

# GREECO

## Territorial Potentials for a Greener Economy

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## I. Executive summary: The road ahead; setting the agenda for a greener economy in Europe at the regional and local levels

The policy analysis has been a cornerstone in the GREECO project and a range of policy messages have emerged, originating both from the specific economic sectors analyses as well as from the regional case studies. Derived from the experience and knowledge generated within the project, the following general key lessons learnt and policy messages should be considered in the future process of developing green economy policy in European regions. Most of these conclusions have already been reflected through different instruments of the Structural and Cohesion policy.

It is worth noticing that a single region cannot achieve the needed changes, but Europe as a whole, with its experience, track-record and economic power has a realistic chance to lead this transition towards a greener, more resource-efficient economy and future, tackling current sustainability challenges.

### 1. Key findings of GREECO project of particular relevance for policy action

**Cities and regions are key actors in a green economy transition.** Regions and local authorities have the potential and the necessary leverage to make a significant contribution to the achievement of the green economy through the definition of territorial actions under their competence. Although a number of factors (e.g. taxes, legislation) fall out of the scope of regional stakeholders, regional authorities play a leading role in fostering regional economies through eco-innovation, purchasing policies, promoting regional R&D, awareness raising, etc. In such a context, eco-innovation strategies, capitalising on the local strengths may strengthen regional economies and reduce regions' dependency on non-renewable resources and thus increases resilience. This is demonstrated by many of the regions studied within GREECO which are formulating strong policies for green economy development aligned with their respective level of jurisdiction. Many of the regions are in fact setting more ambitious goals than the national ones, such as in case of Jämtland (SE) and Cornwall (UK) to further accelerate a green economy transition.

**Cities and regions hold significant assets that are key building blocks in green economy development.** The assets (or territorial capital) vary across territories and there is a fundamental qualitative difference in their nature (geographical location, natural resources, social capital and institutions, etc.), their economic role in the local communities and regions, and how much they can be leveraged to foster transition to a green economy. The realisation of the potential of the territorial capital depends on a number of policies, institutional, political and financial factors. The region of Zealand has managed to profit on the rich wind potential of the region and has made wind energy one of the most expansive sectors in the economy of the region since the early 1990s. This is a result of the focused regional and municipal policies on development of renewable energy, bioeconomy and green experience economy. Close to all municipalities are signatories to the Covenant of Mayors and they pursue their own climate and energy programmes.

**Local networks and local initiatives can support a transition of both the supply and demand side of the green economy** by supplying information; education support to SME's and concrete practical tools for engaging in greening initiatives. One of the key factors behind Puglia's (IT) success in green innovation and research sector is its institutional framework that

is driven by regional clusters and networks. Enhancing collaboration among firms, universities and the public sector increases knowledge transfer and boosts the potential for innovation, research, and development which acts as a powerful accelerator for green transformation.

**The regulatory framework is a key driver for green growth.** The differences and potentials of territories should be reflected by policy-makers across Europe and across territorial levels in the implementation of policies contributing to green economy. It is important to ensure that different policies and EU Cohesion Policy in particular, take on board the territorial dimension, build on the diversity of regional potentials and challenges. An example of a strong regional policy that is driving a regional shift towards green economy is the MODERNA plan of the autonomous region of Navarra (ES). Coupled with economic instruments, the strategy seeks an economic paradigm change, from a resource intensive economy to a resource efficient one built on RES and innovation.

**The lack of data at the regional and local levels is a real challenge.** One of the critical observations of GREECO was the overwhelming lack of good regional data. Given the high regional variations, coupled with the fact that greening potential of regions is directly related to existing performance, the lack of data is a major limitation creating comparable information for holding regions accountable to greening their build stock. Further development of green economy and resource efficiency indicators would enable to set a measurement framework to monitor progress towards green economy and would benefit the policy-making process at the EU level.

**A clear political orientation and guidance through policy is needed,** and the EU and its member states and regions could lead the way and set a positive example through e.g. thoroughly applying Green Public Procurement and strengthening the market-based instruments, creating a demand for green products and services.

## 2. Key policy messages emerged from GREECO research

Countries and regions need sound and clear-cut but ambitious and transformative policies based on wide stakeholder involvement and accompanied by sufficient financial resource.

### ***Increase policy ambition would speed up transition to a green economy***

**More transformative policies.** In order to speed up the green economy transition, more policies need to have a transformative character to support a complete shift in the paradigm on which current patterns of production, consumption, working and living are based. The current EU framework is not truly transformative but rather builds on marginal improvements of the business as usual scenario through introduction of best-of-class technologies and processes.

**Increasing the targets.** Policy targets and objectives are a major driver of green growth. Cities and regions have the potential to lead the green economy transition by setting more ambitious goals than the EU. For example, London has set targets for 45% municipal recycling/composting by 2015; 70% commercial recycling/composting by 2020 and 95% of C&D waste by 2020. Lagging regions need to consolidate their policy, institutional and financial systems in order to reach compliance and decrease the gap with the leaders.

### ***Bigger stakeholder involvement and awareness are key for the success of policies***

**Strategic policy development at all levels must engage local actors:** Important strategic shifts in the regional economy need to be consulted with relevant local actors in order to ensure their buy-in. Additionally, complex strategic documents need to reflect the available expertise in the region which is held by stakeholders from the public, private, academic and non-governmental sectors.

**Raise public awareness to stimulate behavioural change.** An often repeated obstacle to green economic development is the lack of access to information and knowledge. Measures improving the access to knowledge and facilitating knowledge

spill-over should therefore be promoted such as creation and support of knowledge networks, clusters, associations, strengthening linkages between actors and across sectors, dissemination of good practices, etc.

**Involve consumers and promote demand for greener consumption.** The labelling of products according to environmental, economic, and social standards is an important tool in ensuring the consumer partnership in the process towards greening economic sectors. There is numerous awareness raising programs, EU labelling and certification schemes, web-portals as well as national and regional initiatives. Labelling of products with visible and clear messages to consumers on the energy consumption and future environmental and economic impacts of their choices should be promoted. In addition, it is important to harmonize the plethora of labelling schemes in certain sectors as it can cause confusion among consumers.

***Further investments in public infrastructure provide the basis for greening sectors such as water, waste, biodiversity, transport, etc.***

**Improve public infrastructure** to enable the development of green economies. The infrastructures needed range from modernized transport systems, to energy networks that unleash tacit RES potentials. The availability of state-of-the-art infrastructure such as tertiary wastewater treatment plants, waste handling and recycling systems, public transport, efficient energy grids etc. is needed to increase the environmental performance of regions (as well as the impacts from the overall community). The process of designing and constructing this infrastructure is an integral part of greening of the economic sectors.

**Further support resource efficiency and invest into ecosystems** in order to maintain a profound environmental foundation to green economy development. Ecosystems provide life-supporting services to Europe's economy and society which have an economic value counted in billions of Euro, through provisioning and regulating services. Decoupling resource use from economic activity needs to be a key factor in policy making at all levels and across sectors.

**Avoid the 'silver-bullet approach':** Emblematic large-scale projects are not a strategy for change in itself, unless they are integrated into a larger, more holistic approach to build the region's or city's future. Large-scale projects cannot be the drivers for green economy transitions. These should be based on multiple, incremental activities to create a positive climate in which change can flourish.

***Better pricing of resources is a powerful driver of change***

**More realistic pricing of natural resources:** The price of natural resources does not reflect the true value. Therefore, policy support is needed to adjust the economic and fiscal framework to provide incentives to become more resource efficient (i.e. greener).

**Charge for external costs to create a higher share of consumption on organic and resource efficient products.** Products that have high negative external costs should be considered for taxes or charges or other cost efficient measures. E.g. the OECD suggests the further implementation of trading schemes for e.g. water rights or carbon emissions. These are cost efficient and dynamic (in the sense that they stimulate the development of new technologies) ways for correcting for market failures.

**Carry out an environmental fiscal reform including removing Environmental Harmful Subsidies (EHS)** is a powerful message to stakeholders as it reduces the burden of taxation from labour to natural resources and environmentally harmful products, subsidies and activities. Additionally, removing the existing EHS reduces the lock-in effect and frees up a significant resource for environmental protection measures.

### ***Strengthen financial support for regional actors in implementing green economy***

**Make better use of available investment support schemes.** The development and spreading of green investment support schemes would support green economy development in many sectors; e.g. tourism, agriculture, construction. Investment support for modernisation of e.g. agricultural or public buildings and equipment holds great potential in reducing emissions of GHG, improving energy efficiency, etc.

**Incorporate environmental, eco-innovation and resource-efficiency elements in available EU, national and regional funds and improve regions' access to finance and funding by increase absorption capacity of regional institutions.** There is significant EU and national financial resources that are playing and could play an even bigger role for greening the economy. For this purpose, environment, eco-innovation and resource-efficiency need to be incorporated both on planning and project level. It is also essential to develop networks and establish cooperation supporting SMEs and municipalities in providing support for application procedures.

**Strengthen market based instruments,** such as environmental taxes and tradable rights, which create incentives for environmental efficiency. Implementing tax reforms through further development of the environmental tax system is seen as an effective driver which steers the economic development towards more sustainable scenarios. In addition, a stronger legislative provision and stricter regulations need to be introduced. Moreover, an adequate fiscal policy and a full-fledged environmental fiscal reform could also generate incentives to stimulate innovation and create revenue for further investments into sustainable resource use.

### ***Progress towards the adoption of an integrated territorial approach***

Benefits of policies are greater in a number of ways when planned and developed in an integrated manner than the summed technical potentials of the individual components alone:

**Towards a resilient urban and regional planning:** Promoting densities of scale that reduce energy demand in buildings, and non-car forms of mobility through cities and peri-urban regions of functional distances are very effective tools to induce green responses in the economy.

**Further promote the mutually profitable synergies between business and municipalities** where underutilised and undervalued resources from one (materials, energy, waste, water and waste water) are recovered and reused elsewhere in the industrial and municipal networks creating Circular Economy. The promoting of opportunities of business linkages and connection to residential/municipal activities may help companies cut disposal, storage and transport costs, generating sales by adding value to previously under-used or discarded resources, and thereby ensuring a general reduction in energy consumption. It increase profitability through reduced costs and additional sales, promotes more value for by-products, share innovations through knowledge transfer and access to solution providers, and ensures corporate social responsibility commitments through measurable actions.

**Consider links and trade-offs of green economy sectors:** For instance, benefits of water and waste management systems are actually greater when planned and developed in an integrated manner than the summed technical potentials of the individual components alone.

**Implement a multi-level and collaborative territorial governance approach,** particularly in some sectors. For example, from a water and waste management perspective, cities hold the keys to awareness raising and separate waste collection, whereas regions are better placed to organize functioning regional waste management systems. Regions are also the right governance level for supporting circular economies based on industrial ecology systems. Regional/local partnerships are key players to incorporate renewable energy in energy systems.

***Better monitoring and enforcement increase the credibility of policies and contribute to their constant improvement***

**Improve regional monitoring:** The formulation of operational programmes including a framework of indicators capable of assessing progress towards a green economy can be very helpful, as it allows the formulation of ends and means in specific targets and instruments.

**Improve regional indicators:** It is strongly recommended to develop a statistical framework with collection of primary data that allows for monitoring the green transformation of the fixed capital stock and the related consumption of resources, sinks and space. In particular, a harmonised regional energy statistics would be an invaluable tool to local government as well as national and Regional Fund assessments of the regional decarbonisation processes. Thus, it is strongly advised that a database of energy statistics at the regional (at least NUTS2) level is developed.

### **3. Key policy messages by regional typologies**

When developing the typologies we need to provide a disclaimer whereas it is extremely difficult to qualify the whole economy as one or another. 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 messages remains on a general level.

***Regions with pre-transition economies and high green economic development potentials***

These are regions with rich environmental resources, a good mix of drivers and enabling conditions and a certain political willingness to remove existing barriers. These are regions where the environmental resources are particularly favourable but where the rest of the drivers and enabling conditions have been established relatively recently (i.e. New Member States which have recently adopted EU targets) These are the regions where marginal growth ( $\delta$ ) of green economy value added over relatively short periods of time will be high as they have to catch up with average and good performers in a number of areas such as waste, water, manufacturing, eco-innovation, construction, etc.. A number of these regions will be Cohesion Regions and will be in the position to benefit from significant financial resources. These might also be regions which are still not compliant with a number of EU acquis and where the compliance pressure will lead to the necessary actions and investments.

***Regions with pre-transition economies and medium green economic development potentials***

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. For the sake of future policy relevance these regions can be split in two typologies which stem from the nature of their medium potentials:

- **Regions with pre-transition economies, excellent territorial assets and low-to medium- level of policy and finance-related drivers and enablers.** These will typically be regions with excellent natural assets, where the necessary EU policies have been adopted on paper but have not been fully embraced as guiding principles of social and economic development. It may be expected that **regional** political and hence financial and institutional support will be average too little. This situation might lead to impossibility of fully utilising EU funds in the current and future Programming Period 2014-2020 or utilising them for common,

carbon intensive investments.

- **Regions with pre-transition economies, low- to medium territorial drivers and enablers and excellent level of policy and finance-related drivers and enablers.** This will be a relatively rare group of regions which have not yet benefited from green economic development, which do not dispose of strong natural assets but which are ambitious and have recently developed a solid mixture of policy and finance-related drivers and enabling conditions which may take them on a green development path despite the lack of outstanding natural assets.

### ***Regions with pre-transition economies and low green economic development potentials***

These would be those regions which have not been a part of serious green economy development efforts and which have a number of obstacles to create the right conditions for such development. Having in mind that all EU regions benefit from the stimulating EU policies, being in this group may mean existence of significant institutional and financial barriers or lack of capacity for implementation of EU policies. Such regions will also have low capacities for benefiting from EU Structural and Cohesion policies and will choose to spend them (if at all) for one off carbon intensive investments (in terms of large infrastructure projects?). These might also be regions where lack of the above drivers and enabling conditions and/or existence of serious obstacles is coupled with very low environmental assets, low human resource capacities and weak institutions.

#### **Box 1 Policy messages to pre-transition regions**

##### **General policy messages to all types of pre-transition regions**

The policy messages to such regions would be to 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.

Similar regions will also have a relatively low level of awareness compared to Western and Northern European regions with longer tradition of environmental protection and sustainability actions. It is a common characteristic for poorer, pre-transition regions that they would have lower levels of utilities such as water and waste and lower non-compliance penalties. Getting 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.

Pre-transition regions would have environmental institutions which do not have long traditions and would therefore need significant consolidation and capacity development. The quality of the institutions is key for setting intelligent strategic vision, competent guidance and framing a new mindset through appropriate communication actions.

##### **Policy messages to regions without strong territorial assets**

All of the above policy messages are valid to these regions as well. Additionally, such regions 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.

It is also possible to turn a disadvantageous position into a commercial 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.

### ***Regions with transition economies and high green economic development potentials***

These are regions where both natural assets and policy and institutional drivers and enabling conditions are present. 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.

### ***Regions with transition economies and medium green economic development potentials***

These will be regions which have already benefited from a certain level of green economy development because of traditionally good mix of drivers and enabling conditions. However, these might be regions which do 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.

### ***Regions with transition economies and low green economic development potentials***

If these regions have already walked a significant part of the green economy road this means that probably their drivers and enabling conditions set-up is relatively favourable with the exception of environmental assets. This might also mean that after significant green economy investments have been made there has been a change of political leadership leading to a change of economic priorities. These regions might be about to lose their status of relative leaders and embark on a flattening curve of development. These might also mean that the regions and states have made the initial investments related to green economy pressured by compliance considerations but where economy structures and big companies and SMEs have low innovation performance and potentials.

### **Box 2 Policy messages to transition regions**

#### **General policy messages to all types of transition regions**

The policy messages to such regions would be to 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 Both 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 behaviours 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.

## **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. In addition, it further validates the findings from previous policy-related analyses within the project. Hence, the policy analysis 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. Moreover, a review of academic literature and stakeholder consultations will 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.

#### **1.1. Main questions**

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

- What role does 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. 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 been a component in a number of tasks in the GREECO project and will feed

into its overall result. The analysis has included characterization of policy instruments and tools and identification of green economy policy implications. 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 3 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**

As stated in the GREECO interim report, 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;
- the 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.

This means that the 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<sup>1</sup> 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'. (e.g. Waste Landfill Directive has a much bigger green economy implication than the Batteries Directive simply based on the share of Municipal Solid Waste of total waste. It also has a stronger territorial implication).

The choice of the policy instruments has been defined on the basis of desktop research and stakeholder consultation e.g. through interviews. The authors of the studies have then defined the cut-off line.

**Table 1: Policy hierarchy and short description**

European Policies	Short description
<i>EU Roadmaps</i>	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)
<i>Thematic strategies</i>	EC thematic strategies are not legally binding but have a strongly recommended character (i.e. Thematic Strategy on Prevention and Recycling of Waste, 2005)
<i>Other important communications</i>	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.
<i>Green papers (only important ones)</i>	Green papers are widely discussed sectoral reports prepared by the EC that aims to stimulate discussion and consultation.
<i>White papers</i>	Documents containing proposals for Community action in a specific area. They usually follow a Green paper.
<i>EU Directives</i>	Binding texts which have to be transposed by each individual MS taking into consideration the specific legal set-up
<i>EU regulations</i>	Binding texts which are directly applicable and which do not require transposition
<i>Voluntary instruments with EU coverage</i>	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
<i>National legislation transposing the directives</i>	Either in the form of specific laws or parts of already existing laws.
<i>National strategies</i>	Spelling out the national vision of sectoral development.
<i>Regional strategies</i>	Translating the national vision of sectoral development to regional circumstances.
<i>Regional development programmes</i>	RDPs are the blueprint for the development of the region and additionally they reflect (at least in theory) the views of local stakeholders. RDPs lead to subsequent financing for priority sectors and other incentive measures.

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

Financial Mechanisms and Economic instrument	Short description
<b>Structural and cohesion policy</b>	Main EU financial instrument
<i>Incentives, like grant programmes</i>	EU, national or regional financial incentives for green economy activities.
<b>Taxes, levies, fees, charges, including price-based environmental taxation.</b>	Economic instruments aiming to modify the response of economic actors.
<i>Subsidies, like tax credits or subsidised prices, including Environmentally Harmful Subsidies (EHS)</i>	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, <i>but in doing so, discriminates against sound environmental practices.</i> 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.

**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 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**

<b>Characterisation factor</b>	<b>Group 1 (policy)</b>	<b>Group 2</b>	<b>Group 3</b>
	WEAK	AVERAGE	STRONG
Territorial dimension of policy. In this analytical approach policies will be split in groups depending on the territorial dimension of the policy	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. Analysis of the 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. In theory, the effectiveness of a policy is assessed based on the improvement of the indicator in the direction of the target after the adoption of the policy. Effectiveness is to be understood as the extent the policy has changed the development of a given sector in order to achieve the objectives of the policy. This implies that a policy may be very effective without necessarily having strong green economy implications expressed in environmental protection, job creation and GVA generation.

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.

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

<b>Type of innovation</b>	<b>Description</b>
<b>Reactive</b>	Improvements in compliance, minor resource optimisation (i.e. tightening water quality requirements);
<b>Incremental</b>	Some alignment with growth, pollution prevention, addresses issues of cost, risk and carbon footprint, resource conservation
<b>Radical</b>	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)
<b>Transformative</b>	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

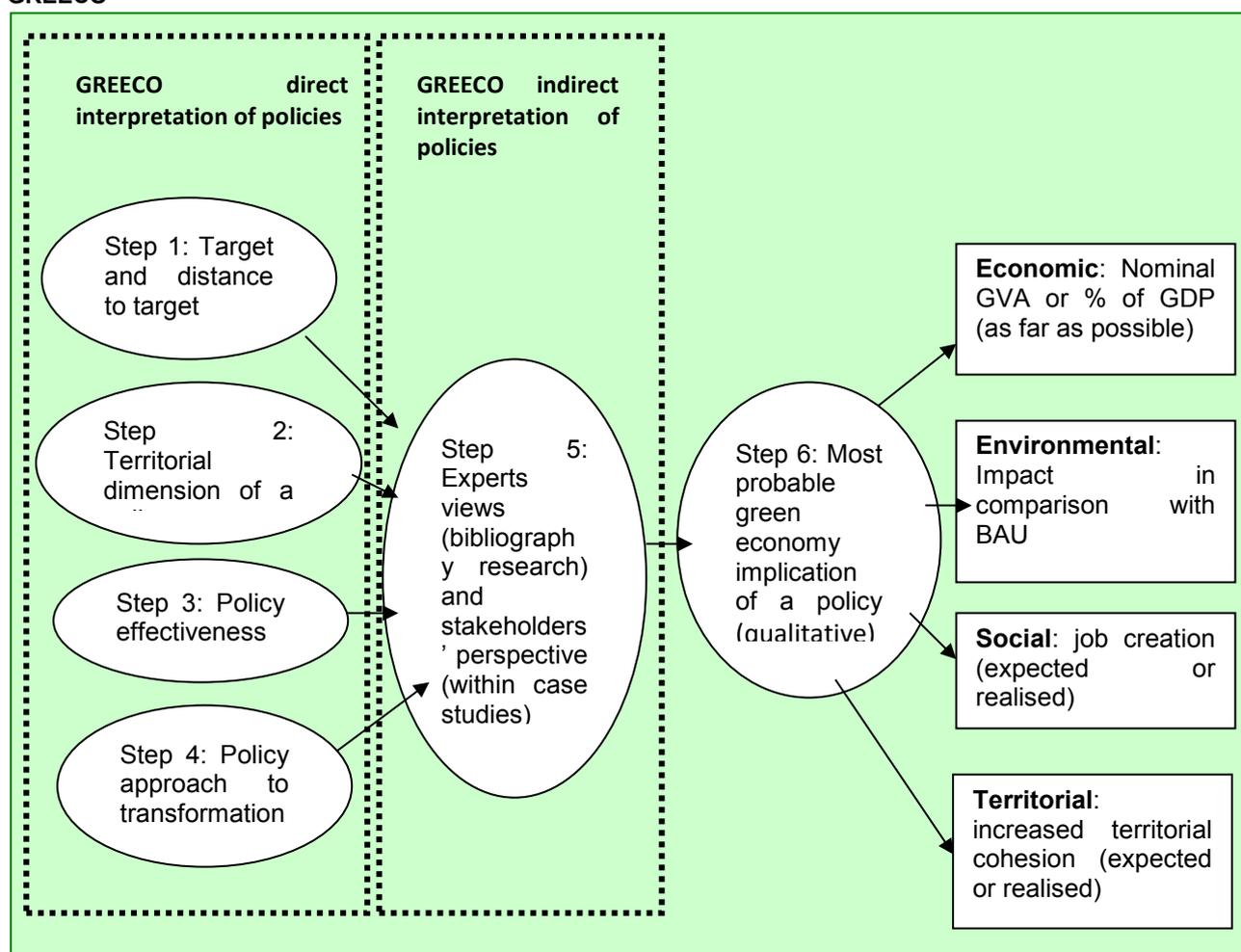
### **3.5. Green economy implications of policies**

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 from 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

In recent years, the green economy concept has emerged as a potential remedy to some of the key market and institutional failures that characterise the conventional development model, and as a more effective pathway to advancing economic, social, and environmental goals. In addition, the green economy was one of two specific themes discussed at the Earth Summit 2012 (Rio+20), the other being the institutional framework for sustainable development. 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

### *Green economy implication*

In the EU, the green growth agenda is reflected in the new 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 addition it also focuses on the need to recover from the economic crisis, whilst becoming more resource efficient. Consequently, even if the strategy does not use the green economy term, they both share common objectives and goals: pursuing economic growth while protecting the environment and increasing social cohesion.

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 is 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. It also urges the Structural and cohesion funds to channel funds in this direction as well as MS to reform their national and regional innovation systems; The Flagship Initiative: "An industrial policy for the globalisation era" encourages the industry to a transition to better resource efficiency; It encourages 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, making binding targets, are the ETS directive (EU Directive 2009/29/E), 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).

#### *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 European Commission 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 policymakers 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).

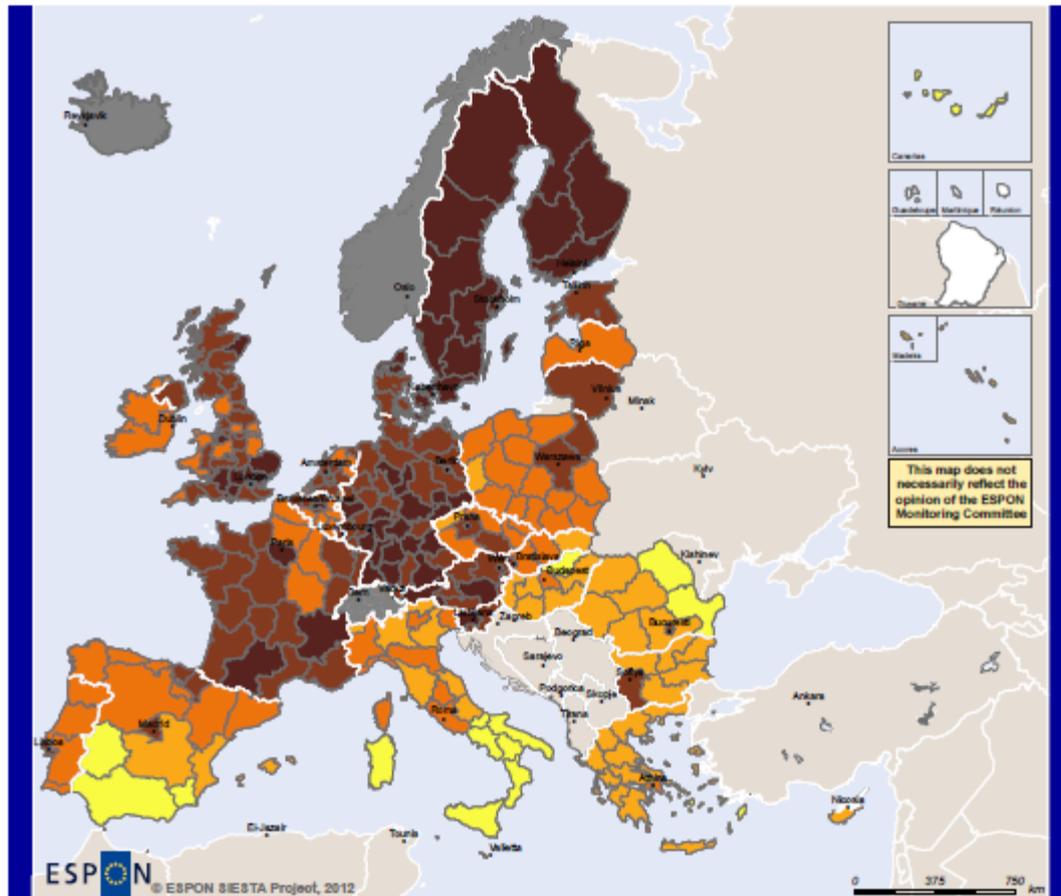
#### *Distance to target and policy effectiveness*

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).

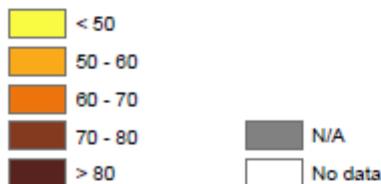
**Map 1 Regional Europe 2020 Strategy aggregate index, 2009 to 2010**



EUROPEAN UNION  
 Financed by the European Regional Development Fund  
 INVESTING IN YOUR FUTURE

Regional level: NUTS 2  
 Source: Own elaboration based on EUROSTAT data  
 Origin of data: EUROSTAT, 2012  
 © EuroGeographics Association for administrative boundaries

**EU 2020 Strategy Index, combined years.**



*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. The EU Territorial Agenda 2020

### *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 4 The 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).

### *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.

### *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.

## **3. The Cohesion Policy**

### *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 376 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 (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). 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; 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.

There is a sort of 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 has been an intensification of the efforts to mainstream environment and climate change in all types of investments including the most energy intensive ones.

Because of the need to achieve impact in terms of 'smart, sustainable and inclusive growth' 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 which are worth 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 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 Contracts and programmes.

### *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.

One territorial aspect of the policy is provided for in point Article 5 of the draft regulation whereas 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.

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.

There is a provision for carrying out integrated territorial investments where 'an urban or territorial development strategy requires an integrated approach'.

The territorial approach of Cohesion policy is also taken up in the Community-led local development, 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'.

One weakness of Cohesion policy projects is that 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.

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.

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 either directly or indirectly invest roughly 30% (EUR105 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. As such, Cohesion Policy will have the greatest effect on interventions:

- That are either 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. EU sectoral policies

This section provides an overview of the key sectoral policies of the green economy, their territorial dimensions and potential for green economy development.

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 RD 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

#### *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 internalised and the transformation to green agriculture would be only up to consumer demand, which is 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.

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 the environmentally friendly production of high-quality products. Organic farming is stressing the advantages for the environment, rural development and animal welfare. 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.

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 which were 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 has led to more diversity in the fisheries. The improvements in 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 focus on qualities parallel to quantities. The TAC and the UN Law of the Sea have relatively limited implications on

green economy development, mainly through regulating the fishing fleet and distributing TAC between the EU countries to protect the fish stock which created a better management of the fish resource within EU waters and enabled fisheries to become better adjusted to the stocks.

### *Territorial implications of policies*

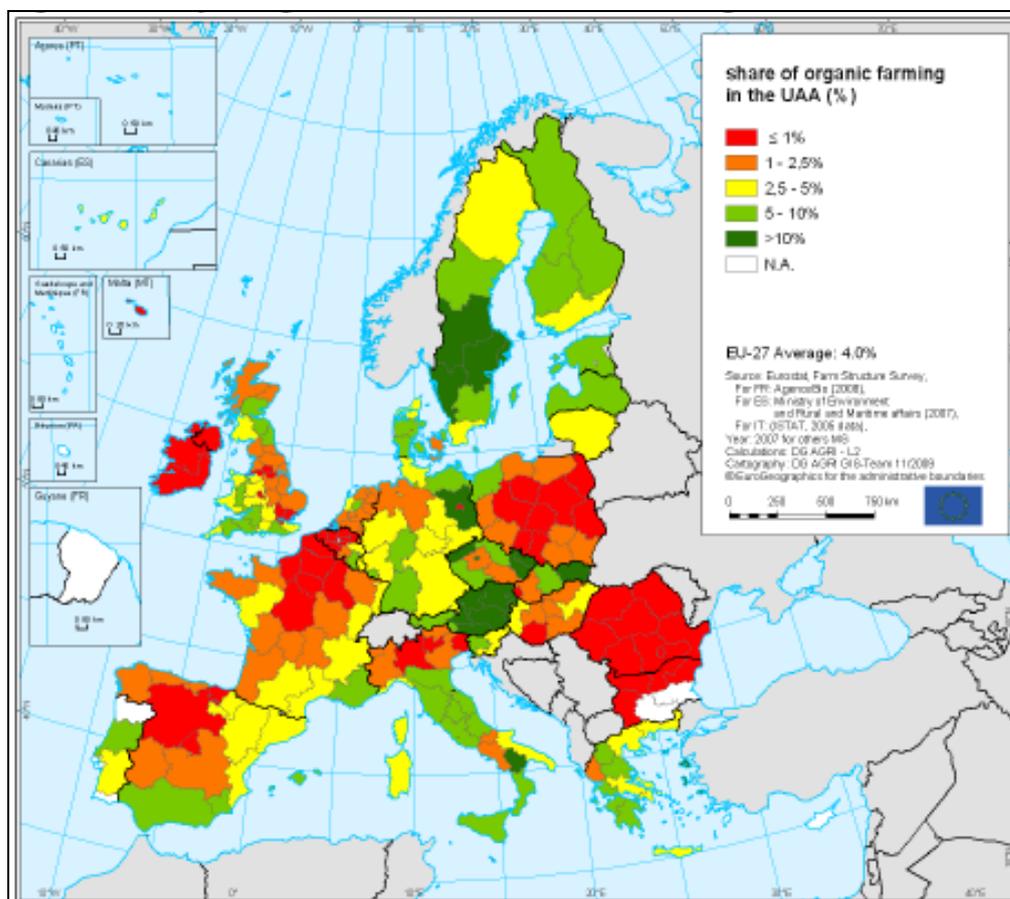
There is a strong territorial implication of the CAP as it is targeting mainly rural areas in Europe. The EAFRD contributes to improving the competitiveness of agriculture and forestry; the environment and the countryside and the quality of life and the management of economic activity in rural areas. Greening of agriculture on a large (EU or National) scale could stimulate local groups or associations to act locally – hence having an impact on the local (governance aspect).

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. The TAC, quota control, developed national and distance fisheries parallel. In order to compensate for expansion possibilities in national and EU waters the fleet moved into international water.

### *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. There is no target on organic farming is uncertain since there does not seem to be a spoken target; but the map below shows the current state of organic production across the EU. The EU-27 average is 4 % but we see that in more regions the share is now above 10%.

**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.

#### *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.

## **2. Energy**

#### *Green economy implication of policy*

EU energy policy is a diverse collection of more specific themes but from a general perspective, and with the aspect of the green economy in mind, there are two headline policies that characterise 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.

The implementation of EU RES strategy has positive implications on the environment – not at least due to the reduction of carbon intensive energy sources and the mandated sustainable uptake of renewable sources (that acknowledges environmental consequences of RES development). It also certainly has a positive impact on territory, particularly in terms of its importance on regional knowledge and strategies for place-based development of

renewables. This is part and parcel with the nature of RES as part of decentralised energy strategies, and RES development 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 for domestic development and export is an important contribution of generating 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 MS to adapt to a new energy paradigm. Without such overall EU coordination, varying impacts will cause winners and losers, and through increased energy poverty will likely 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, if not all, Member States.

Despite these important changes in European energy policy, Member States are ultimately responsible for their national energy mix and exploitation of indigenous energy resources. This implies that the EU has no power over MS' energy mix, depletion policy or taxation (Solorio Sandoval & Morata, 2012).

#### *Territorial implications of policies*

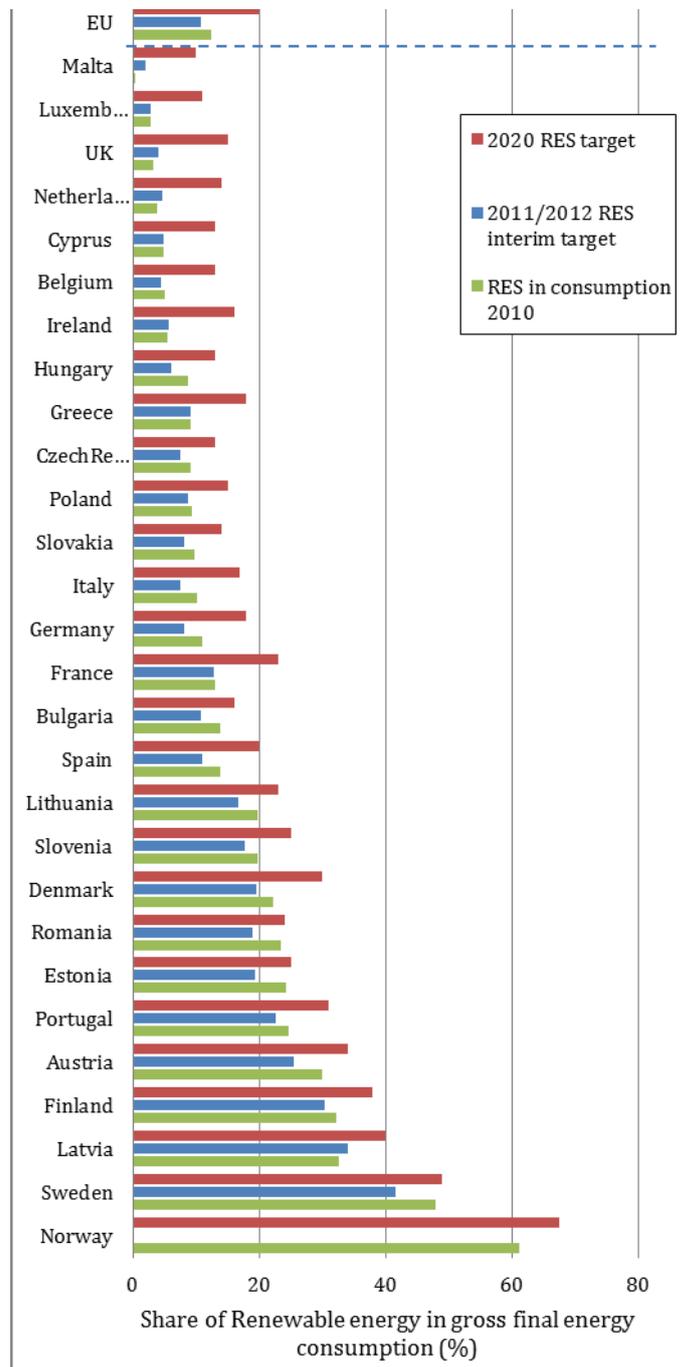
Positive implications of implementing the Energy 2020 strategy and the Energy Roadmap 2050 in terms of territory relate to the need for increased local regional planning and management of energy services. Not least, this includes the local, place-based nature of renewable energy, as well as community energy systems.

Territorially, achieving the EU's energy efficiency goals requires increased action at the local and regional level. These actions not only consider the importance of local context in the development of policy (e.g. via the development of regional energy agencies for example), but improvements to Europe's building stock (the main consumer of energy in the EU) and urban mobility require participation from knowledgeable local and regional authorities.

#### *Distance-to-target and policy effectiveness*

The recently published Renewable energy progress report is a key component of Energy 2020 serves to benchmark progress as the MS level. It mentions that the 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 their 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

### *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 CO2 emissions 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 way energy market acknowledges environmental protection). The '**Energy 2020: A Strategy for competitive, sustainable and secure energy**' has a radical transformative character from the perspective that if the targets are achieved there will undoubtedly be a radically transformed market for green energy technologies that will drive research and eco-innovation.

### 3. Manufacturing

#### *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. On the contrary, 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 manufacture, 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<sup>2</sup> 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.

#### *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

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<sup>2</sup> IPPC Directive will be repealed with effect from 7 January 2014 by [Directive 2010/75/EU on industrial emissions](#)

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 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

#### *Distance-to-target and policy effectiveness*

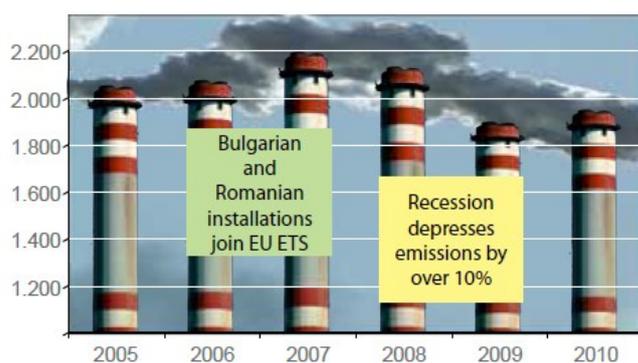
In the case of the IED, the target is to comply with emission level values (ELVs). Most of the MS have complied with the January 2013 deadline for transposing the directive (20th June 2012 data). The IED has great potential to limit environmental damage from industrial activities.

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:

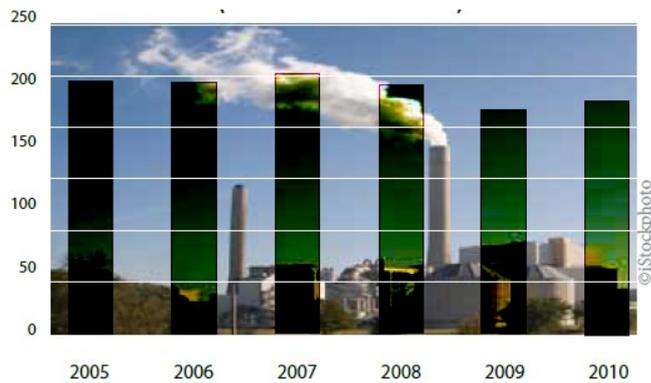
- The group of 'consistent performers': Germany, Denmark, Finland, Sweden, Austria, Ireland, the Netherlands, the United Kingdom, Belgium and France, who perform well in all dimensions.
- The group of 'uneven performers': Estonia, Slovenia, Spain, Italy, Portugal, Greece, Malta, Cyprus and Luxembourg, 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 greenhouse gas 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 thousands 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.

#### *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 prefer 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.

## 4. Green research and innovation

#### *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 5 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 EcoAP.

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.

#### *Territorial implications of policies*

The Eco-AP foresees the need to work together with not only Member States, but also regions. 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).

#### *Distance-to-target and policy effectiveness*

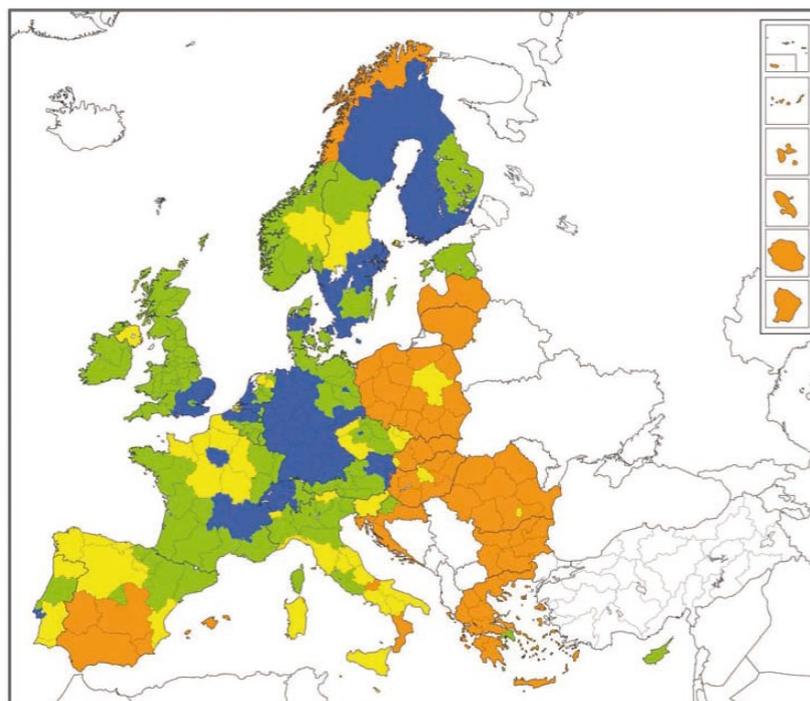
It is too early to assess the effectiveness of the Eco-AP as it was recently launched. Nonetheless, it is expected to be highly effective for green economy development since it takes into account synergies with other EU-wide policies and instruments.

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.

■ INNOVATION LEADER  
■ INNOVATION FOLLOWER  
■ MODERATE INNOVATOR  
■ MODEST INNOVATOR

### *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.

## **5. Green building and construction sector**

### *Green economy implication of policy*

From the top-down, EU policy includes a comprehensive set of thematic strategies, directives, financial incentives, the availability of regional funding and the extent of 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. One way to approach this is by ensuring that resource efficiency is a guiding principle of all public investment in buildings. This directive, like other strategies such as the 2050 Roadmap for moving to a low carbon economy and the Energy Efficiency Plan 2011, also discuss 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. 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 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.

The above mentioned directive on energy performance of buildings (2010/31) provides the basis for how the building sector can respond to Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's GHG emission reduction commitments up to 2020, for which energy efficiency in the building sector will be crucial. It 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 are therefore obliged to set 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. Achieving the goals put forth in the directive would mean that a huge share of the economy (jobs and GVA) become green, that 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 build environment. 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.

Another aspect relevant to green building and its territorial dimensions is energy certificates that should according to directive 2010/31 be used to provide correct information about the energy performance of the building and practical advice on improving such performance.

#### *Territorial implications of policies*

The directive 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.

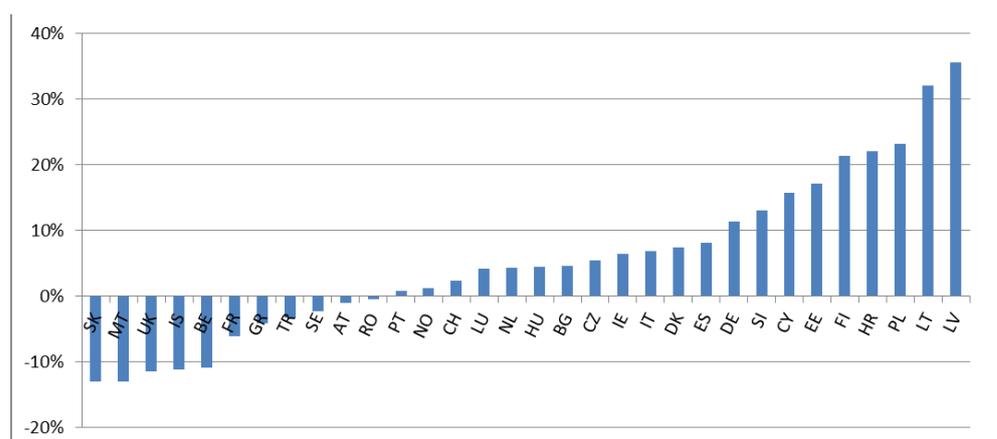
Municipal authorities are key actors as they are generally responsible for land use planning and development. Public authorities should lead by example and endeavour to implement the recommendations included in energy performance certificates. Member States should include measures supporting public authorities (which, as mentioned, are general local and regional authorities that own public buildings) to become early adopters of energy efficiency improvements within their national plans. As such, 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.

#### *Distance-to-target and policy effectiveness*

The buildings directive has been effective in the sense that it provides 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 political actors involved in the process. In this regard, it clearly highlights the role of local authorities, and how they are essential in leading investment through a greening of public buildings. However, the policy framework for the building sector lacks 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 shown in the figure below indicate that buildings are consuming much more energy than they were in 2000. 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

### *Transformative approach*

The policy can be characterized as incremental. It lacks 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.

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<sub>2</sub> 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 a key driver will be the 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.

## **6. Water**

### *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 in a huge range of human activities, and therefore in the policies applied to regulate them. For example in agriculture, land-use and development, energy generation, industry, as well as the indispensable role of water in ecosystems

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 have 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

#### *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 borders 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 policy is specifically laid down in the water related directives, most importantly the Water Framework Directive, Urban waste water directive and the drinking water directive. This is often translated 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 it 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.

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

Other directives in the sector are strongly interlinked with the WFD and thus the measures in e.g. the GWD are linked to the RBMP established in the WFD. Under the UWWTD the relevant authorities in each MS are required to, bi-annually, report on the disposal of UWW and sludge.

#### *Distance-to-target and policy effectiveness*

Much of the achievements in improving water resource management, leading to that high level of public water supply of good quality and a high level of sanitation has been reached in Europe, can be accounted 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 UWWTD. A few countries have fully implemented the UWWTD, 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.

#### *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 framework directive however 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.

## **7. Waste**

#### *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 – 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 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 Directive 2008/1/EC on Integrated Pollution Prevention and Control tackles industrial waste.

Overarching policies like the Europe 2020 Strategy has a strong green economy implication as it sets the tone and style of all other EU policies towards resource efficiency, eco-innovations, emission reduction, BAT use in industry, etc. The same is valid for Cohesion policy, especially the upcoming 2014-2020 programming period, when the Europe 2020 principles have been incorporated in the policy.

#### *Territorial implications of policies*

Regions play an important role in waste management in a number of countries. Although EU directives do not specify this explicitly, in most cases individual municipalities are responsible for waste management. Also, 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.

#### *Distance-to-target and effectiveness*

The main target related to MSW comes from the Waste Landfill Directive – by 2016 biodegradable municipal waste 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.

#### *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. Recently, in the 2000s, EU policies 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 set up national systems for recycling of different waste streams. Once these systems are in place 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 but rather - from those countries that are the most advanced in the sector. The new policies would target mainly prevention, circular economy and waste-to-energy.

## **8. Tourism**

#### *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

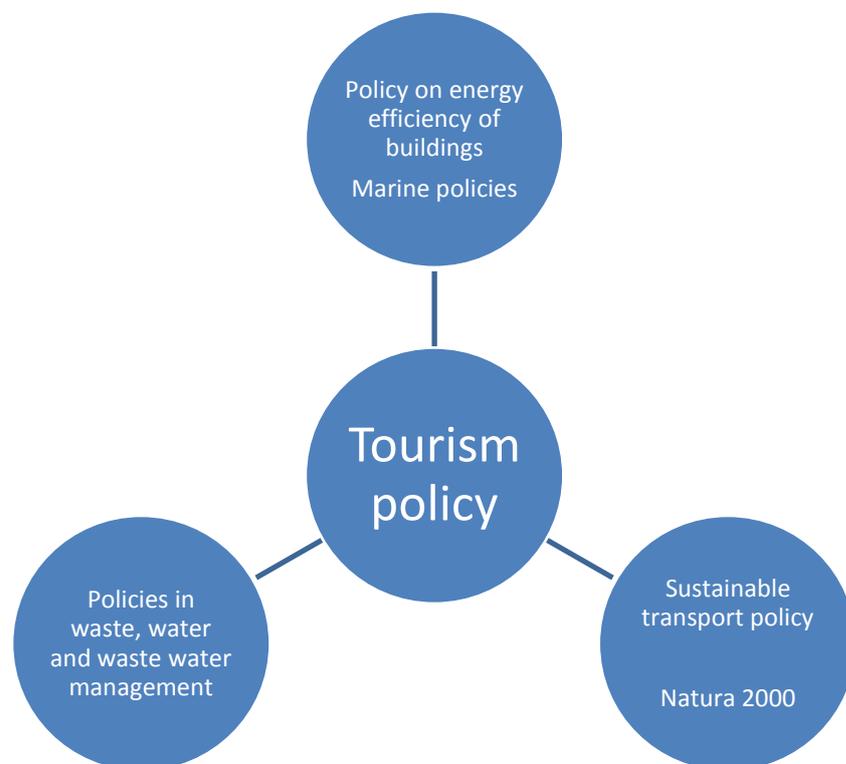
that sustainability is a main factor for the competitiveness of the European tourist sector. The document promotes the diversification of tourism based on the cultural and natural resources of the destinations. Initiatives such as the European cycle routes or pilgrimage routes which have a clear trans-national 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



*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.

#### *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.

#### *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.

## **9. Transport**

#### *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 Commission 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 emphasizes 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.

#### *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.

#### *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.

#### *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.

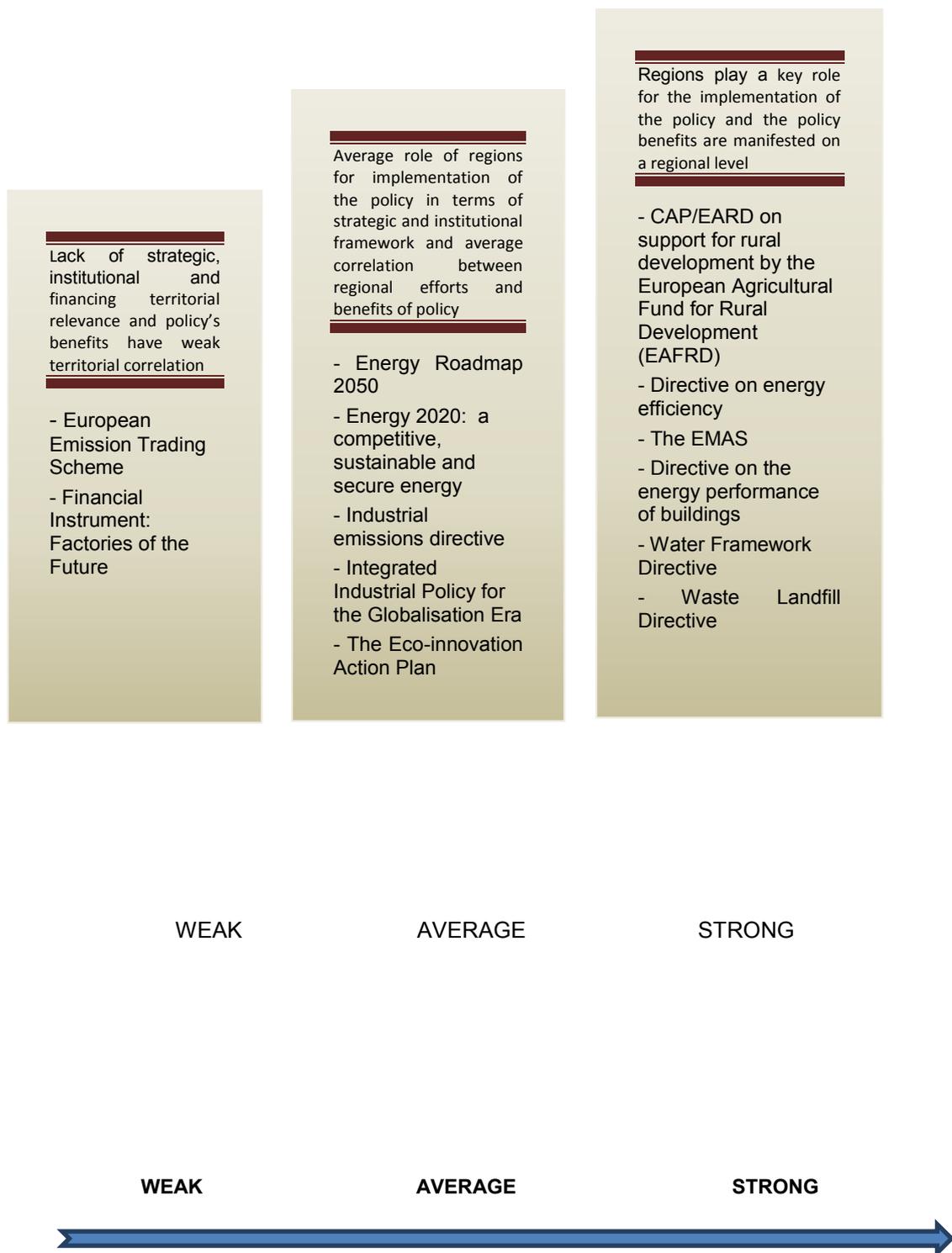
## **V. The territorial governance perspective**

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

There are two ways that regions and policies interact – firstly regions are able to respond to national legislation/targets/strategies; secondly, it is through self-driven, proactive regional policies and vision.

In the case strong territorial implications of policies there are 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. The recognition that regional diversity and the need for place-based approaches to increase Europe's competitiveness are central.

**Figure 7 Characterisation of policies according to their territorial dimensions/implications**



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 strategies strengthen regional economies and reduce regions' dependency on non-renewable resources and thus increases resilience but innovation itself usually takes place in cities and local planning is crucial to put in place an 'ecosystem of innovative companies'.

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

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

#### ***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 %. (Ruhr Case Study)

#### ***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.

#### ***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. (Cornwall Case study)

#### ***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). (Zealand Case study).

#### ***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 (Southern Estonia Case Study).

### **3. Regions as driving forces in the green economy**

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: Investing more in sustainable growth. 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: Investing better. Devoted to:
  - Integrating sustainability throughout the project life-cycle
  - Checking investments against climate resilience and resource efficiency
  - Better governance.

### **3.1. Examples of the role of regions in a green economy transition**

#### ***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.). **(Water and waste sectoral reports)**

#### ***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). (Waste sectoral report)

#### ***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. (Southern Estonia Case Study)

#### ***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

Local and regional authorities are critical for the successful implementation of green building and in particular of the Directive on the Energy Performance of Buildings that 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. Municipal authorities are key actors because they are generally responsible for land use planning and development. (Energy sectoral report)

**Box 6 Examples for the role of regions for greening the waste sector**

<p><b>Flanders (Belgium)</b></p> <ul style="list-style-type: none"> <li>• Sets voluntary agreements with municipalities;</li> <li>• The Waste Plan is a key policy instrument because once approved by the government its provisions apply to all public authorities.</li> </ul> <p><b>Italy</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> <p><b>Finland</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>
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Source: EEA, 2009, Diverting waste from landfill: effectiveness of waste management policies in the EU (Waste sectoral report)

### ***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 (Cornwall Case Study).

### ***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. It is a fact that EU policies have the main influence on the development of EU regions. 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. renewable energies in the 1990s, innovation) and monitored the evolution of measures adopted. In this regard, due to the fact that Navarra has its own tax regime, policies such as innovation and renewable energies 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 promoted by the Government of Navarra was devoted to fostering energy conservation and efficiency, making the best use of renewable energy resources, making them compatible with the environment 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.

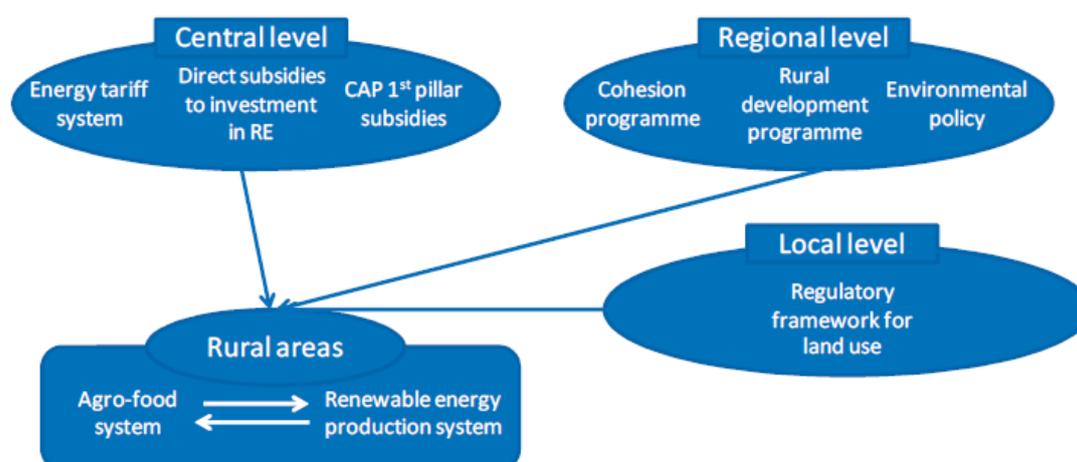
In 2010 Navarra published a cross-sectoral action plan to shift from an industrial economy to a knowledge-based economy - MODERNA. It seeks an economic paradigm change, from a resource intensive economy to a resource efficient one. However, some stakeholders consider that this paradigm change is not 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 MODERNA 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). MODERNA has been promoted by the Government of Navarra along with a range of other regional actors. 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 MODERNA 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. **(Navarra Case Study)**

***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 in fact gained a central role in permitting of plants powered by renewable sources. This role was important because, 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. (Puglia Case Study)

**Figure 8** 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. 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. (Puglia Case Study)

### ***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. (Southern Estonia Case Study)

**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. (Jämtland Case Study)

**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 in such an uncertain context of operation. (Puglia case study)

**Box 7 Lessons learnt from Puglia's renewable energy (RE) implementation**

*"Puglia's pioneering role in RE deployment should be recognised. While RE 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 RE 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 RE 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 RE 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

**Jämtland (Sweden) – Regions are the weakest link in the chain**

Sweden is a parliamentary democracy with three levels of government (national, regional and local). At national level there are 11 ministries that also have sub-ordinate national agencies (e.g. The Swedish Forest Agency). The county administrative boards function as links between the municipalities in the region and the Swedish Government, the Swedish Parliament and the national agencies, such as the Swedish Forestry Agency. The regional or county level has traditionally had the weakest position between the national level and the strong self-governing municipalities at local level. Municipalities have traditionally had a strong self-governance and they have a monopoly on physical planning in their territories. Regional development strategies and programmes are not binding for the municipalities (Government Offices of Sweden 2012; Smas et al. 2012).

In Jämtland, the County Administrative Board has three main tasks: to promote development in the county, to promote the implementation of the national policy goals in the county and to act as an administrative authority (Jämtland County Administrative Board 2013b). (Jämtland Case Study)

### ***South Transdanubia (Hungary) – Regional Energy Strategy: multi-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). (South Transdanubia Case Study)

### ***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.

### ***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 (Zealand Case study).

### ***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 (Zealand case study).

#### **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 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. (Southern Estonia Case Study)

## **4. 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. 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 however 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. The efficiency of EU policies as green economy drivers is also influenced by the stability of the policies. More predictable and stable policy with a longer-term approach will better facilitate greening the economy at local level due to increased cost certainty and therefore reduced risk. (Jämtland Case Study)

##### ***Waste management in case of big cities: big leverage for change of paradigm***

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 ambitious 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.

## Box 8 Examples for the role of cities for greening the waste sector

- **Connect waste and energy.** Kalundborg in Denmark is a well-known example of the economic gains that can be achieved by connecting waste and energy exchanges in an eco-industrial park, with annual estimated savings of US \$ 12-15 million.
- **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.
- **Link between SMEs and research.** There is the need to consolidate the effort of universities and public research centres to engage with SMEs, providing problem-solving and auditing services. Several tools, such as innovation vouchers, are being developed at the regional level and should be analyzed with a comparative approach.
- **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.

Source: Interim report on OECD Green Growth Strategy, 2010 (Waste Sectoral Report)

### ***Urban Waste Water Treatment – cities are major actors of water policy through urban planning***

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 give 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 it 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)

### ***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.

According to the communication Cities holding significant assets as they are:

- engines of growth;
- places of advanced social progress;
- platforms for democracy, cultural dialogue and diversity;
- places of environmental regeneration.

In the new Cohesion Policy period, increased attention will be given to 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.<sup>3</sup>

#### **Box 9 Local government conditions for successful environmental mainstreaming**

The local government conditions are important in setting the context for green economies. Conditions that better integrate environmental and social objectives into policy include:

- Legislative system: Supporting environmental protection and social justice.
- Institutional mandate: All sectorial and decentralized institutions tackle environment as a cross-cutting issue within their work;
- Public concern: Public demands to tackle environmental degradation and care for environmental assets are significant and well-expressed;
- Public and media advocacy: Mass media organizations and NGOs are able to raise difficult policy issues in relation to the green economy;
- Leadership: Government and local leaders prepared to listen, to change policy, to act and to be accountable;
- Communication and transparency: Offer many ways to access, share and feedback information about environment-society-economy links;
- Cooperation: Shared initiatives and processes allowing actors to collaborate.

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

**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. *Ambiente Solidale*, a local civil society organization and others, are distributing recycling bins to homes and businesses throughout the region.

**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)

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<sup>3</sup> presentation, [http://hanse-office.de/files/dirk\\_ahner\\_urban\\_dimension\\_of\\_cohesion\\_policy.pdf](http://hanse-office.de/files/dirk_ahner_urban_dimension_of_cohesion_policy.pdf)

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

### ***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). (Jämtland Case Study)

### ***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) (Cornwall Case study)

### ***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. (Ruhr case study)

***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.

***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). (Zealand Case Study)

***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. (Jämtland Case Study)

***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. (Jämtland Case Study)

***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<sub>2</sub> 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. (Jämtland Case Study)

### ***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.

## **VI. The Way Ahead: Policy Messages for Policy Makers and Regional and Local Authorities**

The regulatory framework is the key driver for green growth. The EU legislation has during the last two decades driven many sectors in order to reach a high level of environmental performance, unleashing potentials and inducing economic growth. At lower geographical scales initiatives such as certification and eco-labelling schemes are playing a crucial role to develop some sectors (green manufacturing, green forestry, organic agriculture, etc.). It is clear that policies matter in the transition to green economy in European territories and that the territorial aspects of green economy needs to be reflected in the policy framework for creating an enabling framework for green economy development.

Cities and regions have many assets that can play a key role in green economy transitions. It is crucial to transform such assets into competitive advantages by leveraging their value. However, the potential value of assets varies widely and this has to be acknowledged by policymakers across Europe and across territorial levels. The most important difference among territorial assets is not merely the scale, but a fundamental qualitative difference in their nature (geographical location, natural resources, social capital and institutions, etc.), their economic role in the local communities and regions, and how much they can be leveraged to foster regeneration. A clear political orientation and guidance through policy is needed, and the EU, member states and regions could lead the way and setting a positive example through e.g. applying GPP and creating a demand for green products and services. It is worth noting that a single region cannot achieve the needed changes, but Europe as a whole, with its experience, track-record and economic power has a realistic chance to lead this transition towards a greener, more resource-efficient economy and future, tackling current sustainability challenges (European Commission (EC) – DG REGIO (2012)).

- The differences and potentials of different territories should be reflected by policy-makers in the implementation of policies contributing to the Europe 2020 Strategy. It is important to ensure that different policies and EU Cohesion Policy in particular, take on board the territorial dimension, build on the diversity of regional potentials and challenges.
- Regions and cities are key actors in the achievement of the EUROPE 2020 objectives. The contribution by regions and cities requires a placed-based integrated policy and a strong commitment and coordinated actions from policymakers at different geographical levels.
- Regions and local authorities can make a key contribution to the achievement of the Strategy through the definition of territorial actions under their competence. (ESPON ATLAS, 2013)
- In order to speed up the green economy transition, policies need to be more transformative to support a complete shift in the paradigm on which current patterns of production, consumption, working and living are based. The current EU framework is not really transformative but rather builds on improving the business as usual scenario.
- Set ambitious regional and local targets: Targets may be a major driver of green growth. For example, London has set targets for 45% municipal recycling/composting by 2015; 70% commercial recycling/compsting by 2020 and 95% of C&D waste by 2020.

# 1. Policy messages targeted to sectors of the green economy

The below section present a range of policy messages that are targeted to policy makers within the specific green economic sectors studies within GREECO.

## 1.1. Bioeconomy

### Key policy messages for Agriculture:

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.
2. **Make better use of investment support schemes.** Investment support for modernisation of agricultural buildings and equipment holds great potential in reducing emissions of GHG and diversifying the on-farm use of energy (fuels for heating as well as machinery and equipment). As some of these investments are not productive in the short run, and also embody some level of public good component, there is a motivation for investment support for some of this restructuring of the agricultural sector. 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.
3. **It is important to further develop and target the agri-environmental measures of the second pillar of the CAP to support less intensive production and provision of public goods.** These measures are instrumental in providing both positive externalities that contributes to the well-being of humans and biodiversity of ecosystems, 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 agriculture in a transition to a greener sector, e.g. reduced input use, less emissions, change in energy mix, and more production of renewable energy, provision of landscapes for recreation and tourism (as well as resilience to future climate change).
4. **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.
5. **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. Products that have high negative external costs (not incorporated into the market price of the products) should be considered for taxes or charges or other cost efficient measures. E.g. the OECD suggests the further implementation of trading schemes for e.g. water rights or carbon emissions. These are cost efficient and dynamic (in the sense that they stimulate the development of new technologies) ways for correcting for market failures.

6. **Local networks and local initiatives supporting a transition of both the supply and demand side of the agricultural economy.** 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 – this will at the same time augment rural and regional development agendas.

#### **Key policy messages for the Fisheries sector:**

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.
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.
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.
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 **sympiosis 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.
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 3<sup>rd</sup> countries. *In this process it is important that consumers are not only informed, but involved in the process.*

## 1.2. Energy

1. 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, if not all, member States.
2. The switch to RES is an incremental process that must take place within the confines of existing market conditions, both in terms of supply cost and energy affordability. It is therefore **important to maintain a set of funding policies** (such as feed-in tariffs etc.) which will continue to serve as key drivers of the sector. It is, however, also important to be aware of the limitations such policies may have in a balance between exploiting the feed-in tariffs as means for profit versus experiencing positive impacts of the funding. **Monitoring of the process is therefore important** until the renewable energy may have reached a level of competitive advantage over traditional sources.
3. Renewable energy sources and technology for domestic development and export is an important contribution to a future low-carbon economy. And recognizing that Europe is in a situation where innovation and technological development in RES is ahead of most of the world, **this competitive advantage should be promoted further**, and keep Europe as a world leader. It is however also important to recognize that countries such as China are moving rapidly forward in order to take advantage of potential competitive advantage in the development of renewable energy technologies.
4. The goals of the shift towards RES require **parallel development of new markets for energy efficiency goods and services, shift in energy sources, but also behavioural changes in the ways of thinking about energy consumption**. Alliances with consumer organisations are needed in order to make the population more aware of both short and long term consequences of continuing the traditional patterns of energy consumption. Energy consciousness should be considered at the forefront of investment decisions, and **labelling of products with visible and clear messages to consumers on the energy consumption and future environmental and economic impacts of their choices should be promoted**.
5. The mutually profitable links or synergies between business and municipalities should be further promoted through **Industrial Symbiosis** where underutilised and undervalued resources from one (materials, energy and water) are recovered and reused elsewhere in the industrial and municipal networks creating **Circular Economy**. The promoting of opportunities of business linkages and connection to residential/municipal activities may help companies cut disposal, storage and transport costs, generating sales by adding value to previously under-used or discarded resources, and thereby ensuring a general reduction in energy consumption. It increase profitability through reduced costs and additional sales, promotes more value for by-products, share innovations through knowledge transfer and access to solution providers, and ensures corporate social responsibility commitments through measurable actions.

### 1.3. Manufacturing

1. **Improve access to knowledge:** One of the more often quoted barriers for manufacturing industries is the lack of access to information and knowledge. 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.
2. **Raise public awareness:** Increasing resource efficiency is in the interest of the manufacturing industry. Therefore, this transition is likely to take place, even if the motivation may be either “green transition” driven or “lowering costs” driven. However, part of this transition will bring a paradigm change and thus will also require a strong public commitment and support, e.g. the renewable energy transition and subsequent infrastructure requirements (Geyer et al. 2003). In addition, meeting consumer demands is one of the most powerful drivers for change. In such a context, awareness raising and increasing public participation is essential. E.g. information campaigns, marketing (including control on green commercial claims), etc. oriented to foster green consumer behaviour.
3. **Lower financial burdens:** Design Market Based Instruments (MBIs) to address the lack of financial incentives issue. E.g. promote benchmarking, reform taxes and subsidies (i.e. EHS) so that the support resource efficiency, make use of green procurement approaches, etc. Improve access to finance and funding, e.g. to facilitate the implementation of green innovations.
4. **RDI investments to fill knowledge gaps:** Some manufacturing subsectors (e.g. steel) are technologically very mature and as such, current technologies are reaching performance limits and 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 researching technological and innovation breakthroughs. E.g. further support to address the limits of BAT.
5. **Introduce eco-efficiency indicators for better monitoring:** So far, progress has been made on consumption of resources measurement. However, there is yet progress to be made on developing the right resource efficiency indicators. These eco-efficiency indicators would enable to set a measurement framework to monitor progress towards resource efficiency and would benefit the policy-making process at the EU level.
6. **Increase policy support to the transition through exploiting the full potential of EU legislation:** All in all, the policy framework should promote the green transition and discourage “business as usual” behaviour. However, in some cases it has been found that regulation is not exploited to its full potential, e.g. for encouraging material recovery from WEEE, or for maintaining status quo (Rademaekers et al. 2011b and UNIDO 2011b). That is why it is of utmost importance to exploit the full potential of the EU policy framework, so that it promotes recovery of materials and waste separation, fosters industrial symbiosis and cradle-to-cradle approaches, etc. All of which should be complemented with policy impact assessment, monitoring and evaluation.

### 1.4. Eco-innovation

1. **Better pricing and a shift to environmental taxation:** There are a variety of financial factors which may hinder the deployment of eco-innovative developments. If it was not for environmental legislation, incentives for a resource-efficient economy

are scarce. The main reason behind is that prices do not reflect the real value of natural resources. Therefore, policy support is needed to adjust the economic and fiscal framework to provide incentives to become more resource efficient (i.e. greener). For instance, instead of value-added taxation, it may be more efficient to tax natural resource's use before goods for final use have been produced, while lowering taxation of labour accordingly.

- Market failures, i.e. prices do not reflect environmental costs and thus foster monopolies and hinder eco-innovation;
- EHS and harmful subsidies;
- Lack of funds within companies and insufficient access to existing subsidies and fiscal incentives (R&D costs, lack of investment, etc.);
- Inadequate availability of risk capital.
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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, (lack of) knowledge is 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);

That is why supporting Eco-innovation to bridge the gap between research and the market is essential.

3. **Comprehensive policy mix to support eco-innovation:** Decades of research have managed to unveil national, sectoral, regional and technological differences in innovation systems. Keeping sectoral specificities in mind, regulation has played a key role in promoting the use of eco-innovation. But for years the policy focus is 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.

4. **Adjust eco-innovation support measures to the receptor:** Recent analyses suggest that strategic eco-innovators developing emerging eco-innovations are different to other eco-innovators as they have clear first-mover strategies. This type of eco-innovators has a different innovation dynamics due the fact that they are in a stage of the innovation cycle that has high uncertainty and risks. This type of eco-innovators is not yet consolidated, but they are often high-growth, SMEs. Besides, 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. Smart policy advice should be able to identify and provide

differentiated messages for 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 manufacturing) that adopt innovations developed elsewhere in order to improve their process efficiency and to reduce cost, among a few other factors. The second group may have the same motivation, but decides to go through R&D and engineering efforts in order to develop or adapt eco-innovations. The third group corresponds to eco-innovators with the clear strategy to develop an eco-innovation that is ought to be sold in the marketplace (Montalvo et al. 2012). The reason for such differentiation is simple: their strategic orientation is different and their resources and capabilities for innovation also differ. For this reason, there is no one-size-fits-all support measure to enhance eco-innovation implementation.

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 factors (e.g. taxes, legislation) fall out of the scope of regional stakeholders, regional authorities play a leading role in fostering regional economies through eco-innovation, 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 strengthen regional economies and reduce regions' dependency on non-renewable resources and thus increases resilience (Massard et al. 2012). These strategies should be defined in a smart way, capitalizing local strengths and addressing local challenges by means of policy instruments available at the regional level, e.g. green public procurement, promoting regional R&D, awareness raising, etc. (European Commission (EC) – DG REGIO (2012)).

## 1.5. Green Building and Construction

1. **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.
2. **Proactive land use policy will act as a driver for a greener built environment:** Policy at all levels must further emphasize reduced land take as a policy priority through brownfield and greyfield development. Not only does this have important environmental benefits, but is also a key agent in promoted more efficient (accessible, connected and integrated) urban development. Therefore more effective land use planning (through more effective and coordinated spatial planning) can promote improved energy efficiency. This implies the importance of using information on land consumption and urban sprawl more actively within the formulation of policy, planning practices at all levels of government. Land use factors should therefore be included as criteria within the dispersal of EU funds. As such, focusing on green buildings in a territorial perspective means that local planners and decision makers must emphasise a number of underlying potentials, including planning green building strategies within the wider framework of green urban systems; where underlying

complementarities with mobility, leisure space and other public services are conceived together.

3. **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.
4. **Policy targeting existing buildings must be strengthened even further:** Extremely high variations in terms of per capita energy consumption and CO<sub>2</sub> emissions, both in terms of the status quo and the changes between 2000 and 2009 are evident at the Member State level. Further investigation on the causality for this suggested quite convincingly that the relatively high number of old buildings in larger urban centres of Europe means that these areas have poor consumption than would otherwise be expected. In order to promote investment in renovating this existing building stock, national-based financial incentives cannot be understated in terms of their importance for creating a strong market for green building and construction. These initiatives must somehow be developed to overcome internal constraints, (i.e. the capital intensity of building investments, lack of awareness and split-incentives, etc.) Currently, national incentive schemes – mainly in the form of subsidies, grants and tax credits - have proven to have only a marginal impact of promoting private investment. 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.
5. **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 (as a share of GDP) 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 – for instance, through Cohesion Fund or the ESF 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.
6. **Public support for greening buildings is a low risk investment, but more coordination is necessary:** 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 they rely on. This is in contrast to investment in other sectors, which are often exposed to import leakage when domestic markets cannot supply appropriate green technologies. However, bureaucratic processes attached with acquiring funding appear to be a constraint for regions accessing EU funding. The efficiency of the allocation process should

therefore be improved to maximize results. Likewise, additional information on the effectiveness of policy schemes is also needed. On one hand, this requires that more information at more local administrative scales is compiled and monitored regarding resource efficiency in the sector, as well as stricter guidelines enforcing that ex-ante and ex-post evaluations of policy programmes are always a part of funded initiatives.

## 1.6. Water

1. **In a green economy, water efficiency needs to be optimised; water consumption and abstraction significantly 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 a significant hinder to development, leading to large 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.
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.
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 MS 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.
4. **Better water pricing is needed.** Today, water prices do not normally reflect the true value of water and it will be necessary to charge for the full cost of resource use which 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).

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<sub>2</sub> emissions.
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.
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.

## 1.7. Waste

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 and awareness raising.** Only when this is not possible - with moving waste management from methods low on the waste hierarchy (landfilling) to methods high in the waste hierarchy (recycling). This is despite the fact that more generated waste will generate more value according to the NACE and EGSS classifications.
2. **Product design plays a crucial role in the amount and type of waste generated.** Products can be designed so that they can be repaired, re-filled or re-used. The type and combination of materials and hazardous substances used is crucial for the recyclability of a product. Currently, the incentives for product designers and manufacturers to design products that are long lasting, repairable, refillable, and

easily recyclable are weak. These need to be enhanced and new business models developed that make these types of products, services and product-service-systems attractive and economically viable.

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).

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.
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.
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 accompanied by capacity building.**
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.

## 1.8. Tourism

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.

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.
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.
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.
5. **Increase industry awareness and involvement in greening for 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.
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.
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.
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.

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.
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.
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.
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.

## 1.9. Transport

1. The transport sector with its main components vehicle production, transport infrastructure provision, transport operation and passenger travel and freight transport is important for the move of Europe and its regions towards a green economy. There is a strong need, but also a large potential to reduce energy use and greenhouse gas 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 cars and lorries and more public transport vehicles and other freight transport vehicles than lorries is a huge challenge. In addition, the development of public transport systems and alternatives to road freight transport to shift transport demand is another challenge.
2. However 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<sub>2</sub> emissions went still up in times in which other economic sectors made already good progress in the reduction of greenhouse gas emissions. However, CO<sub>2</sub> 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<sub>2</sub> 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.

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:

- 1) 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.
- 2) 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.
- 3) 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.

However, 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.

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:

- **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. CO<sub>2</sub>-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 European Commission. 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.
- **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.
- **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 built more infrastructure 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 sets also the right-way targets for modal shift such as medium and long distance freight from road to rail and inland waterways with 30 percent by 2030 and 50 percent by 2050 or that 50 percent 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.
- **Transport policy together with integrated spatial planning to address also the “avoid” part of a green transport strategy.** Transport demand seems still to be a pre-given condition for transport policy that is not to be touched. However, in greening the transport sector, the reduction of transport volumes in terms of trips and distances is an important integrated component for greening the transport sector tackled. 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.

## 2. Policy recommendations by regional typologies

When developing the typologies we need to provide a disclaimer whereas it is extremely difficult to qualify the whole economy as one or another. 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.

### 2.1. Regions with pre-transition economies and high green economic development potentials

These are regions with rich environmental resources, a good mix of drivers and enabling conditions and a certain political willingness to remove existing barriers. These are regions where the environmental resources are particularly favourable but where the rest of the drivers and enabling conditions have been established relatively recently (i.e. New Member States which have relatively recently adopted EU targets) These are the regions where marginal growth ( $\delta$ ) of green economy value added over relatively short periods of time will be high as they have to catch up with average and good performers in a number of areas such as waste, water, manufacturing, eco-innovation, construction, etc.. A number of these regions will be Cohesion Regions and will be in the position to benefit from significant financial resources. These might also be regions which are still not compliant with a number of EU acquis and where the compliance pressure will lead to the necessary actions and investments.

### 2.2. Regions with pre-transition economies and medium green economic development potentials

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. For the sake of future policy relevance these regions can be split in two typologies which stem from the nature of their medium potentials:

- a. **Regions with pre-transition economies, excellent territorial assets and low- to medium- level of policy and finance-related drivers and enablers.** These will typically be regions with excellent natural assets, where the necessary EU policies have been adopted on paper but have not been fully embraced as guiding principles of social and economic development. It may be expected that **regional** political and hence financial and institutional support will be average to little. This situation might lead to impossibility of fully utilising EU funds in the current and future Programming Period 2014-2020 or utilising them for common, carbon intensive investments.
- b. **Regions with pre-transition economies, low- to medium territorial drivers and enablers and excellent level of policy and finance-related drivers and enablers.** This will be a relatively rare group of regions which have not yet benefited from green economic development, which do not dispose of strong natural assets but which are ambitious and have recently developed a solid mixture of policy and finance-related drivers and enabling conditions which may take them on a green development path despite the lack of outstanding natural assets.

### **2.3. Regions with pre-transition economies and low green economic development potentials**

These would be those regions which have not been a part of serious green economy development efforts and which have a number of obstacles to create the right conditions for such development. Having in mind that all EU regions benefit from the stimulating EU policies, being in this group may mean existence of significant institutional and financial barriers or lack of capacity for implementation of EU policies. Such regions will also have low capacities for benefiting from EU Structural and Cohesion policies and will choose to spend them (if at all) for one off carbon intensive investments (in terms of large infrastructure projects?). These might also be regions where lack of the above drivers and enabling conditions and/or existence of serious obstacles is coupled with very low environmental assets, low human resource capacities and weak institutions.

#### **Box 10 Policy recommendations to pre-transition regions**

##### **General policy recommendations to all types of pre-transition regions**

The policy recommendations to such regions would be to 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.

Similar regions will also have a relatively low level of awareness compared to Western and Northern European regions with longer tradition of environmental protection and sustainability actions. It is a common characteristics for poorer, pre-transition regions that they would have lower levels of utilities such as water and waste and lower non-compliance penalties. Getting 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.

Pre-transition regions would have environmental institutions which do not have long traditions and would therefore need significant consolidation and capacity development. The quality of the institutions is key for setting intelligent strategic vision, competent guidance and framing a new mindset through appropriate communication actions.

##### **Policy recommendations to regions without strong territorial assets**

All of the above policy recommendations are valid to these regions as well. Additionally, such regions 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.

It is also possible to turn a disadvantageous position into a commercial 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.

## **2.4. Regions with transition economies and high green economic development potentials**

These are regions where both natural assets and policy and institutional drivers and enabling conditions are present. 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.

## **2.5. Regions with transition economies and medium green economic development potentials**

These will be regions which have already benefited from a certain level of green economy development because of traditionally good mix of drivers and enabling conditions. However, these might be regions which do 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.

## **2.6. Regions with transition economies and low green economic development potentials**

If these regions have already walked a significant part of the green economy road this means that probably their drivers and enabling conditions set-up is relatively favourable with the exception of environmental assets. This might also mean that after significant green economy investments have been made there has been a change of political leadership leading to a change of economic priorities. These regions might be about to lose their status of relative leaders and embark on a flattening curve of development. These might also mean that the regions and states have made the initial investments related to green economy pressured by compliance considerations but where economy structures and big companies and SMEs have low innovation performance and potentials.

### **Box 11 Policy recommendations to transition regions**

#### **General policy recommendations to all types of transition regions**

The policy recommendations to such regions would be to 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 Both 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 behaviours 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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