

# GREECO

## Territorial Potentials for a Greener Economy

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## Contents of this Volume

Understanding Green Growth: A territorial approach .....	5
Territorial Dimensions of the green economy .....	10
1.1. Territorial outcomes .....	11
Synthesis of the territorial dimensions from the sector reports .....	29

## Understanding Green Growth: A territorial approach

A key issue within the GREECO research framework has been to provide explicit considerations in relation to which territorial dimensions are most relevant in pursuing of the green economy, and how. To facilitate this process a set of eight overarching territorial factors (each with three to four sub-factors), and seven overarching territorial outcomes have been identified as the main processes or conditions that either influence or result from the pursuit of a greener economy.

Based on this it is possible to synthesize the findings into a sound discussion on how the GREECO project interprets the relationship between territory and the green economy by focusing on the following key results:

- The identification of ***the most important territorial dimensions*** that will shape the development of the green economy;
- ***Their relevance*** within key sectors of the green economy;
- Determine ***where, and how, sector-based development initiatives will potentially synergize*** or oppose each other from the territorial perspective.
- And ***provide a comprehensive definition of the territorial definition of the green economy*** to be used as an analytical tool for other activities in the project.

The general objectives of this task are:

- To combine conceptual understandings of *Territory* and the *Green Economy* to deduce a Territorial concept of the green economy.
- Based on a synthesis of the insights gained within the sector reports, to define and explain the relevance how each territorial dimension is relevant to the green economy.
- To combine both perspectives to identify ways in which the territorial dimensions both strengthens and calls into question a top-down approach to defining the relevant territorial concept and its associated dimensions.

A territorial concept and its associated dimensions are applied to the sector reports from a top-down territoriality approach. This is in order to define, characterize and elaborate the territorial dimensions

from the bottom-up and to identify which complementarities or inherent conflicts are presenting themselves when pursuing the green economy across the range of sectors that deliver growth in reality.

The research approach in its schematic form below shows how the top-down and the bottom-up research processes are brought together through a series of straightforward steps. While a number of equivalent approaches might have been applied, the distinctions of the selected one provide a means of understanding and following through the analytical process.

1. At the top, the **Territorial Definition** is the cumulative result of the work completed in the entire task, and in the analysis of territorial dimensions with the sector analyses. As such, it is simultaneously the heading of the task and a term that represents all of the findings through the subsequent steps. Again, this draws on the fact that a territorial definition of green economy cannot be a single statement, but must be multi-faceted in order to reflect the diversity of both the European regions and their economies, but also their varied material bases.
2. Next, the **Territorial Concept** is the essence of the top-down exercise – as how notion of territory is seen in relation to the notion of the green economy. This acts as a basis to identify the key territorial dimensions of the green economy.
3. Consequently, **Territorial Dimensions** follow directly from the territorial concept as the themes that are operationalizing a territorial definition of the green economy. The dimensions themselves are identified vis-à-vis the territorial concept (from the top-down) while the individual dimensions (the factors and outcomes, as mentioned below) are then analyzed through generic preliminary tables that are to be filled out in relation to each sector report. The results from each table are then synthesized to actually define and elaborate each territorial dimension, thereby providing the bottom-up “reality” of each dimension. As such, the two-stage process of completing analysis on the territorial dimensions is at the heart of the top-down meeting the bottom-up research process and the entire territorial definition of the green economy.

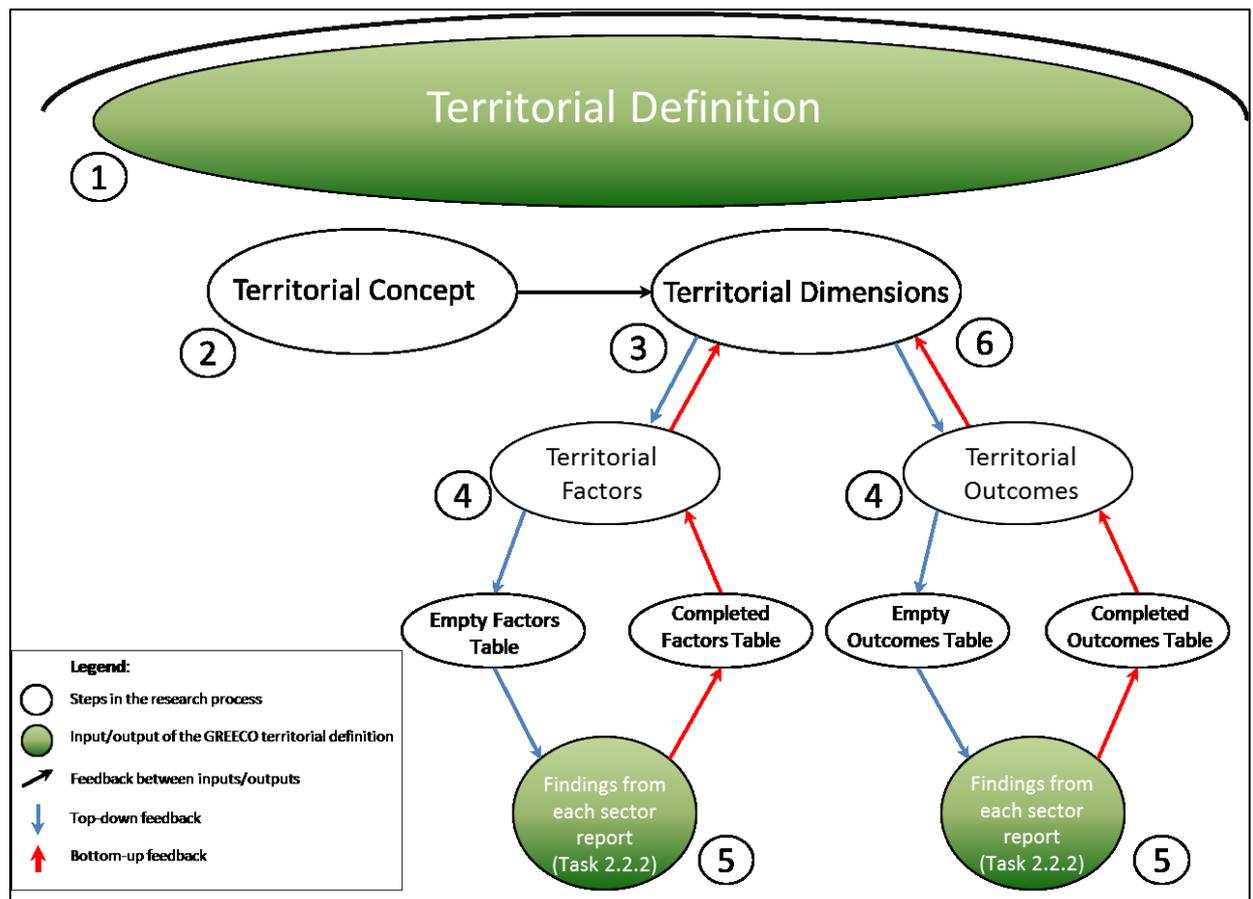


Figure 1: Schematic of the research flow for developing the territorial dimension within the GREECO project

### ***The territorial factors and outcomes***

Territorial dimensions are distinguished in terms of factors and outcomes. **Territorial Factors** are territorial dimensions that drive, enable or hinder the development of the green economy in European regions. Being territorial, they are place-based – as in non-uniformly distributed in space and depending on the local societal, cultural and political context. This means that they account for the basis of how European regions differ in their pre-conditions for a transition towards a green economy. **Territorial outcomes** are territorial dimensions, -as new or existing territorial phenomena - that are accentuated in one way or another by pursuing the green economy. They answer the question: for achieving some greening of the economy in a given or a set of sector, what territorial outcomes can be expected to take place? This means that they account for the basis of how European regions differ in their “possible effects” for a transition towards a green economy.

The contributions from each sector have been analyzed in parallel to identify the key territorial factors and outcomes of the green economy through responding to the following questions:

- What are the most important territorial dimensions that need to be acknowledged in order to achieve policy-led development of a greener economy?
- To what degree are the territorial dimensions sector-specific or cross-sectoral? As a point of departure, this will be done by counting whether each factor, sub-factor and outcome was identified as having relevance across all of the sectors.
- What territorial factors appear to complement the development of the green economy in *multiple* sectors?
- What territorial factors are conflicting - in that they show conflicting trade-offs - between promoting green development in one or more sectors while restricting green development in one or more other sector(s)?
- To what extent are place-based or a space-blind, sector- and framework-driven economic development model best suited to address regional growth challenges?
- What are the territorial implications of a paradigm shift from "brown" to "green" development?

### ***Combining territory and green economy***

The important emphasis in the above discussion is how the notion of territory has been used to accentuate the role of the institutional structures in shaping how policy mobilizes place-based possibilities for development. In our current political and economic development paradigm – stretching since the period of industrialization, and consequently coinciding with the development and rationales of the brown economy - the European territory has continued to be increasingly defined through political/administrative structures. Prior to the development of the EU this was very much linked to the formation and dynamic evolution of nation-building, but since then we have actually seen a parallel increase in the roles of the EU (as a Super-state) and of regions (as sub-states). The latter of which is clearly reflected in the concept of "Europe of the Regions". Either way, the role of space - of the physical distributions of people, objects (resources) and activities – has been continually minimized in favour of government derived boundaries.

However, by focusing specifically on the connections between the material world and economic growth, the green economy provides the opportunity to reinvigorate the importance of spatial distributions beyond the traditional contexts of their embedded political/administrative structures. In these terms, the territorial concept in a green economy perspective could even speak of a paradigm shift in terms of how we view the relationship between administrative regions, territory and space; where political structures are not necessarily the de facto boundaries that define and shape development potentials.

Therefore, the GREECO's territorial concept responds to the essence of the green economy through both an economic (monetary) growth and as the underlying structure of society through a more aware and sustainable use of material resources. As such it requires that we comprehend, plan and conceive policy while explicitly considering the spatial distribution of key ingredients of the green economy - the distribution of people and activities (where they consume resources) and the distribution of resources (which are used as inputs into socio-economic production). In these terms, the GREECO exchanges what has perhaps become a regional-based perspective to territorial, place-based development with a space-based perspective that emphasizes the physical distribution of ingredients of a green economy in Europe. This also acknowledges that places in Europe are comprised of very different constellations of locally-specific factors that will shape both their process (transition) and outcomes (economic activities and spatial impacts) of greening the economy.

## Territorial Dimensions of the green economy

Territorial Dimensions are identified as often-interrelated Territorial Factors and Territorial Outcomes, which operationalize the concept with 'researchable' perspectives in other project tasks, especially the sector reports. While territorial factors and outcomes listed in their preliminary state are not sector-based, their bottom-up elaboration in the sector analyses becomes a benefit when comparing the territorial syntheses from each sector report. This is especially important considering our objective to emphasize the role of territorial dimensions to penetrate and link-up sector-based policies that are expected to contribute toward developing the green economy.

*Territorial Factors are territorial dimensions that **drive, enable or hinder** the development of the green economy in European regions. Being territorial, they are place-based (as in non-uniformly distributed in space) and they depend on the local societal, cultural and political contexts, as well as how these contexts interact with socio-economic and environmental changes. This means that they account for the basis of how European regions differ in their "pre-conditions" for a transition towards a green economy.*

These factors **can be founded and interact between, the physical/material/technological/spatial side** of green production and consumption (physical infrastructure; land-based resources); but also **socially** (consumer and producer cultures; tacit versus coded and formalized knowledge); **in terms of information** (communication and information services); **economically** (as consumer-driven versus producer-driven), **or politically** (through the goals of territorial cohesion; through the interplay between different levels of multi-level governance for policy making/implementation). But, not least, these factors can act as *drivers* of the green economy in some or all sectors, *hindrances* to it in some or all sectors, and/or have *differential effects between sectors*.

## 1.1. Territorial outcomes

*The territorial outcomes are territorial dimensions, as new or existing territorial phenomena that are accentuated in one way or another by pursuing the green economy. The dimensions as emphasized through the sectors are outlined in the following section.*

**Bio-economy:** This sector Include agriculture, fisheries and forestry are all territorial related in order to respond to the major consumer demands as well as demands from regions depending on production from the biosphere. For instance when products from sustainable fisheries and organic farmers is available as a from-producer-to-your-door delivery based on web-ordering which has resulted in supply systems with new types of distribution channels and centers. Fresh products are depending on the ability of the transport system to deliver on a daily or weekly based. It leads to a higher diversity and quality in supply, and provide the consumers with new products as well as recipes developed by persons promoting local cooking variations.

**Energy:** The growing presence of renewable energy sources in the European energy mix may increase both relations between public and private actors within and between regions. Also relations between national and regional actors will intensify as coordination between these levels may be required due to large number of actors involved in energy generation.

**Waste:** Regions will be more competitive through closed-loop industrial ecosystems and strong companies with good waste management. Environmental and health pressure will diminish because of less landfilling.

**Water:** Increasing relations in order to respond to the challenges facing waters flowing within and across territories; e.g. regarding reducing pollution and finding balanced water allocations. Strong territorial relations are also needed following the EU water policy regulations that apply river basin management approach to water management.

**Building:** The role of comprehensive land use planning is accentuated further as a means to bridge the multiple demands (desires) of local people and business. While the discussion under

settlement types alludes to the correlation between a green building sector and higher population densities, it must be understood that even though there is an overall trend towards urbanization, there are many people who simply wish not to live in dense urban areas and instead prefer rural environments; Furthermore, many regions of Europe already have an extensively developed peri-urban settlement pattern and it is certainly not resource efficient to assume that this should be uprooted and re-developed; and lastly that other sectors of a green economy (i.e. agriculture, forestry, tourism) require less-concentrated settlements. Each of these requires that the multiple demands, cultures and histories within territories are considered when coordinating plans for greening the building sector.

The cross-sector link to energy is absolutely emphasized for its role in conditioning the greening of the building sector. This is primarily due to the fact that if a European energy market becomes a reality, the traditional barriers of space, time and isolated energy markets are eliminated. Consequently, even nations and regions with an ample supply of clean, cheap energy will then have an incentive to invest in demand-side initiatives (such as the greening of buildings) because saved energy can be sold, on a European market.

**Transport:** Might be reduced as the avoid, shift and improve strategy for greening the transport sector will lead to diminished transport volumes.

**Manufacturing:** Even if it is not possible to assess it yet, it could be expected that the greening of the manufacturing sector across European countries, would create a community beyond regional / national borders, a community of green manufacturers, which would exchange good practices and lessons learnt. This could potentially contribute to reducing distance (physical or perceived) and hence re-shape inter-and intra-territorial relations.

### ***Settlement types***

This acknowledges that the manner in which settle in space has an impact on development across all sectors of the economy. Some sectors require rural landscapes of open, natural (or semi-natural) land, be it for cultivation, recreation or a combination of both. In contrast, other sectors require populations of scale in order to provide access to labor or improve efficiency. But in terms of

resources, it is well understood that settlement structure has a formidable impact on resource efficiency. As a result, we distinguish between **urban areas, rural areas** and **urban-rural interactions** as important dimensions that can structure understandings of biophysical, economic, social and policy potentials of the green economy. Especially the latter emphasizes that territorial diversities are actually a boon in the green economy as places with different characteristics have unique roles to play in achieving a green economy.

**Bio-economy:** There might be an argument to be made about the long term settlement patterns that could emerge in the long run if we cannot continue to produce our food in the way that we do today. If food would have to be produced in a less intensive way and with more labor rather than energy, it would impact on the amount of people that would have to live (or at least work) in rural areas. But this is not really the focus of the programs for greening of agriculture as it stands today. The processes are more about being even more productive based on research and innovation, and produce more, with less inputs, and as little labour as today. But at the same time also the question of maintaining smaller settlements in rural areas and the coastal zone otherwise challenged by losing jobs and other economic activities. And thereby maintaining attractions for tourists, second homes, catering etc. that would otherwise disappear

**Energy:** Settlement structures may not be directly affected by changes related to green models in energy production or distribution. It may instead be the energy sector that becomes better adapted to prevailing spatial, structural and social characteristics of settlements. Economic prosperity generated by the generation of new source of employment and value added in regions may stimulate demographic growth in some rural settlements.

**Waste:** Cities are the biggest waste generators and in a way hold the key to developing new paradigms for waste management.

**Water:** Water efficiency is a key word in any type of settlement in a green economy. Introducing e.g. 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. Growing urban population leading to increase in water use puts pressure on the water bodies in many European regions. But it should also be mentioned in this context that densification of population in urban areas can reduce the cost of water and sewage infrastructure construction, per capita, compared to dispersed rural areas.

**Building:** Higher building densities are a prerequisite for a plausible future of green building and the compact city perspective is viewed as a standard practice of urban development in Europe. This is not only due to the potential increased resource efficiency of multi-family dwellings (compared to larger, detached homes), but especially due to the cross sector implications of higher densities of scale and mixed land uses of more compact urban development. In particular, denser built environments improve the efficiency and feasibility of non-car transport schemes, innovative solutions for waste and sewage disposal/recycling/reuse, as well as innovative energy systems operating at the community or district level. Yet it was also mentioned that many existing urban areas likely have a great potential for greening the building sector due to the number of old or poorly constructed buildings with relatively poor thermal performance. These buildings will be a first and foremost target for retrofitting.

**Transport:** Might induce tendencies to strengthen urban areas

**Manufacturing:** Current green economy trends suggest that those industries creating synergies will show a natural tendency to clustering and that those industries treating industrial waste and residuals will tend to locate nearby larger polluting plants.

### ***Land and land-based resources***

This aspect acknowledges that nothing to do with developing an economy exists without some kind of necessary trade-off with land or land based resources. As such, this represents the territoriality of a heightened focus on (and connection between) the material world and a green economy. When coming up with specific factors, the intention was to acknowledge the importance of key ingredients of society and economy, the ability to monitor and control our interaction with the material world, and not least, the importance that natural resource protection has for avoiding the consequences

of environmental changes. As such, four sub-sections were identified:

**Bio-economy:** Improvement of land quality/management and land based resources are the major impact (outcome) of a greening of agriculture. All environmental and land based aspect of the green concept of agriculture could be mentioned here as this is the major benefit of sustainable production processes and less damaging inputs and outputs. Greening of agriculture implies for land and resources for instance restoring and enhancing soil fertility through the increased use of naturally and sustainably produced nutrient inputs ; diversified crop rotations; and livestock and crop integration; Reducing soil erosion and improving the efficiency of water use by applying minimum tillage and cover crop cultivation techniques; Reducing chemical pesticide and herbicide use by implementing integrated biological pest and weed management practices; These measures would improve biodiversity due to less intensive land use and more diverse structures. It would furthermore improve the quality and availability of water through more efficient irrigation techniques, specifically in the Mediterranean countries. And in relation to fisheries a focus on access to products with issues of quality (freshness), place of origin (=territoriality) and methods of fishing (=responsibility) being keywords and identifiers of a greening of the sector which has become cornerstones in marked changes in relation to both sector characteristics and in relation to activities in other sectors.

**Energy:** Due to increasing importance of renewable energy sources, sectorial competition on land will not only intensify but new approaches on multifunctional land uses will evolve. Green approaches on land exploitation will furthermore place sustainability and the preservation of ecological services at the center of energy related activities.

**Waste:** Landfilling is the waste treatment option which is the most land consuming. With decreasing of landfilling the demand for land will diminish.

**Water:** Focus on preserving rich water resources of good quality to maintain ecosystem services which improve water quality and reduce costs of water treatment. Territories with rich and healthy water resources have a competitive advantage. Water management

policies must be based on the recognition that water of adequate quantities and quality is indispensable for the functioning of ecosystems.

**Building:** Land take will be monitored and limited as much as possible. Mandated investigations seeking for opportunities for brownfield (rather than greenfield) development are now preconditions to obtaining EU funds in support of development projects. Furthermore, coordinated EU policy on land use and landscape has been developed to create conditions that Member States' shall adhere to when developing their built environment and it especially focusses on restricting development to already developed areas. In part through increased preference for brownfields, processes of urban mining (recycling of the materials comprising existing building and infrastructure) are now economically viable.

**Transport:** Might lead to a net reduction of land consumption for transport infrastructure, however new green transport infrastructure (e.g. for new rail links) will consume land resources.

**Manufacturing:** The most promising outcome of greening manufacturing would be to make it less resource intensive, make it more efficient, by means of re-use and recycling. E.g. cradle-to-cradle approaches, eco-design, industrial symbiosis, etc.

### ***Market relations (Production; consumption; export, import) and innovation***

This dimension intends to capture the territorial dimension of the market structure in the key sectors of the green economy. Similar to the policy and governance dimension below, it is arranged in four sections based on territorial scale: thus according to the relevance of markets operating on the **local and regional, national, EU,** and finally, the **global scales**. From the policy provision perspective the intention is to identify which sectors share similar territorial patterns in terms of: supply of labour and inputs, location of primary market(s) and competition. The idea being that how these market relations are situated in space can provide information on which spatial scale has the best opportunity to most provide policy provision, and which sectors may benefit most from consideration within territorial policy agendas.

**Bio-economy:** Market relations can play a vital role in driving agriculture towards greener production processes. There might be a wider impact on markets if consumers start to consume more locally produced food products, and hence start to acknowledge/gain interest in consuming also other items locally. Innovation is a process, and regional innovation in agriculture might obviously spill over on other sectors and have a larger impact in a region. One thing that should be considered is that green agriculture requires “getting the prices right” which implies internalizing the cost of externalities in the form of emissions or use of scarce resources. This means higher prices for output commodities, and higher prices in the entire production chain. It could also impact on other sectors that use the same damaging inputs if these “correct prices” are enforced on a wider sectoral scale. E.g. the cost of GHG emissions, rules for emissions, tradable permit schemes for water use, etc. This aspect relates to fisheries as well going from bulk production which was characterizing the industrialization of fisheries up till the 1990’s and 2000’s where a shift is underway with an increased focus on the above issues of methods, quality and origin. It has added to changes in both production systems, consumption patterns, connections (information, transport) and innovations

**Energy:** As the internal energy market integrates thanks to increasing interconnection between nations by power grids and the construction of new roads and railways, competition will increase and the availability of energy resources will diversify. This development may be accompanied by the diversification of global energy markets. Thanks to increasing competition energy prices may stabilize while consumers may gain more power.

**Waste:** It is of utmost importance to create and nurture markets for recycled waste.

**Water:** Focus on innovation in terms of developing new water efficient technology. Other key words are water efficient production and sustainable consumption.

**Building:** The construction sector has gone through a certain level of industrialization in order to reduce resource waste during the construction process (embodied emissions) construction process are now more coordinated because larger construction firms (operating on the national and international scales) are now commonplace.

The demand for green building products has been conditioned by policy support at a range of scales, especially in terms of financial support from national and regional administrations, coupled with knowledge and awareness support from local levels of government.

**Manufacturing:** It is to be expected that greening manufacturing (and its products) will raise consumer awareness, which in turn will push for even a greener production, in a virtuous circle.

### ***Inter- and intra-territorial relations***

This is a theme emphasizing how no development happens in a vacuum but is related to issues which are determined **within' territories** reflecting on how a greening of the sector relates to/depends on place-based factors such as for instance economic relations, production- and consumption patterns, characteristics of interaction, networks, social relations, and local cultures represent a network of organizations within an economic system that are directly involved in the creation, diffusion and use of scientific and technological knowledge, as well as the organizations responsible for the coordination and support of these processes. A key element in this connection is the concept of social capital, which is seen to develop in the community and the territory through processes of interacting, experiencing and learning, stressing how social capital refers to the values and beliefs that citizens share in their everyday dealings and which becomes an asset attained through membership of a community situated in a territorial context. **Relations 'between' territories** include consideration of that economic produces and activities are a composition of a number of inputs - each coming from its own place and via its own development process; all of which have to be organized and managed accordingly. **Relations 'across' territories** is a crucial dimension to consider because a greener economy, based on an increased consideration of the connection between the economy and the material world, can also become a more specific or specialized economy.

### ***Place-based factors***

The notion of "place-based" is the essence of the term territory. It reflects that many of the fundamental components comprising economy - be it people, natural resources, partnerships and networks, knowledge, etc. - are located in space; and not only

individually, but relative to each other. As such, we have introduced four additional perspectives that try to capture some more important place-based dimensions that can be used to interpret how certain areas can respond to potentials of the green economy. **Competitiveness through strong local economies** is potentially important for all sectors. Like the notion of the main heading “place-based factors”, this dimension very much embodies the essence of the territorial perspective. That is, to plan and realize economic activities that acknowledge the many locally embedded resources (including human ones, such as the previous emphasis on social capital) which are needed to achieve sustainable growth. From a sector-based perspective, this dimension provides the opportunity to interpret the importance of local factors and conditions in achieving growth. The issue of **Multi-functionality** – Especially important for all “space and resource-consuming” sectors, i.e., bioeconomy sectors, building and construction, housing, waste and water – is closely connected to the previous factor on Land consumption or dependence, the expression “multifunctional land use” refers to land which serves different functions by combining its variety of qualities, i.e. that different material, mental, and social processes in nature and society take place simultaneously in any given area and interact accordingly. It therefore means the co-existence of ecological, economic, cultural, historical, and aesthetic functions. Two aspects are important in this context. **Tacit/experiential knowledge** accounts for any knowledge that cannot be transferred through direct means (such as informing someone through writing or speaking). In a territorial context, this dimension acknowledges that many of the intangible assets of the region are indispensable to advancing the green economy, and, because of this, they are embedded as experience- and historically-based knowledge structures within the local society. Furthermore the question of **Proximity** based on an understanding that economic activities are not only located in space, but they are positioned in a specific locational context vis-à-vis all other economic activities, resources, inputs, actors, markets, etc. within a given area. Therefore, connected to other dimensions such as multi-functionality, market relations and territorial relations seeks to explore how proximity is an important for achieving a greener economy.

**Bio-economy:** It has been evident that place based factors have an impact on the greening of the sector brought forward from a

territorial dimension were “competitiveness through strong local economies, multi-functionality, tacit/experiential knowledge, and proximity” As a greening of the sector primarily impacts on the environment there might be some impact on the quality of a region from this perspective and the use of regional quality as input to other sectors. Obviously tourism gain from a nice environment but so do also other sectors that require input, labour, etc. In fisheries the quality of the environment is an important identifier of products and very important in relation to the advance of ecosystem-based management approaches. And thereby enabled maintaining productions that would otherwise be lost due to global competitiveness

**Energy:** Geophysical conditions such as the availability of natural resources and the geography may have less impact on energy consumers as energy resources may be more accessible, thanks to small scale energy producing solutions and modernized transmission grids. The population, industries and politicians in nations and regions may have better understanding and acceptance towards renewable energy sources. Knowledge regarding new energy technologies and management may spread through regions strengthening new regional economies in rural areas thanks to innovation.

**Building:** As previously mentioned, the importance of creating a sense of place in urban areas - where citizens can feel at home - is essential for creating competitive and robust built environments. This includes acceptance of the existing built environment as a point of departure, thus accentuating the role of retrofitting for achieving Europe’s resource efficiency goals, and that consideration of existing building types is important for creating new buildings that are accepted by consumers. Not least, the responsibility of local governments – as those general responsible for land use development and the political scale most in touch with consumers of buildings – is universally understood. As such municipalities now have staff with expert knowledge in practices and processes of sustainable land use planning.

**Transport:** A greening of the transport sector would put more emphasis on place-based factors

**Manufacturing:** One of the outcomes to be expected from greening manufacturing is the reinforcement of existing knowledge-networks and clusters, but also the creation of new ones, contributing to the dissemination of good practices and resulting in an enhanced green transition.

As shown above, by exploring the connection between each sector and its target market, this dimension is not territorial per se, but it seeks to establish if, and how, territorial issues are important factors structuring the development of the market for different green products and services. First, it asks to what extent development in the sector is based on clear, **consumer-driven processes**. In the agricultural industry for instance, we know that the growth of organic and locally-grown food, while perhaps being the result of production-side initiatives, is very much driven by a consumer demand that has gained traction for its health and environmental merits over the past two decades in the most developed countries.

Second, it also asks to what extent development in a given sector is based on clear, **producer-driven processes**. From a territorial perspective, this is important because it can act as an outlet for explaining and rationalizing variations in terms of regional performance of the green economy in a given sector. For example, in the building and construction sector we know that performance, while being driven by a market demand for greener buildings, also relies on construction firms having the necessary skills to build greener structures. However, these skills are not universally distributed throughout Europe and understanding both why and how this can be changed could be important questions for place-based policy supporting the green economy.

Third, it furthermore asks if **development and innovation are based on well-defined territorial conditions or on open access**. This issue relates closely to the previously mentioned question of diffusion opportunities and options. A few examples illustrate how inherited territorial, market or firm structures that have evolved based on the development of previous technologies may impact the greening of certain sectors:

- If energy transmission infrastructure is privately owned - probably by large power companies - the costs of establishing a parallel network would be a preventive factor for newcomers in

the energy sector, thereby giving the owner of the network a monopoly over development of alternative energy sources within a specific territory. However, alternative ownership forms or legal constraints might provide the distribution of energy as an open access opportunity and thereby enabling innovative producers to compete.

- A major challenge for new green means of road transport is the present dense network of petrol stations that are able of ensuring easy and quick access for private cars to refill. This network has been developed and expanded during the last decade, and as long as similar options are not accessible for alternatives to hydrocarbons as fuel source the option of open access for the consumer to choose which system to base their future transport on is more or less non-existing, or at least territorial limited.

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### ***Accessibility and mobility***

Issues of transport and accessibility have always been placed right at the centre of the territorial discourse of European development. One reason for this is its crucial importance in promoting regional development, for instance by providing accessibility to markets for consumer products, as well as access to labour. This operates across a number of territorial spheres, ranging from intra-urban roads and local public transit, connecting rural peripheries to urban centres of trade and commerce and connecting urban metropolises via rail and air networks. It also operates across a number of territorial development issues (including ones characterized here as territorial factors of the green economy) and its importance is also reflected in the fact it is considered as an important economic sector (both overall and in terms of its resource consumption and greening potential). But it has also been an important target of EU-driven investment because of its physicality – as investments that can be clearly observed and used in space. Generally speaking, this has also meant that transport infrastructure investments are considered rather fail-safe investments, perhaps leading to over-investment in certain cases. As a result, its territorial importance also rests in the fact that transport infrastructure has consistently been a focal point of EU policy investment for regional development.

Considering that it continues to be such an important priority for investment via regional policy funds (in particular for newer Member States where Cohesion Funds are directed) it is therefore important to reflect on the implications it has for achieving a greener economy. This is distinguished among the following three sub-dimensions: **Transport connections (transport of materials; transport of labor, etc.)** encompassing physical infrastructure of all forms that connecting people, materials, goods and services across space. As such, it is about how mobility across space affects the development of the green economy within and among the GREECO sectors; **Regional Accessibility (access to markets; access to supply of materials; access to public services)** While the previous sub-dimension discusses the idea of accessibility concretely through the notion of transport and mobility, this one reflects the importance of access to markets, input materials, goods and services that are generally fixed in space. It therefore asks the authors of the sector reports to comment on how territorial differences in accessibility to key sector interests may affect its green development; **Information connections (use of communication and information services; need of interaction; questions of consumer and producer cultures).** The continued advancement of mobile communications technology has fundamentally impacted the way we go about living our lives. By making place irrelevant for conducting certain socio-economic interests, some have said that the information technology era has resulted in the “death of distance”. Undoubtedly, it has also served to blend the distinctions between work and recreation, where many of us are almost constantly connected to the World Wide Web, where some of us are able to complete many of our professional responsibilities remotely, and where we can bring people together in virtual meetings through technologies such as Skype. At the same time, very few economic activities are entirely remote and almost all jobs require physical presence, even if only periodically. Likewise, many other jobs require constant presence in a given location in order to conduct work. Therefore, the intention of this dimension is to identify the impact that information connections have on how we arrange and conduct our various socio-economic activities in space. This allows us to determine which sectors an advancing IT sector can support a greener economy, or ones that could be constrained by such development.

**Bio-economy:** It may be difficult to assert any major impact to accessibility and mobility due to a greening of the agricultural sector as it has been understood and found to be defined in the major sources of this sector report. The case of fisheries provides further insight into the aspects. While the industrial development of fisheries emphasized an increase in mobility and concentration both for business and for labor force the ongoing changes in fisheries and not the least aquaculture is based on more stability and dispersed activities which at the same time creates increased demands in relation to accessibility. In many ways reflecting similar intensions as those discussed in relation to the new policies in relation to the CAP.

**Energy:** A green development in the energy sector may result in the modernization and expansion of transmission grids which may allow the integration of power generated from wind and solar generators within and outside Europe. Energy consumers may benefit from better accessibility to wider options regarding the choice of energy consumed and suppliers, while being able to sell surplus electricity from small scale photovoltaic and wind power generation.

**Building:** It is emphasized how better goals should be set, but this can only start with measuring the RIGHT successes – particularly energy consumption patterns at scales that can reflect territorial trends in population densities and building age. Local action plans are tailored to regional specificities of planned growth and development and include: Systematic audit of the energy performance of buildings; Incentives that are provided directly based on knowledge of the performance of existing buildings; Creating official networks (green building councils, associations, etc.) at the local level to bring together key actors responsible for planning land use and construction development; Include a multi-sector dimension of green growth for urban regions. This especially includes consideration of mobility issues and providing incentives for existing jobs related to the development of buildings and infrastructure to be made greener. It means that municipal and regional planning now requires increased communication between existing city departments; Use public funds to increase focus on greening buildings focusses first on publically owned housing; Local information and awareness campaigns that target the investment and consumption behaviours of building owners, including individual

citizens and particularly youth are universal in European municipalities; An administrative-based territorial distinctions (between municipal, regional and national levels of planning and government) are being replaced by new forms of municipal sharing and cooperation, which promotes planning that views urban regions as on complete metropolitan area.

The importance of planning and governance of the functional urban region – in other words, coordination and agreement among municipalities rather than strictly within municipalities – is important when planning for growth, but absolutely crucial when planning for resource efficient growth. This notion of “metropolitan governance” emphasizes the role of building a common vision among the range of institutions responsible planning an urban territory – notably, among the range of municipalities that comprise an urban region. As such, polycentric urban development through municipal cooperation is now a norm that replaces development of satellite communities in response to municipal competition.

While metropolitan governance requires a scaling down of territorial strategies from the national and EU levels, it also requires an up-scaling of urban land use and development planning beyond individual municipalities. But the challenge is that implementing such an approach means overcoming the underlying fact that many municipalities are in reality competing against each other rather than working together. Not only does this require innovative policy and governance solutions to bring them together, but it also accentuates a shift to the way we identify regions – from largely administrative-based structures toward ones based on the location and movement of people, materials and resources.

**Transport:** The challenge is to guarantee existing accessibility levels, however, with reduced need to travel

**Manufacturing:** Transport (of materials and products, especially) is a pillar for the functioning of manufacturing and it has also conditioned the location of manufacturing industries to some extent, i.e. transport costs. The relation of accessibility and mobility with the greening of manufacturing cannot be evaluated straight forward. On the one hand, re-industrializing Europe would decrease transport needs and hence reduce the environmental impact of manufacturing. But, on the other hand, reinforcing the industrial

activity of Europe (even if this industry is greener than before), would increase certain environmental implications (emissions, waste, etc.). Therefore, the evaluation of trade-offs should be carried out on a case-by-case basis.

### ***Policy and governance by territorial level***

This section lies very much at the heart of what is being investigated by the GREECO project. It understands that green economy is first and foremost a policy-driven development perspective for Europe, where the rollout of new technologies, regulations, products and services are transitioned into social, cultural, economic and institutional norms through policy. But this requires comprehensive sets of policies that are both arranged across various sectors and integrated among the collective competencies of different scales (levels) of government. As such, the territorial dimension is on one hand underlying – where policy provisions will come from different administrative scales depending on key sector-specific or territorial specific requirements. Here for instance, the subsidiary principle advises that policy and governance should be predominantly organized at the most local level possible in order to cater to territorial specificity. At the same time, territory is explicitly emphasized by also considering the relevance of EU territorial policy across the GREECO sectors: **Scale of sector-based policy support** acknowledges each sector's will have a unique division of labour in terms of policy vision as a key part of its territorial dimension. For a given sector this likely means that multiple administrative scales are responsible for devising and/or implementing policy, which reflects the reality that many territorial dimensions are operating at the same time in all sectors. **Role of other EU policies with territorial dimension** highlights the role of EU regional policy initiatives and regional funding, which is used to support resource efficient growth. In particular, this relates to the manner in which key EU funding schemes (ERDF and the Cohesion Fund) are used to support place-based, regionally-oriented development initiatives among the GREECO sectors.

**Private versus public sector – led development** is keeping in mind that governance is much more than management by public administrations, this sub-dimension seeks to know what types of producer, consumer, citizen, non-profit or other types of consumer organizations are important for developing the green economy in a given sector, and what administrative scale these are

located at. Due to the fact that the sector reports are designed to have a European relevance, this may include the identification of specific association or, more likely, those that are often found within Member States or their regions and cities.

**Bio-economy:** There can probably be a feed-back effect of greening on the policy and governance of a region. Perhaps we are used to thinking in the opposite direction – that policy and governance are the drivers or enablers of such a development. But for sure, if greening is impacted by market (e.g. consumer awareness) or by production side forces (such as innovation or need to adapt) there might be a feed-back on policy and a pressure to implement local policy. Also, 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). Furthermore, it is important to recognize the need of territorial involvement in the development process in order to comply with both sector and general interests. This is for instance the main point in the shift in OECD's abolition of the "New Rural Paradigm" in its original form because the original definition had its starting point in a top-down vision of every rural region providing a lot of undiscovered potentials, while their present approach (among other things after the case studies from the project on Renewable Energy as a driver in Rural Development) recognizes the fact that many regions (or other territorial units) for many reasons have limited or no potentials, and therefore depending on for instance transfers in order to maintain existing sectors (=sector interests) and ensure acceptable living conditions (=general interests).

**Energy:** The diversification of energy sources and their availability as well as the incorporation of large number of small producers may require that competences in energy policy are transferred to regions and municipalities. All regions may be responsible for their own local energy plans and for the coordination between public and private actors in energy planning.

**Waste:** On one hand there will be an increased importance of multilevel and regional (a.k.a. territorial) governance. This takes into account that governing the sector must negotiate between the fact that MSW collection and management is predominantly coordinated at the municipal level, but do so within an integrated regional waste management system, as a stakeholder (where the

institutional structure could be a company) or a member (if the institutional structure is an association).

**Water:** Issues of multi-level governance are at the heart of the search for environmentally sustainable models of growth in the water sector. It is important to recognizing the need of territorial involvement in the development process in order to comply with both sector and general interests.

**Transport:** Policies and governance at all territorial level will face the challenge to provide living and production conditions that are in line with and would support the avoid, shift and improve strategy for greening the transport sector.

**Manufacturing:** There is a wealth of evidence that regions and localities can play a significant role in pursuing sustainable development (the ultimate goal of greening the economy), mainly because of their closeness to not only local environmental problems, but also to local know-how on how to overcome challenges. Along these lines, the greening of Manufacturing should increasingly go hand in hand with EU and national policies integrating the local territorial conditions, in addition to the sectoral perspective.

## **Synthesis of the territorial dimensions from the sector reports**

The following table and diagrams provides a general overview of how the territorial dimensions were elaborated by the sector reports. This keeps in mind that the task of the reports was to identify territorial factors and outcomes using the dimensions listed above as inspiration; thereby determining which of the dimensions are relevant for each sector.

Territorial Factors	Sectors											
	Agriculture	Buildings	Eco-innovation	Energy	Fisheries	Manufacturing	Waste	Water	Forestry	Tourism	Transport	Total
<b>1. Settlement types</b>												
i. Urban areas	1	1	1	1	1	1	1	1				8
ii. Rural areas	1	0	0	1	1	0	1	1				5
iii. Urban-rural interactions	1	1	0	1	1	0	1	1				6
<b>2. Land and land-based resources</b>												
i. Land consumption or dependence (or water)	1	1	1	1	1	0	1	0				6
ii. Material Consumption or dependence	1	1	1	1	1	1	1	1				8
iii. Energy consumption or dependence on specific energy types or systems	1	1	1	1	1	1	1	1				8
iv. Management of ecosystem services)	1	0	1	1	1	0	0	1				5
<b>3. Market relations (Production; consumption; export, import) and innovation</b>												
i. Local/regional markets	1	1	1	1	1	1	1	1				8
ii. National markets	1	0	1	1	1	1	1	1				7
iii. EU markets	1	0	1	1	1	1	0	0				5
iv. Global markets	1	0	1	1	1	1	0	0				5
<b>4. Inter- and intra-territorial relations</b>												
i. Within territories (place based; local cultures; relating to territorial/national policies)		1	1	1	1	1	1	1				7
ii. Between territories (networks; competition)		1	1	1	1	1	1	1				7
iii. Across territories (cross-border supply and demand)		1	1	1	1	1	1	1				7
<b>5. Place-based factors</b>												
i. Competitiveness through strong local economies	1	1	1	1	1	1	1	0				7
ii. Multi-functionality	1	1	0	1	1	0	0	1				5
iii. Tacit/experiential knowledge	1	1	1	1	1	1	0	0				6
iv. PROXIMITY	1	0	1	1	1	1	1	1				7
<b>6. Consumer relations</b>												
i. Are development and innovation consumer-demand driven?	1	1	1	1	1	1	0	0				6
ii. Are development and innovation producer driven?	1	1	1	1	1	1	0	0				6
iii. Are development and innovation based on well-defined territorial conditions or on open access?	0	0	0	1	1	0	0	0				2
<b>7. Accessibility and mobility</b>												
i. Transport connections (transport of materials; transport of labor)	1	0	0	1		1	1	1				5
ii. Regional Accessibility (access to markets; access to supply of materials; access to public services)	1	0	1	1	1	1	1	0				6
iii. Information connections (use of communication and information services; need of interaction; questions of consumer and producer cultures)	1	1	1	1	1	0	1	1				7
<b>8. Policy and governance by territorial level</b>												
i. Scale of sector-based policy support												
· From the EU Level	1	1	1	1	1	1	1	1				8
· From the national level	0	1	1	1	1	1	1	1				7
· From the regional level	0	0	1	1		0	1	1				4
· From the local/municipal level	0	1	0	1		0	1	1				4
ii. Role of other EU policies with territorial dimension	0	1	0	1	0	0		1				3
iii. Private versus public sector – led development. Are consumer organizations advocating for developing the green economy. At what political scale are they located?	0	1	0	1		1	1	1				5
<b>Total number of factors identified:</b>	21	20	22	30	25	20	21	21				180
<b>Territorial Outcomes</b>												
<b>1. Settlement types</b>		1		1	1	1	1	1				6
<b>2. Land and land-based resources</b>		1		1	1	1	1	1				6
<b>3. Market relations (Production; consumption; export, import) and innovation</b>		1		1	1	1	1	1				6
<b>4. Inter- and intra-territorial relations</b>		1		1	1	1	1	1				6
<b>5. Place-based factors</b>		1		1	1	1	0	0				4
<b>6. Accessibility and mobility</b>		1		1	1	1	0	0				4
<b>7. Policy and governance by territorial level</b>		1		1	1	1	1	1				6

Figure 2: Overview of incorporated territorial factors and outcomes.

### Identified factors and outcomes

The results show that many relevant factors and outcomes have been identified according to each of the proposed dimensions and sub-dimensions. It is, however, notable that even though many of the sectors responded with factors or outcomes based on each sub-

dimension this doesn't not necessarily imply linkages between the sectors. Only by analyzing more specific each response individually can we determine synergies and oppositions. Nevertheless, some additional points are identified by the results shown in the table, which can help structure a more in depth, sector-by sector analysis of the results:

It is clear that all sectors have provided relevant findings in terms of settlement structure, particularly in terms of linkage to urban areas and urban-rural interactions. As such, the connections between the results should reveal which sectors complement each other (for instance, where urbanisation facilitates green development in certain sectors compared to others) or where opposition is found (for instance where urbanization reduces the growth potential in certain sectors). This territorial perspective should help to reiterate that socio-economic development, when seen from a territorial perspective, consists of balancing between positive and negative effects of development across a broad range of sectors.

It is also provisionally notable (although not surprising) that it is the natural resource production sectors that reflect relevance in terms of 'rural areas'. From a territorial perspective, this should help to show what types of activities must be considered for promoting a balanced, multifunctional green economy in rural regions.

All sectors show an importance toward both 'material consumption or dependence' and 'energy consumption or dependence'. For the latter, this reflects that the energy sector, while being an economic activity in its own right is emphasized by the green economy as a transversal sector, both impacting and being impacted by developments in all other sectors.

All sectors reflected relevance between a greening of the sector and the importance of local and regional markets. Similarly, all sectors were able to identify connections to each of the sub-dimensions under the heading 'Inter- and intra- territorial relations'.

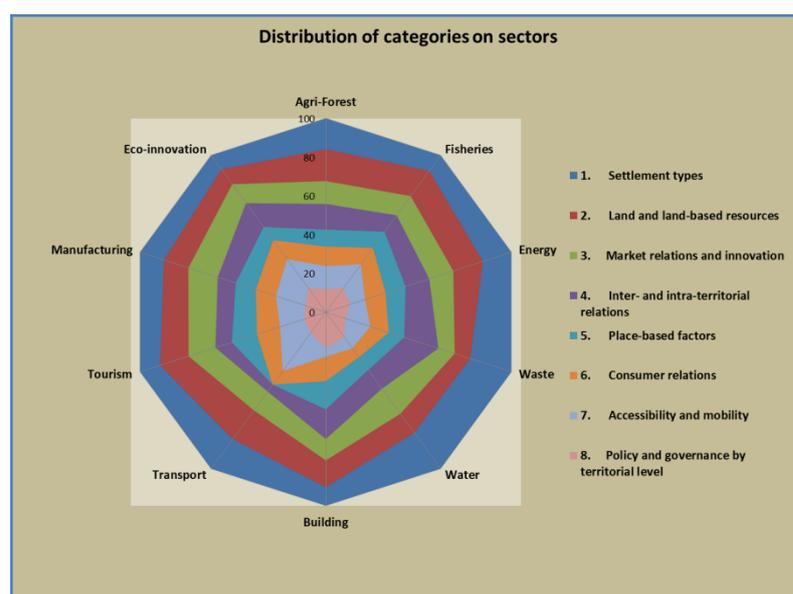
There are many notable differences in terms of the relationship between green development and policies coming from different territorial scales. For instance, greening of the agricultural sector promoted overwhelmingly by policies (CAP) coming from the European level. Likewise, all sectors show that EU level policy provision is an important component of the policy mix. This is likely

reflects the emphasis that sectors place on, for example, providing common standards to facilitate a balanced, fair development of the economy. With that being said, we clearly see differences in terms of the emphasis on policies derived from the regional and local levels, which will be interesting to analyze further.

Some of the sub-dimensions are not identified as being relevant across a wide number of sectors. It must be recognised that method of asking the authors of each sector report to reflect on the proposed territorial dimensions leaves the process open to a high degree of subjectivity. However, based on the fact there is no established territorial basis of the green economy, coupled with the many sectors under consideration, means that there is no possible way to systematically define territorial perspectives of the green economy. This in turn places a high degree of emphasis on a sound, comprehensive analysis of key messages in all the sector responses.

The eco-innovation sector has not provided any territorial outcome, which is due to the fact that it is de facto already a green sector and a key tool for promoting the greening of other sectors. Therefore, the authors stipulate that there are no territorial outcomes of greening this sector. On the contrary, indirect territorial outcomes of promoting eco-innovation are expressed in the territorial outcomes of the greening the sectors in which eco-innovation measures are applied.

### ***The role of the identified factors and outcomes***



Going through the sector reports the use of references throughout the document reveals two important issues in relation to sectors and the territorial factors.

The first graph to the left is an account of how

**Figure 3: Distribution of references to territorial factors throughout**

often the different territorial factors have been emphasized in each sector report, and how the references have been qualified through the way their importance have been stressed. The representation of each factor has been accounted for and the total number of references and their qualifications has then been converted into percentage for each factor. This graph enables an overview of how the relative relations between the factor are showing sector-wise. Among the categories with the largest variations are for instance the Inter- and Intra territorial relations and the place based factors. It is important to notice, however, that all factors are contributing to explaining the green aspects for all sectors. But it may be difficult to see the details which are discussed further in the main report.

The next spider diagram show for each aspect how they are used in the different sectors. And here it is quite obvious how the different

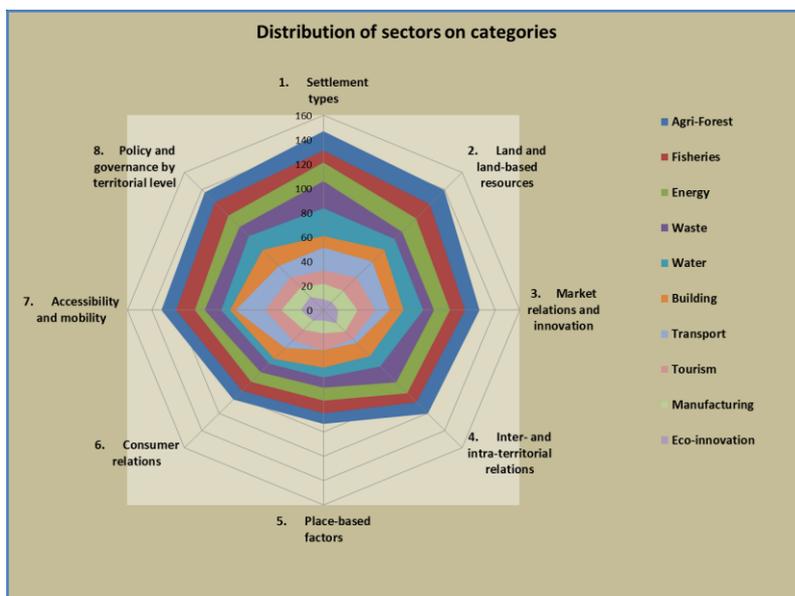


Figure 4: Distribution of sectors on the different green aspects

the sector approaches.

In the GREECO project a series of sector investigations of the green economy has been carried out with the purpose to understand the green growth process within each sector, the current state and greening performance, and to identify sector-specific drivers and enabling conditions for a green growth. The sector analysis also studied the territorial relations of the sectors, identified the communalities, and the most important linkages and interdependencies between the sectors studied.

factors have been applied differently. Obviously with the factors 4 (Inter- and Intra-territorial relations), 5 (Place based factors) and 6 (Consumer relations) are the ones which

obviously have been less used in

For the thematic aspects mentioned above, GREECO will admittedly not have a direct focus on 'services of general economic interest', but they will certainly be considered in relation to their role as comprising that which makes a place liveable. A focus has been on what could be characterised as 'the environmental dimension of sustainable development' where the interaction between regional development and land and land-based resources, including ecosystem services, is emphasized. Likewise, the aspect of territorial analysis as being an important component of territorial cohesion is represented through and through within the sector approaches to the GREECO project. On one hand it is represented in all of the spatial findings presented throughout the project, particularly ones that are able to harness regional differences within Member States. It has not the role of this territorial definition report to provide those findings directly, it is rather the opportunity to provide a series of novel messages or understanding that can be used to interpret territorial evidence.

And in this context it is first and foremost the notion of 'functional geographies' and moving beyond single sector and single scale governance that really provides an opening for conceptualizing territory in the perspective of the green economy. Certain statements noted in EU policy documents reflect that the place-based perspective that Territorial Cohesion intends to operationalize in EU policy does not really differentiate between the concept of "space" "territory" and "region". For instance, by including the territorial dimension in Cohesion Policy the 5th Cohesion Report states how "Taking a slightly different approach than previous reports, this chapter distinguishes between policies which have an explicit spatial (regional) dimension as such from those which have only a partial spatial dimension and those which are 'spatially blind', i.e., policies which do not distinguish between different parts of the EU"(p. 179). Not only does the sentence make no distinction between that which is "spatial" and that which is "regional" it is quite clearly trying to emphasize the role of regions, as the existing administrative boundaries in the EU.

However, GREECO actually has positioned it as an important distinction that can help to identify a territorial concept to be considered alongside the green economy concept. In this context, we define the space/spatial reflects on the distribution of people, material objects (resources) and activities (processes) in space, in

which the spatial scale does NOT relate to anything other than physical distances or areas. While territory/territorial also reflects on the distribution of people, objects (including man-made and natural resources) and activities (including flows and processes) in space, the key difference is that the reflection is structured through a pattern of boundaries imposed by individuals or groups. This mainly relates to the political sphere in terms of institutional or administrative boundaries that are agreed upon in order to manage people, objects (resources) and activities in space. The territorial basis is therefore contingent on the clear recognition of the role that human constructions, including political and administrative jurisdictions, cultural values, etc., have in shaping the understanding of place-based potentials.



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