase capacities. This resulted primarily in the construction and enhancement of the road network with strongest increases in the less environmental-friendly mode of transport. The White Paper on transport sets right-way infrastructure development targets such as the maintenance of dense rail networks in all member states and the tripling of the high-speed rail network by 2030 and a full high-speed rail network by 2050. It also sets the right-way targets for modal shift such as medium and long distance freight from road to rail and inland waterways with 30% by 2030 and 50% by 2050 or that 50% of medium distance passenger should travel by rail. However, given the capacity and quality problems rail transport today has in many parts of Europe, such targets are realistically not to be reached if there is not a much stronger shift in transport infrastructure policy to increase the performance of the rail system in Europe. A concentration on high-speed rail is by far not enough. [*All governance levels*]
9. **Transport policy together with integrated spatial planning to address also the "avoid" part of a green transport strategy**. Transport demand still seems to be a pre-given condition for transport policy that is not to be touched. However, the reduction of transport volumes in terms of trips and distances is an important integrated component for greening the transport sector. Here, transport policy has to be combined with other sector policies. Important tasks in this are with integrated spatial planning at all levels of planning, from the European via the national and regional levels to the very local. Integrated spatial strategies have to aim at spatial structures that reduce the need the travel as such or at least the need to travel longer distances. [*All governance levels with a strong role of the regions*]

# V. The territorial governance perspective

## 1. Multi-level governance for green economy development

Green economy policy efforts are implemented through multi-level governance. While the EU sets the overall directions and targets (through roadmaps, directives and regulations), the Member States translate those to the national context. The regional role in policy definition and implementation is twofold– firstly regions are able to respond to national legislation/targets/strategies; secondly, it is through self-driven, proactive regional policies and vision.

When policies have strong territorial implications this means strong regional governance aspects and regional governments and municipalities often bear the responsibility for the implementation. Such policies also take into account the need to consider specific local characteristics for a successful implementation. This is a recognition that regional diversity and the need for place-based approaches to increase Europe's competitiveness are central.

**Table 5 Characterisation of some policies according to theirterritorial dimensions/implications**

| WEAK | AVERAGE | STRONG |
|---|---|---|
| **Definition: Lack of strategic, institutional and financing territorial relevance and policy's benefits have weak territorial correlation.**<br>**----------**<br>- European Emission Trading Scheme<br>- Financial Instrument: Factories of the Future | **Definition: Average role of regions for implementation of the policy in terms of strategic and institutional framework and average correlation between regional efforts and benefits of policy**<br>----------<br>- Energy Roadmap 2050<br>- Energy 2020: a competitive, sustainable and secure energy<br>- Industrial emissions directive<br>- Integrated Industrial Policy for the Globalisation Era<br>- The Eco-innovation Action Plan | **Definition: Regions play a key role for the implementation of the policy and the policy benefits are manifested on a regional level**<br>----------<br>- CAP/EARD on support for rural development by the European Agricultural Fund for Rural Development (EAFRD)<br>- Directive on energy efficiency<br>- EU Eco-management and audit scheme (EMAS)<br>- Directive on the energy performance of buildings<br>- Water Framework Directive (water pricing, savings)<br>- Waste Landfill Directive (waste treatment infrastructure, regional waste management systems. |

Source: Authors' assessment based on GREECO sectoral reports

A number of policies can be defined as having medium to strong territorial implications, such as the EU Energy Roadmap and the 2020 Strategy for Competitive, Sustainable and Secure Energy. They illustrate that in order to achieve the set goals, planning, development and management of local energy systems (both in terms of supply via renewables and demand-side improvements) will have to be executed at all governing scales, from the EU to the local level, and in particular give increasing importance to the local and regional level. This is the primary reason why green energy issues are an important element of EU regional development funds, and many local/regional stakeholder networks for these issues are supported by the EU. At the same time, the 2020 Strategy for competitive, sustainable and secure energy includes the notion that emissions should be cut via new energy sources and improved efficiency means that policy actions will have to be executed at all governing scales. These policies are however general strategies and do not include

any direct discussion of implementation of place-based approaches at the regional or local level. Also, the Directive on the promotion of the use of energy from renewable sources, COM (2010) 614 - An Integrated Industrial Policy for the Globalisation Era, Eco-innovation Action Plan (Eco-AP) (which includes milestones for each territorial level) and the IED directive can be added to this category.

A multi-level territorial governance approach is beneficial for virtually all policies but particularly for some sectors:

- **Energy:** An increased regional/local perspective will be crucial to incorporate renewable energy in energy systems, and it will also intensify the implementation of support schemes by regional/local authorities.
- **Water and waste:** Cities hold the keys to awareness raising and separate waste collection. Regions are better placed to organize functioning regional waste management systems. Regions are also the right governance level for establishing industrial ecology systems whereas the waste from one industry is used by another industry.
- **Technology and innovation:** Eco-innovation strategy strengthens regional economies and reduces dependency of regions on non-renewable resources and thus increases resilience. Innovation itself usually takes place in cities and local planning is crucial to put in place an 'ecosystem of innovative companies'.

**Box 15** Example of multi-level governance of one issue, the renewable energy sector

**Governance level and related governance aspects:**

- ***EU*** – The climate and energy package and 2020 Strategy for competitive, sustainable and secure energy. Current European energy policy does not have a regional dimension as it exclusively refers to EU's and MS's targets for the energy sector. EU's energy and regional policies have instead a common ground in the Europe 2020 strategy.
- ***National*** – National RES strategy including adoption of targets, feed-in tariffs. At national level MS have implemented individual support mechanisms on RES deployment and production according to their specific socio-economic, political and geophysical context. This implies that the level of support and rules on these mechanism vary individually among MS. The most common support mechanisms are feed-in tariffs, feed-in premiums and quota obligations systems.
- ***Regional*** – Regional Energy Strategy financing, location permitting, etc. The energy policy has a clear local and regional impact and therefore this policy field has become of strategic importance for regions. The Structural and Cohesion funds are the European policy instrument that explicitly targets regions in the area of sustainable energies.

## 2. The role of the national level. Policy messages

Europe's member states need to transpose the EU directives into their national policy framework. The strategic vision and development directions of a country are

formulated on a national level and the key strategic priorities are included in national level programmes which guide regional and local strategies. National level is responsible for coordinating the developing of strategic vision for the future of a specific sector of the economy. If we take the example of Cohesion policy the Partnership Agreements are being elaborated by the national level institutions with the contribution of other stakeholders. The national governance level also drives the programming of transversal sectors in the economy such as innovation. In the case of Cohesion policy these would be all Operational Programmes (except the regional ones). The national level has an important role of providing overall guidance and stimulating the regional and local levels in further developing this guidance and adapting it to territorial circumstances. The national level plays a preeminent role in ensuring overall territorial coherence.

## 2.1. Examples of strong national policies steering the transition towards green economy

**Box 16** ***Germany - Energy Concept 2050: strong transformative character***

Germany has opted for a **fundamental transformation of its energy supply**. Especially against the background that after the nuclear disaster in Fukushima in 2011, the energy production by nuclear energy was re-evaluated in Germany, with the result that all nuclear power plants in Germany will be closed by 2022. In this context, in 2010 the federal government adopted a long-term energy concept. In the "Energy Concept 2050" the government formulated long-term development paths, guidance and targets for a reliable, secure and affordable energy supply. The federal government aims to implement national and international objectives with a cross-sectoral energy concept with an overall strategy by 2050. At the core of the energy concept is mainly the expansion of renewable energy, reduce greenhouse gas emissions and increase energy efficiency. For this, the federal government formulated ambitious climate protection targets for a short, medium and long-term development.

Accordingly, it is the goal of the federal government to reach the share of electricity consumption accounted for by renewable energy to 18 % by 2020 and to gradually increase this to 2030 and 2050 to 30 or 60 %.

Source: Ruhr Case Study

**Box 17** ***Germany - Renewable Energy Sources Act (EEG): transition to RES is financed through well-adapted feed-in tariffs***

The main funding instrument for the expansion of renewable energies in German regions is the Act on Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act - EEG). The EEG was adopted in 2000 as a further development of the former electricity feed law of 1991. Since then it has been amended several times. The EEG is partly responsible for the rapid expansion of RES, especially in the electricity sector and then serves in over 50 countries as a template for similar arrangements. EEG provides that the produced green electricity is fed primarily from the conventional electricity production to the grid. The network operators buy the

produced electricity from the RES operators at a fixed feed-in tariff, determined by the EEG. The effects of this instrument for the expansion of RES in Germany are already measurable today. Thus, 25 % of electricity can be covered by the use of RES wind, solar, biomass or water. Between 2010 and 2012 the share of RES increased from 17% to 23 % of gross electricity generation. By 2016, at least 35 % of the total electricity demand can be met by RES. In the year 2012, 146 million tons of GHG emissions could be avoided in Germany, of which 81 million tons are directly attributable to the EEG. However, the EEG was developed for the early phase of the energy turnaround, in which the share of RES was still low. EEG must be constantly revised to provide adequate support to the energy transition. One perceived problem is the burden for citizens and businesses by additional costs of the disproportionate increase in the EEG surcharge. On the functional principle is that consumers pay the difference to the current market price of electricity and the fixed price of the EEG apportionment. But as the current market price low and the amount of green electricity fed-in is high, the cost of electricity for consumers increase. For 2013, the EEG provides an increase in the feed-in tariff to 0.5277 EUR/kWh per kilowatt hour; the end user will probably have to pay 20.36 billion EUR for electricity from RES.

**Box 18** ***UK Transition to a Green Economy Strategy – engaging the business sector***

The UK government strategy for how to mobilise the business sector in the transition to a green economy is presented in the comprehensive plan for "Enabling the Transition to a Green Economy: Government and business working together" (HM Government, 2011). The plan outlines programmes to be carried out in a process of transforming the economy including mainly decarbonisation; circular supply-chain management of materials, water and energy and investment in ecosystem services.

Source: Cornwall Case study

**Box 19** ***Denmark – energy economy: rejection of nuclear power as a driver for radical transformation***

The transformation of the Danish 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.

The national energy agreement of 2012 and the follow-up legislation in 2014 are expected to achieve a 40% reduction of GHG emissions by 2020 relative to 1990. 50% of the electricity consumption will be delivered from wind-power and RES will supply 35% of total final energy consumption (Danish Ministry of Climate and Energy, 2012).

Source: Zealand Case study

**Box 20** ***Estonia – the state sets targets and provides financial support***

The state has been an important development motor in improving the energy efficiency of buildings in Southern Estonia by introducing the policy targets and providing financial support for energy saving measures in public and private buildings since the beginning of 2000. The objectives outlined in the national policies are translated into development strategies at the county level, such as stricter energy performance requirements of the new buildings.

The forestry sector is to a great extent regulated by the state in Estonia and the state has an ultimate legal control over it. This is understandable since about one third of forest in Estonia is managed by the State Forest Agency. The national policy in the field of forestry is quite effective and strict. The stakeholders in the region note that in comparison to Scandinavia the laws and regulations in Estonia are even tougher. The forestry actors indicate that by complying with the national law, the private forest owners already meet most of the requirements outlined in the certification schemes

Source: Southern Estonia Case Study

## 2.2. Policy messages to national authorities

- ✓ **National governments could embark on very transformative policy paths** similar to the German Energy Concept 2050 and to the Danish Energy Economy. This means that all mechanisms and systems of the national government from research to funding and governance should be geared towards this transformative goal.
- ✓ **Well-thought national feed-in tariffs are one of the best policy approach to stimulating development of the renewables sector.** The level of the feed-in tariffs should be sufficient to serve as a business driver and incentive but not too big.
- ✓ The central national level has a **strong responsibility for stimulating technological development** across the sectors such as renewables and energy efficiency but also water technologies.
- ✓ The initial momentum **of all efforts related to access to knowledge and public awareness** should also be given by the national level. Subsequently, regional and local governance levels have a significant role to play.
- ✓ Adopting **Market-based Instruments (MBIs) in different sectors** is within the remit of the national governments.

Defining of a **smart approach towards research, development and innovations** is mainly driven by national governance especially in relation to programming the Structural and Cohesion Funds.

# 3. Regions as driving forces in the green economy. Policy messages

Regional governments have an important role in the transition towards green economy as they have a significant role in 'translating' EU policy objectives into concrete measures to be implemented on the ground. In addition regions have a great oversight of both local assets (e.g. renewable resources, clusters, know-how, etc.) and environmental challenges. They also provide a suitable governance level by reaching economies of scale.

**In January 2011, the European Commission published a Communication calling on EU Member States and regions to make greater use of cohesion funds to finance projects promoting sustainable growth** (COM (2011) 17 final - Regional policy contributing to sustainable growth in Europe 2020). The communication sets the frame for regions to use policy to develop a resource efficient, low carbon, climate resilient competitive economy, by investing more and using funds more effectively.

It consists of a two-pillar approach to maximize the contribution of Regional policy to Europe 2020 and the Resource Efficiency Flagship Initiative. Pillar one calls for investing more in sustainable growth with a focused on: transition to a low-carbon economy: focus on investments in energy efficiency, buildings, renewables and clean transport; ecosystem services: focus on preserving and maximising the potential of the natural environment; eco-innovation: focus on mobilising innovation partnerships and information technology. Pillar two is emphasizing the importance to investing better and is devoted to: Integrating sustainability throughout the project life-cycle; Checking investments against climate resilience and resource efficiency; and Better governance.

## 3.1. Examples of the role of regions in a green economy transition and recommendations stemming from them

**Box 21** ***Waste and water management - governance overlaps with geography***

The **Water Framework Directive** 2000/60/EC and the **Waste Landfill Directive** (99/31/EC) have both strong territorial implications. The WFD is an example of where the governance framework is established by natural geographical units; river basin districts, and consequently applies a river basin approach to governance and planning and the measures proposed in the directive are explicitly territorial. This approach creates a need for cross-boundary cooperation. River basin management plans (RBMP) shall be established for each river basin in the EU analysing the water bodies' characteristics and drawing up a programme of measures to address major problems. The WFD is guiding many of the other water related directives, such as the ground water directive and the floods directive and river basins are thus the territorial unit that most of the EU water legislation is built upon. The water policy in Europe is mainly designed by regional or local governance structures together with the central government, which involve governmental policy actions as well as private sector

activities and behaviour of different stakeholders (civil society, farmers, industries enterprises, utilities, etc.).

Source: Water and waste sectoral reports

**Box 22** ***Waste management - cooperation between municipalities is a key to success***

**Municipalities and regions are main actors in implementing in the Municipal Waste Landfill Directive and it is underpinned by the principle of proximity and self-sufficiency on community level. The regional 'approach' has developed through the years as it has been demonstrated that the biggest economies of scale can take place on such a level.** Regional authorities have a major planning role to fulfil, including planning for new infrastructure in good time to enable targets to be met. Cooperation between municipalities or larger geographical units plays an important role in ensuring the necessary financial and human capacity to develop alternatives to landfill (EEA, 2009).

Source: Waste sectoral report

**Box 23** ***Energy - empowering regional governments***

The **Directive 2012/27/EU on energy efficiency** and its supporting documentation has a decisive focus on leading by example through public sector investment. This means that local and regional governments (owners of public buildings and infrastructure) are essential to the process of achieving the EU's energy efficiency goals. As such, the directive points out a number of governance networks, policies and funding sources directed towards local and regional authorities. This includes e.g. the EU Covenant of Mayors – especially in terms of developing integrated approaches to energy savings, complete with action plans, Managenergy (energy efficiency and RES at the local and regional level), the Intelligent Energy Europe programme (for instance through the establishment of regional energy agencies), JESSICA funds in support of urban projects targeting efficiency and that the ERDF and Cohesion fund will both extend their focus on energy efficiency issues in the 2014-2020 period

Source: Energy sectoral report

***Box 24 Examples for the role of regions for greening the waste sector***

**Flanders (Belgium)**

- Sets voluntary agreements with municipalities;
- The Waste Plan is a key policy instrument because once approved by the government its provisions apply to all public authorities.

**Italy**

- The regions prepare regional waste management plans based on criteria defined in the national legislation and the provinces develop waste management plans in conformity with the regional plans.
- The regions issue regulations in compliance with the national legislation and define the 'optimal areas for the management of waste' (ATOs) that are responsible for

meeting the targets on landfilling BMW and separate collection of municipal waste. The ATOs are supposed to represent a geographical entity where waste management is economically feasible and generally correspond to province boundaries.

- Every region must also formulate a plan for reducing landfilling of biodegradable waste. The regions define the waste streams to be collected separately and issue permits on constructing new treatment capacity and upgrading existing plants.
- The provinces coordinate the municipalities' waste management and identify instruments for separate collection, enhancing implementation of the regional waste management plan. Municipalities are in charge of municipal waste collection and disposal and collect charges for managing waste.

Source: EEA, 2009, Diverting waste from landfill: effectiveness of waste management policies in the EU (Waste sectoral report)

**Box 25** ***Cornwall (UK) – Green Cornwall Strategy: high ambition, measurable results, green infrastructure***

In 2011, the Cornwall Council adopted a Green Cornwall strategy to guide the economy of the region towards a green economy (Cornwall Council, 2011). The strategy aims at achieving the following outcomes:

- Cutting the CO2 emissions of the council by 40% by 2020;
- Contributing towards cutting Cornwall's GHG emissions above national targets (34%) by 2020;
- Supporting the increase in RES production to meet the national 15% target of non-transport related energy by 2020;
- Providing leadership to promote non-transport related energy demand reduction of 10% by 2020;
- A measurable transformation towards a low-carbon economy;
- Measurable community benefit (fuel poverty levels, renewable heat incentive utilised for local benefit).

The progress so far towards these outcomes were assessed in 2013 (Cornwall Council, 2013a). The strategy is expected to create at 10,000 jobs in maritime and geothermal energy industry and smart grid and electric vehicle solutions. The production development initiatives are to be developed in a public-private local enterprise partnership (LEP). It has developed a strategy for economic development (Cornwall and Isles of Scilly Local Enterprise and Partnership (LEP), 2012).

The Council has adopted strategies on a green infrastructure (Cornwall Council, 2013b) and on maritime resources (Cornwall Council, 2012). They are important for the protection and economic development of the ecosystem services of the region.

Among the green economy production projects supported by the Green Cornwall Strategy is the establishment of a marine energy park (South West MEP, 2012) to produce equipment and service to the considerable investments expected to be made in sea based energy: Offshore wind farms, wave energy, tidal energy etc. This project will exploit the ideal location of Cornwall in relation to the sea areas where much of the sea energy investments in Europe will be made.

Source: Cornwall Case Study

**Box 26** ***Navarra (Spain) - Developing strong and ambitious regional policies through wide consultation***

***MODERNA – action plan for economic paradigm change***

Spain is a highly decentralised country, where autonomous communities have the authority for policy making, as long as it does not contradict national legislation. The most remarkable feature of the autonomous region of Navarra is that over the last decades it has built a solid policy framework to foster its priorities (i.e. RES in the 1990s, innovation). Due to the fact that Navarra has its own tax regime, policies such as innovation and RES have been complemented with tax incentives which boosted the growth of both sectors. However, in the case of Navarra and the RES sector, the transition towards renewables started before the 2005 mandatory and comprehensive energy policy was adopted. The 1995/2000 Energy Plan of Navarra was devoted to fostering energy conservation and efficiency, making the best use of RES and increasing the size of the transmission and distribution network. The main funding mechanism for renewable energies has been a guaranteed feed-in tariff.

Over the last two decades, Navarra has supported the development of the sector, both with policies and with the creation of support institutions, but also with economic support:

- 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;
- support for new innovative technology-based companies.

In 2010 Navarra published a cross-sectoral action plan to shift from an industrial economy to a knowledge-based economy - MODERNA. It seeks an economic paradigm change, from a resource intensive economy to a resource efficient one. However, some stakeholders consider that this paradigm change is not as radical as it should be to achieve a green economy, because instead of pursuing breakthrough changes (e.g. sustainable mobility) it focuses on incremental changes (e.g. sustainable vehicle) (ISF 2013), thus continuing the current economic model. The MODERNA action plan aims to achieve a smarter, more inclusive and more sustainable Navarra, which is a greener Navarra. The economic impact sought by the plan may be summarized in a sustained annual growth in employment of 1% once the recession is over, 1.5% mean annual growth in productivity, which entails a mean annual growth of 2.5% in regional wealth up to 2030, achieving more than 32,000 million EUR GDP (Ortega-Agilés 2012). It is worth mentioning that MODERNA is a very participative initiative, because any person can propose the creation of a Work team to develop any improvement idea for the sector or economic context, or to design or execute any of the actions described in the action plan. In summary, this regional development plan provides the framework and the tools for the smart, inclusive and sustainable transition of Navarra as a whole.

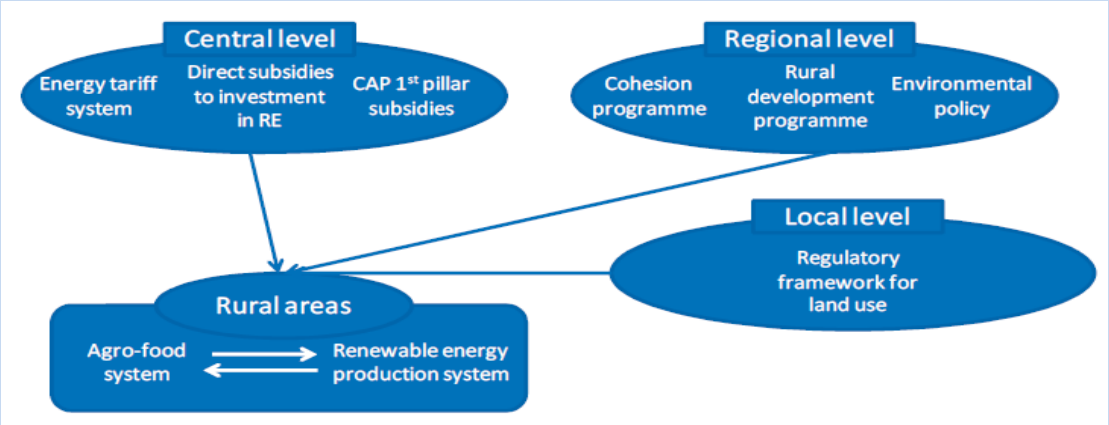
Source: Navarra Case Study

**Box 27** ***Puglia (Italy) - Regional planning for renewable energy and innovation: opportunity for an integrated approach***

The EU influences Puglia's policy mainly through the environmental and agricultural policies, as well as the Cohesion Funds. Regional administrations in Italy are now responsible for policy making in the area of scientific and technological research and support to innovation for industrial sectors (while observing some fundamental principles set by national law). In the case of Puglia, regional authorities develop policy initiatives with the support of the recently created Regional Agency for Technology and Innovation (ARTI). All these changes offer new opportunities to the regional administrations, as well as challenges. E.g. community roles of new stakeholders need to be promoted, partnerships and interaction among stakeholders needs to be increased, the evaluation and monitoring of policy initiatives needs to be reinforced, etc.

Italian regions have also acquired important functions in the field of renewable energy with the reform of Title V of the Constitution, implemented by Law 3/2001, which has placed energy among the materials in concurrent legislative powers between the State and the Regions. Since 2007 the Puglia region has had its own independent Regional Environmental Energy Plan (PEAR), which is currently under revision. The Italian regions have gained a central role in permitting of plants powered by RES. In the absence of national guidelines, some regions have introduced autonomous regulations regarding the location of the plants and easing of the national bureaucratic procedures.

**Figure 7** Renewable Energy Policy Framework in Puglia.




Source: OECD 2012

Over the last years Puglia has promoted policy measures to enhance the regional innovation system and promote partnerships and networking. The first Regional Innovation Strategy (RIS) for the region of Puglia was launched in the late 90's and was based on three broad lines of action:

- To qualify and specialize the regional innovation infrastructure;
- To support the Demand / Supply match of Innovation services;
- To support North South and Euro-Mediterranean partnerships.

As part of its innovation strategy in 2004 the regional government created the regional agency for technology and innovation (ARTI). In addition, in 2005 the Scientific Research Framework Programme Agreement (APQ) was signed by Puglia Region, the MIUR and the Ministry of Economy (Agrimi et al. 2012).

Finally, the next major policy step in Puglia in the innovation sector is to elaborate a Research and Innovation Strategy for Smart Specialisation (RIS3). The Smart Puglia Strategy aims to deliver a knowledge based economy, focusing on transport and mobility, creative industries, tourism, environment, energy but also responding to social inclusion, education and electronic government. It relies on innovation oriented analysis of the knowledge and value chains methodology.

Source: Puglia Case Study

**Box 28** ***Southern Estonia - Regional Strategy for Sustainable Tourism: relying on regional assets for green growth***

In Southern Estonia, Põlva county has 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, working and relaxing. In the vision 2027, Põlva county has embedded 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. 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.

Source: Southern Estonia Case Study

**Box 29** ***Jämtland - Regional administrations – coordination for higher efficiency. Monitoring and data management – essential for efficiency***

The Regional Council of Jämtland works for coordinating and making the regional development work in the county more efficient. It is a cooperation institution, made up of representatives from the different municipalities and the County Council Administrative Board. It 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).

Developing the analysis and monitoring system concerning the green economy would be beneficial for information and data management in different sectors. 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.

Source: Jämtland Case Study

**Box 30** ***Puglia (Italy) – Network contracts for innovation and development***

In recent years, a model of networking has taken shape in Puglia, Italy 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. Building on this networking structure, a relevant policy instrument that have been

mentioned by some Italian reports as a 'powerful accelerator' (Fondazione Symbola – Unioncamere, 2012) for green transformation are the Network Contracts adopted in 2009 under the auspices of the Small Business Act (SBA). The Network Contracts were introduced in 2009 as a new tool that aims at enhancing collaboration among firms to increase their potential for innovation, research, and development. One of their main goals of Network Contracts is to overcome the typical lack of scale economies that characterise Small and Medium Enterprises (SMEs). As a result of this programme, many companies have made investments in the green economy that would not have been made otherwise, considering the barriers that SMEs have to face when operating in isolation is such an uncertain context of operation.

Source: Puglia case study

**Box 31 Lessons learnt from Puglia's renewable energy (RE) implementation**

"Puglia's pioneering role in RES deployment should be recognised. While RES policy has been far from perfect in the region, the authorities have proved able to organise local resources to tap into innovative development opportunities. The regional RES strategy has evolved through a process of "learning by doing" in which the authorities are constantly trying to minimise distortions and maximise the benefits related to RES deployment. For example, when local communities expressed their opposition to large wind farms in mountainous areas or PV installations on valuable agricultural land, the regional government changed its approach and favoured a more sustainable pattern. This capacity to adapt demonstrates flexibility and the ability to discuss issues openly. This is critical in a policy domain like RE, which is relatively new and where no established understanding of "best practice" yet exists. This approach has underpinned the social acceptance of RES by the regional population in spite of extensive deployment. It is also aided by the fact that regional interventions aim to maximise benefits for host communities rather than for individual investors."

Source: OECD 2012

**Box 32** ***South Transdanubia (Hungary) – Regional Energy Strategy: muilti-level governance - the region as a bridge between the state and local authorities***

Hungary has traditionally been a centralised country and the regions do not have any administrative power and elected representatives. Following the EU recommendations, statistical-planning regions have been introduced but their main role is only to provide inputs and signal the needs of the region for the national government. Regulations are therefore not initiated on regional level; instead the municipalities, authorities and other actors of the South Transdanubian region have to consider the national regulations and strategies. Below the national level, the next official level is counties (NUTS3), districts (LAU1) and local municipalities (LAU2) Municipalities may voluntarily take on certain tasks of self-government. There are however efforts and examples of creating 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. The regional strategy attempts to get an official approval of the Regional Development Consultation Forum which represent the standpoint of the region. The Forum is composed of the presidents of the three counties' (NUTS 3 level) general assemblies (Baranya, Somogy and Tolna).

Source: South Transdanubia Case Study

**Box 33** ***Zealand (Denmark) – regions as coordinators and catalysts***

In Denmark, the primary driving forces of the transformation to a regional greening of the economy are the national government and the municipal administrations. The Danish central government has delegated responsibilities to regions and municipalities. Regions are responsible for regional development and industrial development strategies as well as Agenda 21 strategies but have otherwise quite limited possibilities. They don't collect taxes and can almost only invest in hospitals. They do not regulate or tax environmental pressure or plan land-use. They cannot provide guarantee for industrial development projects. The role of the regional councils is mainly related to coordination and the role of a catalyser. The regional councils, however, are assigned direct responsibility for soil pollution problems and raw materials extraction, which in the case of Region Zealand primarily concerns sand and gravel.

The instruments available for the Danish regions include networks, promoting awareness on innovating opportunities, co-ordinating activities, dialogue with local industries etc.

Source: Zealand Case study

**Box 34** ***Zealand (Denmark) - Physical planning and permitting are a key for RES development***

Regional and municipal spatial planning and permits for installation of renewable energy plants and related infrastructures are key factors in the implementation of the policies. Planning of district heating – often in competition with natural gas provision – is also a key factor. 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. The future role of the municipalities is being negotiated at the present.

Source: Zealand Case study

**Box 35** ***Zealand (Denmark) – public-private partnership role***

The development strategy of Region Zealand outlines a number of fields where the regional council will transformation towards a green economy offers opportunities for the economic development of the region. An important instrument in implementing the regional development strategy is the public-private partnership "Growth Forum", which has adopted the Industrial Development Plan (Vækstforum Sjælland, 2011). The action plans accompanying the regional and industrial development strategies (Region Sjælland, 2012b; Vækstforum Sjælland, 2012) include activities that support the participation of firms in international innovation projects and raise the level of awareness on new opportunities for innovation. The pharmaceutical and health

industries as well as energy and environment industries are in focus here. These activities are carried through in the framework of the Copenhagen CleanTech Cluster.
Region Zealand also supports the development of a second-generation biofuel cluster in Kalundborg (West Zealand) and a transport cluster in Mid Zealand focusing on sustainable transport. Innovation in energy-efficient buildings is supported through the management of the buildings owned by Region Zealand as well as through support of innovation in the building and construction sector of the region.

Source: Zealand case study

## 3.2. Policy messages to regional policy-makers

- ✓ **Regions have a particularly important role when the administrative governance overlaps with the geographical boundaries**. This is valid for policies in waste and water. Regional cooperation and coordination is an important factor for greening a number of other sectors as well. Regions have a prominent role at the stages of planning but also at the stages of enforcement of legislation.
- ✓ **Regions should make use of the EU LEADER Community Initiative** and in such a way promote the participation of local actors. This is particularly suitable for agriculture and tourism.
- ✓ **Regional authorities are critical for the successful implementation of green building and in particular of the Directive on the Energy Performance of Buildings.** They should be consulted and involved in the development of programmes to provide information, training and awareness-raising, and, in general, the implementation of this Directive at national or regional level. There is a need for adequate guidance to local planners and building inspectors to carry out the necessary tasks. Municipal authorities are key actors because they are generally responsible for land use planning and development.
- ✓ Regions in countries with strong regional autonomy are key to **formulating higher regional ambitions** by setting up higher targets and by providing additional incentives. Regions are well-placed to define targets and strategies through wide consultation with various stakeholders.
- ✓ **Regions have an important leverage in the field of innovation through the Regional Research and Innovation Strategies for Smart Specialisation (RIS3)**. They are in the position to to promote partnerships and networking and establish regional technology and innovation institutions.
- ✓ **Regions can easily rely on regional cultural and natural identity** and strengthen this identity additionally. This is very relevant for the tourism sector where certain regions can specialise in eco-tourism for example.
- ✓ **The regional councils have a strong responsibility in coordinating work and improving general efficiency of operation**. They are also in the position to develop a monitoring system concerning the green economy and improve data management in general.
- ✓ Regions' have an important role in development of renewables through physical planning and permitting.
- ✓ **Regions are extremely important when it comes to networking and coordination**. They could facilitate the coordination between universities,

public and private research centres and other institutions in different areas such as technology development and transfer and innovation.

- ✓ **The public-private partnerships are important instrument in the hands of regions.** Companies could participate in international innovation projects and raise the level of awareness on new opportunities for innovation. This could happen in the framework of Clean Technology Centres or clusters.

# 4. Cities as major actors in the transition to green economy. Policy messages

Urban areas are growing in importance and most of Europe's GDP is produced in cities. People live, work, commute and consume in cities. Re-construction and construction of buildings are most intense in urban centers and a big part of tourism takes place in cities. Consequently, cities are also home to serious environmental problems such as air pollution, waste generation, water consumption and sewerage dismissal, noise, etc. In order to transition to green economy there is a need to capitalize on the role of cities and urban centers in developing green economy and to realize the opportunities that cities have in realizing this process.

In 2011, ICLEI developed the concept of **Green Urban Economy** where the emphasis is given to local government as innovator and driver, with the multiplicity of city actors at their side. It states that "the proximity to economically active citizens and companies provide local governments a particular opportunity to realize their responsibility for city development and planning, which can influence private actions and lifestyles, as well as framework conditions for economic activities. Local governments can set framework conditions and instruments, which have an effect immediately and locally." (ICLEI, 2013)
EU policy goals influence the development but cannot always reach all the way down to the local level as their implementation is dependent on local level political will in the self-governing municipalities. (Jämtland Case Study)

The growing urban population and the following increase in water use are putting additional pressure on the water bodies in many European regions and cities. From a territorial perspective, land-use planning as well as urban-planning is being one of the main drivers of water use. Although the water policy does not foresee direct governance to local authorities (rather to the regional governance structures), the policies are implemented by local institutions and as such they play a crucial role in constructing place-based policy approaches and ensuring that the policy is effectively implemented. These explicitly take into account territorial specificities and local concerns and where cities and regions should get bigger responsibility in developing a sustainable and "adaptive" water policy in the context of fiscal consolidation, social, technological and environmental transformation, in response to climate change, demographic and urbanisation pressures. Urban waste water treatment is therefore closely linked to urban planning.

Long-term urban planning is an important driver for greening the water sector. It is essential for improving water efficiency as well as maintaining and upgrading infrastructure to e.g. reduce leakage. Improving water efficiency in urban areas can

offer win-win situations. For instance, applying technologies that cut water use is also contributing to reduce energy consumption of the sector. In addition, water efficient buildings and distribution systems and water saving household appliances will have a significant effect on greening the sector as urban areas are a main water consumer (*GREECO water sector report and EEA, 2012, towards efficient water use*)

**Box 36 Local government conditions for successful environmental mainstreaming**

The local government conditions are important for setting the conditions for the transition to the green economy:

- **Legal system:** in favour of environmental protection and social justice;
- **Institutional mandate:** all sectoral and decentralized institutions tackle environment and a cross-cutting issue;
- **Public concern:** public demands to address environmental degradation and to care for local environmental assets are significant;
- **Public and media advocacy:** mass media and NGOs are able to raise difficult policy issues in relation to the green economy;
- **Leadership:** local leaders are prepared to listen, to change policy and to be accountable;
- **Communication and transparency:** there are different ways to access and share information about environment-economy links;
- **Cooperation:** there are shared initiatives and processes allowing actors to collaborate

Source: Local Sustainability: Driving Green Urban Economies Through Public Engagement, Rosalie Callway (adapted from IIED 2010)

## 4.1. Examples of the role of cities and municipalities in a green economy transition

**Box 37 *Jämtland (Sweden) - Strong decentralization***

The municipalities are responsible for a wide range of services for their inhabitants. Municipalities have traditionally had a high level of self-governance in Sweden and elected councillors at local level decide how for example tax revenue is distributed (Swedish Association for Local Government and Regions 2010). The municipalities also have a monopoly on physical planning, which means that regional development strategies and programmes established at regional level are not binding for the municipalities (Smas et Al. 2012).

Source: Jämtland Case Study

**Box 38 *UK – local authorities' role increases after reform***

In 2010, the regions in the UK lost their administrative powers and spatial planning powers were returned to local government. The local authorities therefore play a key

role in implementing the green solutions as they are responsible for physical planning, transport planning, waste treatment and wastewater. Local government works in partnerships with related businesses and public research institutions, colleges and schools to generate a technological competence basis for this industrial development.

The National Committee of Climate Change has published a report on the options for local authorities in the process of decarbonising the economy. They are 'social landlords, community leaders and major employers'. The central government has adopted programmes that make instruments available to the local governments for promoting home insulation towards energy efficient buildings. With their physical planning powers, the local authorities can enforce energy efficiency standards in new buildings, plan for urban structures that minimize car transport needs, help reconciling conflicts of interest in local planning of renewable energy and plan for low-carbon district heating, green infrastructure and sustainable transport. They can introduce waste separation and recycling. The local authorities can also invest in energy efficiency in their own buildings, outdoor lighting and transport fleets and enlarge the market for green innovations through their own procurement expenditures. (Committee on Climate Change, 2012)

Source: Cornwall Case study

**Box 39** ***Ruhr area (Germany) - Urban planning for green energy***

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. The actual implementation of the expansion of RES, climate protection and resource efficiency takes place in the municipalities. Here the local government fixing the wind energy in land use plans has a binding effect. In addition, cities can be the owner of the potential energy surfaces on which the construction of renewable energy systems is realised. This would speed up the planning process and also avoid additional rent. Also, some cities of the Ruhr area have an Internet-based solar cadastre as in Dortmund and Hamm showing the radiation intensity for each roof area of the city and representing a guide for the construction of PV roof mounted systems.

It should be noted that RES as opposed to conventional energy supplies are usually a space-intensive and conflict-ridden because of a decentralised spatial distribution. Therefore, the development of renewable energies 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 in renewables and climate change adaptation must be space-efficient. In the context of expansion of RES the regional and country land use planning (also the Federal Spatial Planning), has the task to coordinate the conflicting and competing needs in line and to secure in spatial plans adequate space potentials for RES development. Furthermore, the regional planning has the opportunity to exclude renewable energy in particularly valuable and sensitive areas.

Source: Ruhr case study

**Box 40** ***Zealand (DK) – Covenant of Mayors and other voluntary agreements: instruments for increasing the ambition***

Almost all municipalities in the Danish region of Zealand 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. The municipalities pursue their own climate and energy programmes focusing on development of wind energy, district heating based on biomass and gasification of manure and other industrial waste and other transformation processes towards a green economy. Cost savings is an important driver and they are amplified by regulatory requirements of wastewater treatment, fees and other aspects of the institutional framework.

The Danish energy and environmental taxes introduced in the recent decades enables profitable investments in resource saving and recycling solutions. In addition to this, firms and households are offered subsidies for energy saving investments.

Source: Zealand case study

**Box 41** ***Zealand (DK) – Municipality of Kalundborg enables industrial ecology: networks of companies for transformative waste management***

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).

Source: Zealand Case Study

**Box 42** ***Jämtland (Sweden) – crucial role of cities in green transport***

The municipality of Östersund has been very active in developing "green traffic" (including e.g. promoting the use of green cars and especially biogas, developing cycle traffic and informing about transport sustainability). The municipality has a permanent department for green traffic with two permanent employees and it has successfully worked towards decreasing the climate impact of travels and transport in the municipality.

Source: Jämtland Case Study

**Box 43** ***Jämtland (Sweden) - greening the city administration. The importance of monitoring***

The environmental management system of Östersund has been an important factor in its work towards increased sustainability. All units of the municipal organisation have to draft their own environmental goals and measures and the implementation is monitored by both the municipal management and outside auditors. Thereby sustainability issues have been included cross-sectorally in the municipal

organisation.

Source: Jämtland Case Study

**Box 44** ***Jämtland (Sweden) - innovative local funding tools***

The County Administrative Board and the Regional Council of Jämtland 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 $CO_2$ emissions caused by travelling.

For the development of green traffic in Östersund, the system of reduced taxable benefit for the use of green cars has been central but the rules from the national level are 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.

Source: Jämtland Case Study

**Box 45** ***Jämtland (Sweden) - green public procurement***

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. (Jämtland Case Study) Public procurement at all scales will have to be greened substantially in the coming 10 years in order support more widespread take-up of green technologies and behaviours.

Source: Jämtland Case Study

## 4.2. Policy messages to city policy makers

- ✓ **Communication:** Local government can use communication to stimulate community buy-in into the green economy transformation of societies. Efforts could be targeted at consumption behaviors and saving of resources. Citizen empowerment, provision of information and stimulation of debate around the green economy is an important role of the local governments.
- ✓ **Active involvement**: More and more often community groups can take up the initiative to deliver green economy actions. For example, in Naples, Italy, various social enterprises are working to turn their city's waste into resources.
- ✓ **Financial support:** Local government can help to set the context for new inclusive green businesses. Funding and support for such businesses can bring savings to service delivery, cut clean-up costs, stimulate income generation, skills development and other environmental benefits. (ICLEI, 2007)

- ✓ **Cities have a number of instruments for influencing the greening of the economy through spatial planning and permitting.** Physical planning could make an impact on RES development, buildings and transport.
- ✓ ***Cities have a big leverage for change of paradigm in waste management.*** Given a level of self-governance, regions have the possibility of establishing a more ambitious path towards than e.g. the national targets. There are many examples of this e.g. in terms of setting more ambitions regional and local targets in terms of recovery and recycling which is a major driver for green economy development. For example the city of London has set targets to reach 45% municipal recycling/composting by 2015; 70% commercial recycling/composting by 2020 and 95% of C&D waste by 2020.
- ✓ **Local services to facilitate access SMEs to innovation knowledge.** SMEs will also depend even more on knowledge flows and institutional support available within their region. Even if technologies to increase energy efficiency are available "globally", SMEs can fail to adopt them without "locally" available public services to facilitate access. (*OECD*)
- ✓ **Behavioural changes**. The transition to green economy will also depend on how fast firms and people learn to appreciate their added value. These changes and learning processes happen at the local level. Strengthening the regional dimension of innovation policy would thus provide an opportunity to exploit real differences between regions with respect to capacity to adapt and to push forward systemic changes. (*OECD*)
- ✓ **Cities can become a part of international networks** such as the Covenant of Mayors and national green economy commitment arrangements. Usually, this membership goes with increased commitments for reaching certain targets, i.e in energy, waste, air pollution, etc.
- ✓ Local government can develop innovative funding instruments for the greening of local economy.

**Box 46** ***Urban territorial dimension of Cohesion policy***

The EC communication "Regional Policy Contributing to Sustainable Growth in Europe 2020" acknowledges that cities have a particularly important role to play in developing a low-carbon and resource efficient economy. For the first time in recent years, the European Parliament is calling for more attention to be given to the urban centres in the next financial period 2014-2020, guaranteeing adequate investments and the new approach already in the planning stage at National and regional level. Cities are recognised as holding significant assets as engines of growth; places of advanced social progress; platforms for democracy, cultural dialogue and diversity; and places of environmental regeneration.

In the new programming period, cities have the opportunity to use the Structural and Cohesion Policy to make significant investments in urban areas; e.g through ERDF support focused on a limited number of thematic objectives further detailed in investment priorities, e.g.

- promoting low-carbon strategies for urban areas;
- improving the urban environment;
- promoting sustainable urban mobility;
- regenerating deprived urban areas.

Additional measures will include that at least 5% of the ERDF resources shall be

allocated to integrated actions for sustainable urban development, the management of resources should be delegated to cities wherever possible and the flexible the geographical scale of interventions should be maintained.[4]

# 5. Particularities of rural territories in the transition to green economy. Policy messages

According to Eurostat, in 2012 around 23% of the EU population lived in rural areas and 35% lived in intermediate regions. The biggest share of the population living in rural areas was in Ireland, Slovakia and Estonia. Rural areas are responsible to a big majority of the food production and they are home to Europe's forests and raw materials. At the same time, rural areas face a number of serious challenges such as population decline, lack of quality jobs to keep the young qualified people. From an economic point of view, rural areas are responsible for about 15% of EU's GDP. Agriculture, tourism and fisheries are the key sectors in rural areas which remain of extreme importance to the European Union. Therefore, the greening of these sectors has to take place in rural areas.

## 5.1. Examples of the role of rural territories in a green economy transition

**Box 47** ***LEADER – bottom-up initiative for sustainable tourism in Estonia***

The so-called Community Initiatives of the EU such as LEADER aim to support the 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.

Source: Southern Estonia Case Study

**Box 48** ***Southern Estonia - Community involvement and information***

***Eco-labels for greener tourism: making tourists more sensitive to their impact***

The Tourism Development Plan in Southern Estonia 2014-2020 promotes an increased application of Green Key eco-labels by the accommodation

[4] presentation, http://hanse-office.de/files/dirk_ahner_urban_dimension_of_cohesion_policy.pdf

establishments, integrating the principles of sustainable waste management in Soomaa and development of local eco-marks for Southern Estonian products. There are plans to develop water tourism on the lake Võrtsjärv and receive the European Destinations of Excellence (EDEN) award.

Source: Southern Estonia Case Study

**Box 49** ***Vision for Gozo, Malta***

The environment is Gozo's main asset and the future vision is based on eco-principles and on the island 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 also needs to attract a wider share of independent travelers or the so called relational tourism because of the higher quality interaction with the local communities. Additionally, 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.

A **Policy for Sustainable Rural Tourism in Malta and Gozo** was being finalized as of April, 2013. The policy aims to ensure the complementarity of tourism with existing rural activities and to enrich the diversification strategy for rural areas by proposing sources of income and employment of rural communities. The concept of sustainability is firmly embedded in the drafted document. The two main policy driving factors rely on the distinctiveness of the rural tourism offer and the effectiveness of the management practices adopted by rural tourism operators and also upon the ability to adopt a marketing strategy aimed at attracting tourists whose behaviour contributes to sustainable practices.

Source: Malta Case Study

**Box 50** ***Waste management in sparsely populated, rural regions***

**Finland**

Because many municipalities are small, fragmented and sparsely populated, policy-makers realised in 1993 that municipalities would manage waste better if they united to form inter-municipal companies. By 2000, 65 % of municipalities (covering 80 % of Finland's population) cooperated in such companies. There is no legal obligation to cooperate but it enables municipalities to establish treatment capacity that would otherwise be more costly and take advantage of economies of scale.

Source: EEA, 2009, Diverting waste from landfill: effectiveness of waste management policies in the EU (Waste sectoral report)

**Box 51** ***Treated sewage effluent as a cheaper source of water in Malta, Waste water recycling Moriso project***

A EUR 22 million water polishing project was launched on 17 June 2013 in Bulebel. It is expected to produce some seven million m3 of recycled drainage water for industry and agriculture by 2015. The project consists of a micro waste water treatment plant

that can process 45 m3 of sewage a day and a Mobile Polishing Plant which is taken to fields to improve water quality which is then used for specific crops. Some 40 farmers in the Bulebel area are currently benefiting from Project Moriso using recycled water. The project would be extended to the water recycling plants in Gozo, and in the south of Malta.

The Water Services Corporation intends to install a distribution infrastructure from the sewage treatment plants to a number of strategic locations in Malta and Gozo with a concentration of agricultural activity. The project is implemented by the Water Services Corporation and funded in the most part by the European Structural Fund.

Source: Water Service Corporation and Times of Malta

**Box 52** ***Potential for biomass production in Southern Transdanubia, Hungary***

The large forest areas in Southern Transdanubia imply that there is a significant potential for bio-mass production in the region which represent the largest stock of renewable energy in the region (energy plantations, bio-ethanol and bio-diesel feedstock). Biomass production: the waste wood that remains after logging (e.g. twigs) can be collected and used in biomass boilers. This is intended to feed local boilers with smaller capacities, rather than large power plants.

Source: Southern Transdanubia Case Study

**Box 53** ***Role of food industry in Southern Transdanubia, Hungary***

*Food industry*

The food industry is relatively strong in the region and represent app 20 % of the region's industrial output (in 2001). There are approximately 300 firms in South Transdanubia operating in the food industry, 60% of them are SMEs. The food industry is an important employer with app 15 % of all employers in the industry sector (in third place after machine and textile industries). The number of employees has however decreased since 1998.

Most of the products supplied by agriculture and forestry are processed within the region as the capacities required are available here. The processing of meat and milk constitute the main branches of the food industry, but the baking industry also has considerable capacity. In addition to viniculture, brewing, production of fruit juices and sugar are also significant.

There are several institutions which serve as external drivers for the development of the regional food industry: The South-Transdanubian Regional Food-Innovation Cluster (fosters the cooperation of companies, organizations, institutions in the field of food industry) and the Regional Food Science Competence Centre (harmonises knowledge base).

Source: Southern Transdanubia Case Study

**Box 54** ***Role of economic instruments in Southern Transdanubian agriculture***

Some agriculture related investments can receive support by the ERDF through the **Environment and Energy Operational Programme 2007-2013** includes eight priority axes; and the third priority "Wise management of natural assets" includes measures on Creation of the infrastructure basis for habitat-conserving agriculture and forestry (investments) and for Development of the forest school network. The EEOP also support energy efficiency and the use of RES in agricultural production.

Organic producers will receive priority in future calls from the Rural Development Ministry for diverse support programmes, such as the young farmers' initiative. Organic animal husbandry and apiculture will receive particular support, as these are priority areas within the Ministry's agricultural development policy.

**Agricultural subsidies** financed from the national budget in accordance with the EU regulations on agricultural subsidies include support to community agro-marketing, the development of food safety and quality management systems, as well as consulting.

In case of forestry, farmers have to pay a fee for each logged tree to the **National Re-forestation Fund**. The fund provides subsides for the re-forestation, which are supervised by the forest management authorities after 1, 3 and 5 years. The subsidies are provided in steps, if it is proved that the new forest is growing.

**Box 55** ***Greening the transport sector as a key to greening the economy of a rural region***

Greening the economy in a sparsely populated and peripheral county such as Jämtland is highly dependent on greening the transport sector. The sector is now responsible for 57% of GHG emissions. The county has actively been promoting "green traffic" (including e.g. use of biogas). An example of this is the Green Highway project that resulted in a fossil fuel free transport corridor from cost to cost between Sweden and Norway. Further, tourism is very important for Jämtland and public initiatives have been taking place aiming at greening the sector. The sector also has potential in terms of diversifying the rural economy. Greening of the transport sector is of key importance for greening the tourism sector.

Source: Jämtland Case Study

**Box 56** ***Jämtland - Lack of qualified labour as a major stumbling block to greening the bioeconomy sector***

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.

Source: Jämtland Case Study

## 5.2. Policy messages to rural territories

- ✓ **Rural regions should benefit fully from the European Agricultural Fund for Rural Development (EAFRD) by streamline environment and climate change into as many thematic objectives (TOs) as possible.** This is to be done through the Partnership Agreements and the Operational Programmes. TOs which are particularly suitable for mainstreaming of agriculture and fisheries include:

    - TO (1) "Strengthening research, technological development and innovation" – there is a possibilities for accelerating R, D&I in the agricultural sector;
    - TO (3) "Enhancing the competitiveness of SMEs, the agricultural sector (for the EAFRD) and the fisheries and aquaculture sector (for the EMFF)" - the effort should be in making SMEs improve their resource efficiency including energy efficiency, more use of RES.
    - TO (4) "Supporting the shift towards a low-carbon economy in all sectors". Support for RES development and energy efficiency in rural areas and agriculture will come mainly through this objective.
    - TO (5) "Promoting climate change adaptation, risk prevention and management". Most of the investments under this TO will take place in rural areas;
    - (6) "Protecting the environment and promoting resource efficiency" – many of the investments under this TO will take place in rural areas especially those in biodiversity but also part of the water-related ones (water efficiency and irrigation) as well as parts of the waste-related investments;
    - (7) "Promoting sustainable transport and removing bottlenecks in key network infrastructures". Rural areas are often difficult to access which is a serious drawback in terms of attractiveness for people not directly involved in agriculture;

- ✓ **Rural territories will benefit significantly if the territorial approach of Cohesion policy is taken up through the Community-led Local Development (CLLD)** (designated as LEADER local development in relation to the EAFRD). It should be focused on specific sub-regional territories and they should take into consideration local needs and potential. Regional networks should be shifted more towards greening of agriculture from a supply/demand perspective at the same time strengthening rural and regional development agendas.

- ✓ **The Water Framework Directive (WFD) objective of efficient use of water resources is particularly relevant for agriculture which is one of the biggest water users in the economy.** Additionally, the irrigation systems are often extremely inefficient and lead to enormous water losses. The role in water in ecosystems is also indispensable. A better water infrastructure could

improve water management in agriculture and decrease the environmental pressures of the sector.

- ✓ **Member States should take advantage of waste water as a resource and reuse of waste water and grey water is important for stimulating growth in water scarce regions.** Treated waste water can be used for irrigation. Water re-use is considered to have lower environmental impact than other alternative water supplies such as desalination or water transfer. The composition of waste water is enabling energy recovery and, for instance, biogas can be produced from the sludge to reduce the plants energy dependency.

- ✓ **Countries should reduce agricultural production with intensive use of fertilisers and pesticides as well as an excess agricultural production.** These measures for greening the agricultural sector should be integrated in the reformed CAP but also within all relevant national and regional policies. In this connection, diffuse pollution needs to be addressed. This would decrease the currently increasing costs to society in addition to support reaching and maintaining compliance with the WFD, the nitrates directive and the MSFD, and hence avoid important punishment costs in the medium run.

- ✓ **There is a big potential in modernising agricultural buildings and diversifying use of energy.** Support for this could come from the Structural and Cohesion Policy but also through national and regional funds. This amounts to supporting investments of on-farm biogas/biomass plants, insulation, energy efficiency of machinery, solar panels, etc. Investment support in organic production also goes towards reducing energy use and lowering emissions of GHG. Also, there is scope for stimulating the production of renewable energy from both agriculture and forestry by improving the infrastructure for supplying energy.

- ✓ **Develop the labour force and skills in the agricultural sector and improve the capacity for restructuring the agricultural sector**. Labour and skills development - and the availability of capacity in a region for the restructuring of the agricultural sector – are important factors for a transition to a green farming sector that builds on an understanding of how production impacts society and nature. Innovation does not have to be from within a region – but the application of innovation and the adaption of it to local circumstances have to be. Such factors are important for adopting new technology, new know-how and for producing within the boundaries in each territorial context.

- ✓ Rural regions will be called upon as key territories for green energy production. Therefore **further research is needed on the spatial implications of green energy production** in order to ensure that policy development across different sectors, and for different strategic planning goals, are mutually reinforcing.

- ✓ **There is a need to make tourists more sensitive towards the eco-labels for greener agricultural tourism**. National and regional sustainable rural tourism policies should ensure the complementarity of tourism with existing rural activities to boost income and employment of rural communities. The concept of sustainability is firmly embedded in the drafted document. Factors

for success include management practices of rural tourism operators and also upon the ability to adopt a marketing strategy aimed at responsible tourists.

- ✓ The food industry is a major opportunity for rural areas to create additional jobs outside of agriculture and forestry. Local and regional policies should stimulate processing of agricultural products within the region. Local and regional institutions such as food-innovation clusters are a factor for the development of the industry.

# VI. Policy recommendations by regional typologies

Throughout the whole GREECO research it has been demonstrated that the performance of the green economy has very strong sectoral dimensions and therefore greening of the economy is in fact greening of the individual sectors. Therefore, the classification of the regions and assigning of policy recommendations remains on a general level.

## 1. Regions with pre-transition economies

Regions with pre-transition economies are defined according to their green economy performance. These regions could be additionally divided in regions with high green economy development potentials associated with their environmental resources a good mix of other drivers and enabling conditions or regions where environmental assets are not as good.

These will typically be regions which have not yet benefited from green economy development and which do not have an outstanding mix of drivers and enabling conditions to take them on a new growth path in the near future. This will mean that they either have excellent territorial assets but deficiencies in policy and its implementation or they have average to low territorial strengths but are able to utilise them fully through smart policy drafting and robust institutions.

**Box 57 Policy recommendations to all types of pre-transition regions**

- ✓ **Capitalise on a full, high-quality transposition of EU legislation** and integrate it in regional strategic frameworks and legal systems where relevant. Policy ambitions need to be matched with sufficient finances be it from national, regional or EU sources. Main regional actors should be mobilised in defining a vision for greening of the regional economy and the level of regional ambition. Similar regions would often have environmental legislation enforcement issues and corresponding responsibilities. Strengthening enforcement is primordial.
- ✓ **Increase the level of awareness** on the opportunities presented by a transition to the green economy.
- ✓ **Get the right level of prices** is of extreme importance for defining individual and business behaviour. Removing Environmental Harmful Subsidies is even more important in such regions as this would free up precious financial resources.
- ✓ **Consolidate and strengthen environmental institutions**. The quality of the institutions is key for setting intelligent strategic vision, competent guidance

and framing a new mindset through appropriate communication actions.

- ✓ **Regions without strong territorial assets should concentrate on these green economy sectors which are not directly dependent on natural endowments** and other drivers and enabling conditions that cannot be acted upon. Water and waste management, construction, manufacturing and eco-innovation are such sectors. The importance of strong institutions and human resource capacity is even higher.
- ✓ **For regions without strong territorial assets it is also possible to turn a disadvantageous position into an advantage.** A severe shortage of one resource (e.g. water) can spur research and innovation and lead to development of new technologies which subsequently creates business opportunities.

## 2. Regions with transition economies

The regions with transition economies have gone a long way greening their economies. They could be divided in regions where both natural assets and policy and institutional drivers and enabling conditions are present or regions where the natural assets are not outstanding but the rest of the enablers are so good that they have capitalised on what they have. These will typically be the most successful regions which have already embarked on a path of green economic development years ago and which are at the forefront of institutional and policy innovation. These may be regions which have already realised a big part of the lower-hanging fruits of green economic development (including the ones related with traditional EU policy) as a consequence of robust institutional and policy mixture as well as significant funding. However, these regions might be good candidates for forerunners in setting up innovative behavioural and new economic patterns. These will typically be regions which realise and which have internalised the competitive advantage of a green economy environment and which will exert certain pressure on national and EU policy makers for higher targets. Of course, the marginal growth might not be that big because of the fact that it already took place in the past.

However, some of these regions might not have outstanding natural capital and whose geographical location and economic realities do not allow them to be at the forefront and do not promise outstanding green economy development in more than a limited number of sectors. We may assume that if the region has already transitioned to green economic development the existing policy, institutional and finance-related drivers and enabling conditions are in place and the limited possibilities for development come from natural and other realities that cannot be modified, at least in the short-term.

**Box 58 Policy recommendations to all types of transition regions**

- ✓ **Keep up the policy and performance ambitions that have made them green economy or sectoral leaders.** Without any doubt this position is due to targeted, quality policies both at national and regional backed up with sufficient financial resource. These need to be maintained. Additionally, such

regions would have the potential to introduce even more innovative policies and in this way inform overall EU policy and processes.

- ✓ **Target-setting for transition regions should be more ambitious** and should not be constrained by easily achievable EU targets. Most probably, very high targets will have to be associated with adoption of a bigger number of transformative policies calling for different individual and company behavious but also different system-wide innovations such as industrial ecology.
- ✓ Successful regions have undoubtedly reached this level thanks to the involvement of regional stakeholders which needs to be further developed. There is a possibility for even newer cooperations and synergies between sectors – public, private, non-governmental, academia – which capitalise on different expertise, knowledge and energies. Strengthening the links between research and business is a factor for higher commercialisation of eco-innovations.
- ✓ **Institutional quality has been a factor of success for transition regions and it should not be compromised.** Especially in times of crisis there is a temptation to reduce number of employees, suspend non-essential services, reduce budget for programmes, etc. Similar approach would pose a risk for keeping the leading role of the region. Enforcement of environmental legislation is closely related to the quality of institutions and rule of law.
- ✓ **The relatively high level of awareness in such regions should be consolidated and utilised for behavioural break-throughs – both on individual and business levels.** This might lead to radically different ways of physical planning and new perceptions of production and consumption leading to a much better resource use but also a smarter consumption. Green Public Procurement (GPP) has a huge potential leverage effect and its full-fledged introduction is a key to market transformation and development of new products and services.
- ✓ **Successful regions need to secure political continuity for green, low-carbon development** which is translated in stable strategic framework, stable financial support and prices and maintaining or strengthening of relevant institutions.
- ✓ EU Structural funds are usually not significant in size in similar successful regions however, their role remains crucial because of their innovative character. **EU funds could be used for funding demonstration projects with high potential for replication**.

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