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ESPON BRIDGES

Balanced Regional Development in areas with Geographic Specificities

Applied Research

Final Report

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ESPON BRIDGES
Territories with Geographical Specificities

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Abbreviations

AONB	Areas of Outstanding National Beauty
BEA	Banco Español de Algas
BEMP	Best Environmental Management Practices
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CBSS	Council of Baltic Sea States
CCAS	Climate Change Adaptation Strategy
CEETO	Central Europe Eco-Tourism
CEF	Connecting Europe Facility
CICES	Common International Classification of Ecosystem Services
CLLD	Community Led Local Development
COP	Conference of Parties
CoR	Committee of the Regions
COSME	EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises
CRM	Centre of Rural Medicine
DMO	Destination Management Organisation
DRR	Disaster Risk Reduction
DUI	Doing, Using, Interacting
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EDEN	European Destinations of Excellence
EEA	European Environment Agency
EEN	Enterprise Europe Network
EFA	Ecological Focus Area
EFNCP	European Forum on Nature Conservation and Pastoralism
EIB	European Investment Bank
EIP	European Innovation Partnership
EMAS	Eco-management and Audit Scheme
EMFF	European Maritime and Fisheries Fund
EMS	Emergency medical services
EPAP	European Platform against Poverty and Social exclusion
EPICAH	Effectiveness of Policy Instruments for Cross-Border Advancement in Heritage
EPSC	European Political Strategy Centre
ERDF	European Regional Development Fund
ES	Ecosystem Services
ESF	European Social Fund
ESIF	European Structural and Investment Funds
ESPON	European Territorial Observatory Network
ETC	European Territorial Cooperation
EU	European Union
EURES	European Employment Service Program
EUSAIR	European Union Strategy for the Adriatic and Ionian Region
EUSALP	European Union Strategy for the Alpine Region
EUSBSR	European Union Strategy for the Baltic Sea Region
EUSDR	European Union Strategy for the Danube Region
FEE	Foundation for Environmental Education
FTE	Full Time Equivalent
GAEC	Good agricultural and environmental condition
GAP	Green Action Plan for SMEs

GDP	Gross Domestic Product
GHG	Greenhouse Gas
GSTC	Global Sustainable Tourism Council
GW	Gigawatt
HELCOM	Baltic Marine Environment Protection Commission or Helsinki Commission
HNV	High Nature Value
ICT	Information and Communication Technologies
ICZM	Integrated Coastal Zone Management
IG	Integrated Guideline
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ITI	Integrated Territorial Investment
IUCN	International Union for the Conservation of Nature
LAG	Local Action Group
LCA	Local civic association
LENA	Local Economy and Nature Conservation in the Danube Region
LIFE	Programme for the Environment and Climate Action
LMA	Labour Market Area
LMT	Labour Market Transition
MFF	Multi-annual Financial Framework
MS	Member State
MSAP	Maisons de Services au Public
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MSW	Municipal Solid Waste
MW	Megawatt
NBSAP	National Biodiversity Strategy and Action Plan
NEEAP	National Energy Efficiency Action Plan
NGO	Non-Governmental Organisation
NREAP	National Renewable Energy Action Plan
NSPA	Northern Sparsely Populated Area
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development
OP	Operational Programme
P2P	People to People
PDO	Protected Designation of Origin
PES	Payments for ecosystem services
PGI	Protected Geographical Indication
PSO	Public Service Obligation
R&D	Research and development
RED	Renewable energy directive
RES	Renewable Energy Sources
RIS3	Regional Innovation for Smart Specialisation Strategy
RTDI	Research, Technology, Development and Innovation
SGI	Service of General Interest
SIP	Social Investment Package
SI	Social Innovation
SIE	Social Innovation Europe
SME	Small and Medium Enterprise
SPA	Sparsely Populated Area
SPED	Strategic Plan for Environment and Development
SPF	Small Project Fund
SSPA	Southern Sparsely Populated Area
SUD	Sustainable Urban Development
SUDOE	Sud-Ouest Européen (INTERREG cooperation area)

SWICCA	Service for Water Indicators in Climate Change Adaptation
TEN-E	Trans-European Networks - Energy
TEN-T	Trans-European Networks - Transport
TGS	Territories with Geographic Specificities
TLM	Transitional Labour Markets
TSG	Traditional Specialities Guaranteed
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNFCC	United Nations Framework Convention on Climate Change
UNWTO	United Nations World Tourist Organisation
WHO	World Health Organisation
WNBR	World Network of Biosphere Reserves

Executive summary

The ESPON BRIDGES project explores the specific territorial development issues of Europe's Territories with Geographical Specificities (TGS): mountain areas, islands, sparsely populated areas and coastal areas. It provides inputs on how a better convergence of local, regional, national and European economic development interests could be achieved, with specific focus on these TGS.

Background

There is a significant body of previous studies on this topic. Their key findings have constituted the starting point for the present study:

- There is no statistically significant concentration of economic laggardness or demographic decline in TGS. This contradicts the underlying hypothesis of Art. 174 of the TFEU, *viz*. that TGS would be characterised by 'backwardness'[1].
- TGS have been carefully delineated. While only the level of Local Administrative Units (LAU) allows for delineations that can guide analyses, policy design and policy implementation, it is also meaningful to identify regions that are characterised by geographical specificities to a significant extent.
- The delineation of the diversity of TGS across Europe permits the elaboration of typologies of situations.
- 'Singling out' TGS makes sense neither analytically nor in terms of policy recommendations. They need to be considered in context (e.g. islands in relation to neighbouring coastlines, mountain areas in relation to their piedmonts) in order to formulate strategic options for their future development.
- Some issues are shared by territories characterised by different types of geographical specificity: for example, a small island may face many of the same challenges as a remote mountain valley, or an isolated community in a sparsely populated region.

Method

The ESPON BRIDGES project combines multiple analytical approaches in the analysis of TGS:

- A geographic approach, with four categories of geographic specificities: mountain areas, islands, sparsely populated areas (SPAs) and coastal areas. It is often relevant to subdivide these categories into subcategories.
- A thematic approach, covering aspects related to "competitiveness, quality of life and sustainable growth" and addressing specifically "diversification and specialisation of economic activities; provision of services of general interest; market failure; physical environment and environmental protection; innovative governance approaches" (ESPON EGTC, 2017). This thematic approach was operationalised by identifying 9 so-called 'modules':
    - Innovation: specificity of innovation processes in TGS

[1] Art. 174 of the TFEU does not refer to coastal areas.

    - Sustainable tourism: perspectives and strategies for sustainable tourism in TGS
    - Public Service Obligations (PSOs) in the field of transport in TGS
    - Social-innovation: Social innovation in the provision of Services of General Interest (SGIs) in TGS
    - Labour market transitions: Mobility of workers (both geographical and between different types of status on labour markets) and their contribution to the understanding of social and economic patterns in TGS
    - Residential economy, i.e. the sum of activities directly and indirectly generated by the consumption of services and goods by people who are present in a region without being economically active there, e.g. commuters, pensioners, second home owners, visitors, inactive persons. This can be a significant component of development strategies in TGS
    - Conservation: Biodiversity conservation and sustainable development in TGS
    - Energy: Renewable energy provision and production in TGS
    - Climate: Climate change in TGSs
- A 'constraints' approach, addressing social and economic effects of "insularity, peripherality, remoteness accessibility, vulnerability, attractiveness of specific types of territories" (ESPON EGTC, 2017).
- A 'functional' approach, analysing TGS "through a functional approach that goes beyond morphological aspects and administrative boundaries" and considering "functional aspects that go beyond the areas actually identified as specific" (ESPON EGTC, 2017).

Empirical evidence was collected through case studies in 20 areas across Europe. In each of these, three 'modules' were considered. This report is therefore based primarily on 60 short studies on the interplay between geographic specificities and the different thematic fields that have been considered.

Quantitative evidence, maps, and figures have been generated to illustrate and further specify issues identified as a result of qualitative analyses. Only few pan-European quantitative analyses have been produced. Insofar as TGS issues are specific, corresponding evidence tends only to be available for concerned areas (e.g. reliability of ferry connections to islands; coastal erosion). Selected indicators are particularly relevant for TGS across Europe, for example: population potential (i.e. population mass within a maximum generally accepted daily travel time); population potential change between 2001 and 2011; and population mass within 1 hour from national parks offering outdoor leisure activities.

Findings by specificity: Mountain areas

While Europe's mountain areas share topographic similarities, they are very diverse in every aspect at every spatial scale – both within and between mountain areas. Their opportunities and challenges not only concern topographically-defined mountain areas, but must be considered in wider contexts. For instance, mountain areas provide many ecosystem services and, in particular, may be regarded as the 'water towers' of Europe; the majority of the beneficiaries of mountain water – whether for agriculture, industry or domestic use, or as a

source of renewable energy – are situated outside the mountains. Similarly, there are flows of people between mountain areas and nearby urban centres outside the mountains: e.g. commuters, students, tourists, and for recreation, health care, and shopping. These flows operate at various temporal (e.g. daily, weekly, seasonal) and spatial scales. There are many other examples. Such interactions are one of the challenges identified by Gløersen at al. (2016) with regard to developing a single policy approach to the mountains of the EU.

Integrated approaches are needed to address demographic, economic and ecological challenges and to realise opportunities: topics such as climate change, energy production and distribution, transport and IT infrastructure and services, and all aspects of regional economic development are connected. Consequently, cross-sectoral coordination is essential to address these complex interactions.

More broadly, the Common Strategic Framework should ensure more effective and efficient coordination and integration of the various funds at the national level, for instance between ERDF and ESF, ESIF and LIFE, and ERDF and national policy strategies. At sub-national levels, ITIs should be used to develop and implement regional 'place-based policies' tailored to the specificities of each particular mountain region within its broader context. Few Member States did this during the current programming period.

At a wider spatial scale, a notable characteristic of Europe's mountain regions is that many are shared between multiple states. There are two conventions which specifically concern mountain regions (the Alps and Carpathians), and one macro-region that is centred on a mountain region (EUSALP) – although its boundaries are more extensive. These governance structures and their associated policy instruments, as well as trans-national and regional Interreg programmes, present particular opportunities for multi-level collaboration in testing approaches to policy development and implementation; sharing of experiences and knowledge; and education, training and capacity-building.

Findings by specificity: Islands

Insularity leads to certain permanent features including high dependence on marine and air transport. Yet, while the issue of insularity is common across islands, factors such as population and land size vary from one to another. Hence, the challenges faced by islands are not uniform. For example, a lack of critical mass is less evident for islands with a relatively large population base. However, it is a major issue with impacts on policy areas such as competition, resilience to external shocks, transport, research and innovation in islands where the population base is relatively low. Also, accessibility to main centres of economic and social activity is a greater concern for islands which are remote and/or face double insularity challenges.

Governance structures for islands exhibit considerable heterogeneity. The degree of autonomy in policy formulation and implementation is stronger in island states, such as Malta and Cyprus, than islands which are governed as regions, or islands which are municipalities within larger regions.

EU policies particularly relevant to islands focus on accessibility, energy and competition policy (State Aid). In terms of transport and competition policy, a key issue is that sustainable transport services for islands which are affordable and reliable are often not adequate, particularly for islands where the size of the market is small. This calls for the provision of a PSO; this is facilitated where national transport policy documents identify this objective factor of constraint. However, implementing cost-efficient transport through PSO contracts can be challenging when competition between operators is limited.

Other relevant policy areas which can support islands to tap into new horizons include:

- **Research and innovation:** The key challenge for islands is to promote the development of clusters and smart specialisation strategies while encouraging the development of niche activities in culture, e-services, and food production, as well as the attraction of non-seasonal tourism. Networks of innovation between islands can be part of the solution to address this challenge.
- **Education and Training**: Good practices to improve local education and training outcomes and attract specialised skills should be encouraged across islands, particularly those facing brain-drain challenges. Islands are in this respect confronted to structurally imbalanced flows, in the same way as SPAs and some mountain areas. The promotion of more knowledge-intensive economic development would need to be accompanied by measures to encourage return-migration and to attract talents. Existing good practices in terms of place branding can be capitalised on in this respect.
- **Sustainable Tourism:** Taking into account the ecological capacities of islands can help to improve the sustainability of tourism activities.
- **Climate Change:** From a policy perspective, specific efforts should be undertaken to address the greater vulnerability of islands to the impacts of climate change.

A key element in the effective implementation of these policies is the governance structures supporting policy. The impact of investment funded through Cohesion Policy can be enhanced through the adoption of bottom-up interventions which involve local actors who are aware of the specific challenges and opportunities faced by the region. In some islands, the strong social ties and community involvement have served as a catalyst for such structures. However, in other islands, particularly small ones, excessive proximity between elected representatives, senior officials, and stakeholders may induce a degree of clientelism which impedes the proper implementation of policy measures. Improved multilevel territorial governance, also involving the European level, is part of the solution to address these issues.

Findings by specificity: Sparsely Populated Areas

In contrast to other geographic specificities, sparsity is by definition an objective factor of constraint, as it relates directly to the idea of not reaching a critical population mass. This perspective is rather abstract, as there are no clear rational understandings of where this critical level lies. As shown by the example of the Northern SPAs (NSPAs), this does not have to entail low regional development levels or limited capacity to innovate. However, a series of challenges needs to be overcome.

Though SPAs in the Nordic countries and those in the rest of Europe have apparently similar spatial structures, they are very different. First, NSPAs have a strong global position in their respective fields of economic specialisation (e.g. iron ore in Sweden, fisheries in Norway, forestry and ICTs in Finland). Second, NSPAs include the home region of an indigenous people, the Sami people. Any territorial development taking place in these areas needs to consider ways to preserve their traditional livelihoods, especially reindeer herding. Third, NSPAs have long been a space of cooperation between Nordic countries, through the Nordic Council and the Barents cooperation. They constitute an established area of transnational cooperation. Fourth, most people in the NSPAs live in towns that may be small in terms of population figures, but play an important role for service provision.

In comparison, other SPAs can be described as extreme cases of 'inner peripheries'. They have a particularly high degree of marginalisation from socio-economic development processes, are disconnected from modern communication systems (transport and ICT), and have a long history of demographic decline. In view of the continued demographic polarisation taking place across the continent, the number and extent of these 'new' SPAs is likely to grow.

People are at the core of the definition of SPAs, and also of their development opportunities. The key challenge is not the lack of economic opportunities, but the difficulty of organising a socially sustainable future. Policy interventions thus not only need to capitalize on the territorial assets of these places, but also to consolidate local social cohesion. Demographic decline raises the question of whether the EU, its Member States and other European national authorities should accept that extensive areas become depopulated, or whether maintaining a human presence in these areas should be a priority. A critical factor for future territorial development is the revitalization of urban-rural partnerships between regional urban centres and surrounding resource-based communities. In particular, small towns are important for structuring social and economic processes in SPAs. The notion of 'rural poles' serving as local hubs for the provision of services, the mobilization of knowledge, and the shaping of a collective territorial identity appears to be a necessary step to structure interventions in these very large territories.

Findings by specificity: Coastal areas

While coastal areas share some topographic and geophysical features, they are particularly diverse. A number of EU policies address marine and coastal spaces specifically. In particular, the Integrated Coastal Zone Management (ICZM) and the Maritime Spatial Planning (MSP) directives require EU Member States to provide information on the management of the seaward pressures and planning of these areas.

Rapid urbanisation and an increasing use of coasts for recreational and/or dwelling purposes form part of a narrative on partly excessive concentration of activities along the coast, combined with inadequate developments considering the specific ecological vulnerabilities of coastal areas. While coastalness and the land-sea interface offer specific development opportunities

through e.g. smart specialisation, use of renewable energy or sustainable tourism, they are subject to specific vulnerabilities. Some of these are magnified by the impacts of climate change. Coastal planning and integrated coastal zone management increasingly face uncertainty over the impacts both of climate change and of human activities on biodiversity and ecosystems. ESPON BRIDGES case studies and modules demonstrate the need for coordination to make use of both multi-level governance and cross-sectoral interrelations to initiate sustainable development**.**

Given the diversity of situations across Europe's coastal areas, policy responses need to go beyond themes. While contemporary development strategies for these areas already reflect the diversity needed to take account of place-based characteristics and challenges in order to unlock innovation potentials, European policies can be better designed to support this multisectoral approach. Focusing on the support of soft governance processes, providing links between different governance processes, developing multisectoral coordination and support measures for local transformation can help reach better integration of policies. This may not only enhance socio-economic development, but also contribute to safeguarding coastal environments and landscapes.

1 Introduction

The EU recognises that the geographic characteristics of certain regions may prevent them from competing with other regions on an equal basis. This calls for the recognition of the specific challenges that territories such as mountain areas, islands, sparsely populated areas (SPAs) and coastal areas – referred to in this report as Territories with Geographical Specificities (TGS) – face due to their natural characteristics. In this context, Article 174 of the TFEU states that: *''the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions. Among the regions concerned, particular attention shall be paid to rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps such as northernmost regions with very low population density and island, cross border and mountainous regions''*.

This is in line with the objective of achieving territorial cohesion, which involves ensuring the harmonious development of all these territories and making sure that citizens are able to make the most of the inherent features of these territories (European Commission, 2008). The importance of territorial cohesion was highlighted in the Community Strategic Guidelines on Cohesion adopted by the European Council in 2006, which stated that *"promoting territorial cohesion should be part of the effort to ensure that all of Europe's territory has the opportunity to contribute to the growth and jobs agenda"* (Official Journal of the European Union, 2006).

The ESPON BRIDGES project explores the specific territorial development issues of the above-mentioned TGS. It provides inputs on how a better convergence of local, regional, national and European economic development interests could be achieved, with specific focus on these TGS.

There is a significant body of previous studies on this topic. Their key findings have constituted the starting point for the present study:

- There is no statistically significant concentration of economic laggardness or demographic decline in TGS. This contradicts the underlying hypothesis of Art. 174 of the TFEU, *viz*. that TGS would be characterised by 'backwardness'[2].
- TGS have been carefully delineated. While only the level of Local Administrative Units (LAU) allows for delineations that can guide analyses, policy design and policy implementation, it is also meaningful to identify regions that are characterised by geographical specificities to a significant extent.
- The delineation of the diversity of TGS across Europe permits the elaboration of typologies of situations.
- 'Singling out' TGS makes sense neither analytically, nor in terms of policy recommendations. They need to be considered in context (e.g. islands in relation to neighbouring coastlines, mountain areas in relation to their piedmonts) in order to formulate strategic options for their future development.

[2] Art. 174 of the TFEU does not refer to coastal areas

- Some issues are shared by territories characterised by different types of geographical specificity: for example, a small island may face many of the same challenges as a remote mountain valley, or an isolated community in a sparsely populated region.

To clarify debates, it is important to distinguish between geographic specificity and objective factors of constraint:

- Specific social, economic and environmental issues may be associated with the geographic specificities considered in the present report, i.e. mountainousness, insularity and coastalness. In the European Parliament report *Cohesion in Mountainous Regions of the EU*, the most significant issues connected to mountainousness were mountain farming, high levels of biodiversity in mountain areas, ecological vulnerability and specific exposure to climate change (Gløersen et al., 2016: 30).
- Objective factors of constraint include a lack of critical mass, remoteness from urban centres, and low potential accessibility in the European or national context. These factors of constraint occur extensively in TGS, but are neither ubiquitous in these areas nor specific to them. It is notable in this respect that sparsity constitutes an objective factor of constraint (contrary to mountainousness, insularity and coastalness). Sparsity is defined by the lack of critical mass for service provision and for the balanced functioning of labour markets. While insularity tends to be associated with disconnection from terrestrial transport and energy networks, it produces other types of effects than other forms of remoteness and peripherality.

This distinction helps to clarify debates. ESPON BRIDGES focuses on social, economic and environmental issues associated with the geographic specificities, while taking into account the fact that many of concerned areas are also confronted with objective factors of constraint. As a lack of critical mass is an important such constraint, ESPON BRIDGES devotes particular attention to it, given that the Treaty on the Functioning of the European Union (TFEU) identifies sparsity as a form of geographic specificity.

As observed above, the issue of TGS is not laggardness. A number of TGS have successfully overcome the challenges linked to geographic specificity. Furthermore, certain aspects of geographic specificity may be regarded as opportunities. However, this does not imply that geographic specificity does not continue to produce effects that it may be relevant to address politically. Situations may be classified in four categories:

- Market failures: market forces generate a sub-optimal use of human and natural resources of TGS and affects quality of life of their inhabitants.
- Policy inadequacies: policies that are insufficiently tailored to the diversity of geographic preconditions in TGS generate unforeseen and/or undesirable effects.
- Policy dependence: TGS depend on established policies to develop in a sustainable way.
- Path dependence: past direct or indirect effects of geographic specificity continue to generate effects through self-reinforcing feedback loops.

These categories constitute a framework for the reflection in ESPON BRIDGES on:

(1) how TGS may help European sectoral policies to reach their objectives more effectively and efficiently;

(2) how territorial policies may take better account of TGS-related patterns and trends;
(3) how local and regional policy makers may address geographic specificity.

In all these respects, a relational perspective is promoted. This implies that TGS are not considered in isolation. Their interactions with neighbouring territories are focused on. For example, proximity to mountains is relevant for their piedmont regions; being surrounded by SPAs changes development perspectives for a regional capital town or city; insularity is addressed by considering relations between islands and their respective mainland.

Thematic focus

The thematic focus of the project is wide. Qualitative and quantitative analyses have been organised according to nine modules (see Table 1.1 below). Three topics of major importance for TGS have been left out, as available resources were insufficient to address them. These are agriculture and forestry, which face specific challenges in mountain areas and Northern SPAs (NSPAs); and the social and economic impact of the fisheries sector, particularly relevant for coastal areas and islands.

Table 1-1: List of modules

Transversal Axes	List of modules
1. Innovation and economic development	M1.1 **Innovation**: specificity of innovation processes in TGS
	M1.2 **Sustainable tourism:** perspectives and strategies for sustainable tourism in TGS
2. Accessibility and transport	M2.1 **Public Service Obligations (PSOs)**: Identification and implementation of PSOs in in the field of transport in TGS
	M2.2 **Social-innovation**: Social innovation in the provision of Services of General Interest (SGIs) in TGS
3. Social development	M3.1 **Labour market transitions:** Mobility of workers (both geographical and between different types of status on labour markets) and their contribution to the understanding of social and economic patterns in TGS
	M3.2 **Residential**: Residential economy is the sum of activities directly and indirectly generated by the consumption of services and goods by people who are present in a region without being economically active there, e.g. commuters, pensioners, secondary home owners, visitors, inactive persons. This can be a significant component of development strategies in TGS.
4. Physical environment, natural resources and Energy	M4.1 **Conservation**: Biodiversity conservation and sustainable development in TGS
	M4.2 **Energy**: Renewable energy provision and production in TGS
	M4.3 **Climate**: Climate change in TGS

The project has explored these issues by mobilising different resources:

- 60 case studies in 20 different areas across Europe (see Annexes 2 and 3);
- Academic literature, applied studies and reports;
- European, national, regional, and local policy documents.

Quantitative approaches of geographic specificity

The delineations of geographic specificities used as the basis for the production of analyses are presented in chapter 2. These are primarily drawn from the ESPON GEOSPECS project and are drawn at the level of Local Administrative Units (LAUs).

Quantitative evidence, maps and figures have been generated to illustrate and further specify issues identified as a result of qualitative analyses. Only few pan-European quantitative analyses have been produced. Insofar as TGS issues are specific, corresponding evidence tends only to be available for concerned areas (e.g. reliability of ferry connections to islands; coastal erosion). Selected indicators are particularly relevant for TGS across Europe, for example: population potential (i.e. population mass within a maximum generally accepted daily travel time); population potential change between 2001 and 2011; and population mass within 1 hour from national parks offering outdoor leisure activities.

Geographic specificities as a multilevel territorial governance issues and as potential levers of enhanced territorial cooperation

The numerous case studies and extensive document reviews in ESPON BRIDGES have made it possible to observe that, even if TGS are very diverse, some recurring territorial development issues and themes linked to each type of geographic specificity may be identified. On this basis, European ‘narratives’ of each geographic specificity have been elaborated and are presented in chapters 3 to 6. These narratives are based on results from the reports of the 9 modules presented above. They provide a structured overview of module report issues and themes that can be related causally to a geographic specificity and that occur in a significant proportion of territories belonging to the corresponding category of TGS. As such, each narrative provides proposals on the topics on which a European-level dialogue on mountain areas, islands, SPAs or coastal areas could focus. This does not imply that all topics are relevant for each individual TGS territory across Europe. However, each narrative, as a whole, provides a framework for dialogue within which the respective territories can position themselves, and with which they can identify to a great extent. Furthermore, the narratives introduce major subcategories within each TGS type, e.g. accessible and remote mountain areas, small and large islands, northern and southern SPAs, coastal areas with population decline and exposed to intense demographic pressures.

Each narrative identifies series of challenges which territorial cooperation may help to address, but for which a bottom-up approach is insufficient. For example, local communities in mountainous areas cannot alone find answers to the multiple challenges related to climate

change. First, national and European policies addressing these issues are needed. Second, many mountain communities have a limited capacity to establish the necessary territorial cooperation frameworks and jointly elaborate strategies. Thus, European and national authorities need to support existing initiatives, ensure that they keep their momentum, promote exchanges of good practices, support capacity building, and disseminate knowledge on identified issues and possible solutions. Similar types of observations may be made regarding, for example, sustainable tourism in islands, economic transformation in SPAs, and protection of biodiversity in attractive coastal areas. These issues all require intersectoral cooperation on the ground, vertical dialogue between actors at different levels from the local to the European, and horizontal dialogue between communities confronted with similar types of issues.

Each category of geographic specificity can constitute a framework to organise these different forms of territorial cooperation and dialogue. ***The narratives presented in chapters 3 to 6 are expert-based suggestions on how multi-level territorial governance of mountain areas, islands, SPAs and coastal areas could be framed at the European level***. They can serve as an input to dialogue with relevant sectoral policy actors (considering the identified themes and issues) and territorial policy actors (e.g. considering the need for territorial cooperation across administrative borders) with regard to the elaboration on European strategies for each category of TGS. They also call for the elaboration of corresponding narratives at the national, regional, and local levels across Europe, allowing actors to position themselves in relation to European strategies. As such, TGS categories could help to:

- enhance European added-value of Cohesion Policy, as it provides concrete contributions to solve critical challenges through improved territorial cooperation;
- bring Cohesion Policy closer to individual communities and EU-citizens, as concern for concrete local and regional issues becomes more obvious;
- generate stronger multilevel territorial dialogue, brought together by categories that help to bring together actors from across Europe;
- on this basis, develop a more concrete and result-oriented method for the pursuit of territorial cohesion, based on soft territorial cooperation framed by bringing together concepts at the European level.

2 Delineation of areas with geographic specificities

The ESPON BRIDGES projects addresses four categories of territories with geographic specificity:

- Mountain areas;
- Islands;
- Sparsely populated areas;
- Coastal areas.

Delineations of areas concerned by each specificity have previously been elaborated by the ESPON GEOSPECS project (see Maps 2-1 to 2-4 below). These delineations are all at the level of Local Area Unit (LAU), corresponding to municipalities or communes in most European countries. By comparison, the European Commission operates with delineations at the level of NUTS 3 regions, primarily because this is lowest level at which annual socio-economic data sets are produced.[3]

The LAU level has been chosen for two main reasons:

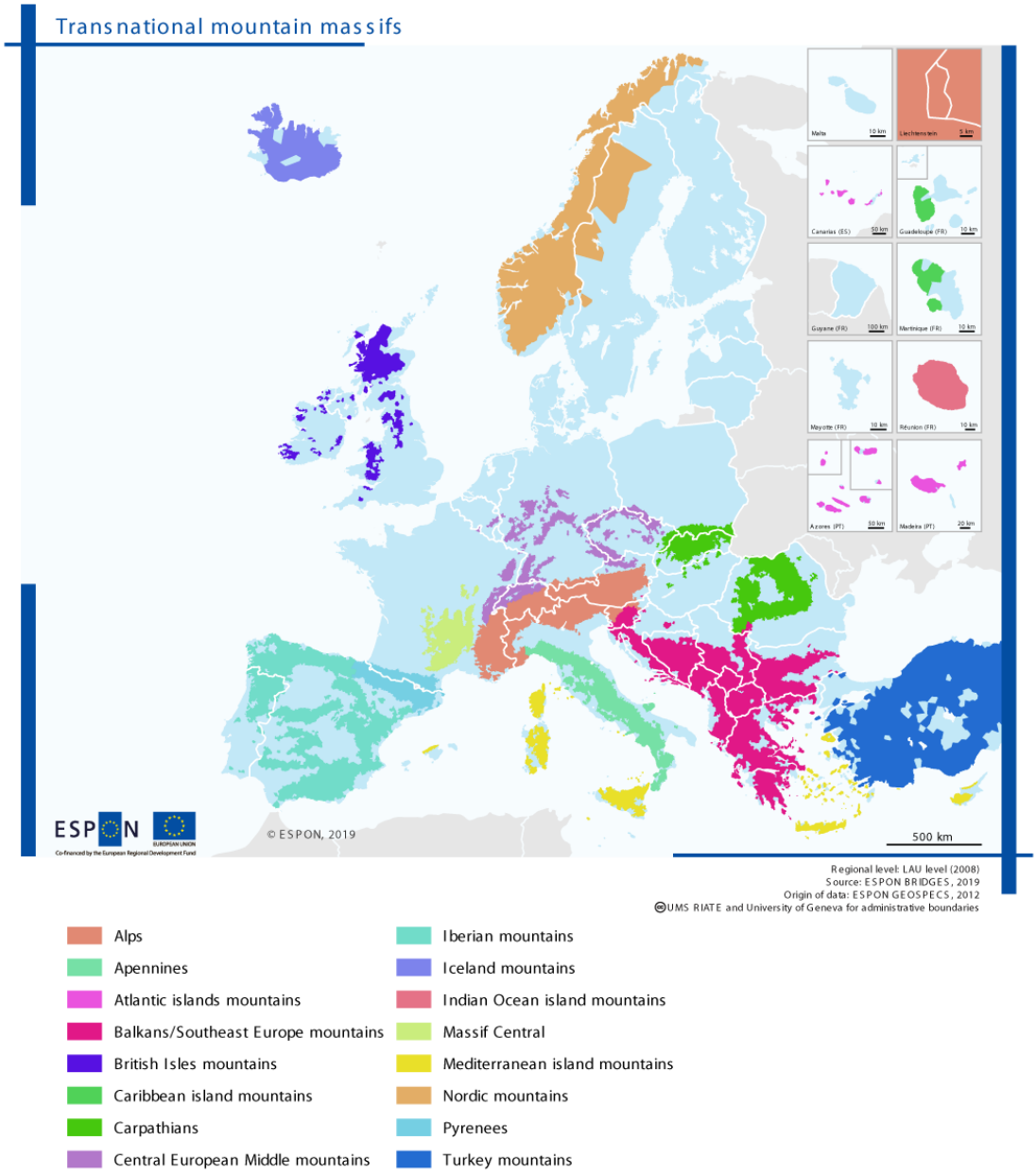
- Delineations at the NUTS 3 level deviate substantially from local and regional understandings of geographic specificity. For example, the entire French départements of Isère and Rhône, including the cities of Grenoble and Lyon, are defined as 'mountain regions'; and the Estonian island of Saaremaa is not identified as an island, as it belongs to a NUTS 3 region that also has a mainland component.
- In comparison to LAU-level delineations, NUTS 3-level delineations are influenced to a greater extent by the way in which administrative boundaries have been drawn.

The different delineations are based on the following sources and principles:

- **Mountain areas:** The delineation of mountain areas builds on studies conducted for the European Commission's Directorate-General for Regional Policy and the European Environment Agency (EEA) (European Environment Agency, 2010a; Nordregio, 2004). Mountains cover 41.3% of the ESPON space and are home to 25.4% of its population. A total of 16 massifs were defined, adapted from the previous EEA study.
- **Islands:** All territories that are physically disjoint from the European mainland or the main islands of the British Isles (UK and Ireland) are considered as insular, including parts of municipalities, but excluding inland islands. Map 2-2 distinguishes between island states, regions and localities, as the socio-economic impacts and political significance of insularity differ depending on the institutional level at which it occurs. In total, 319 islands have been identified. They cover 4.7% of the ESPON space and are home to 3.4% of its population.

[3] https://ec.europa.eu/eurostat/statistics-explained/index.php/Regional_typologies_overview

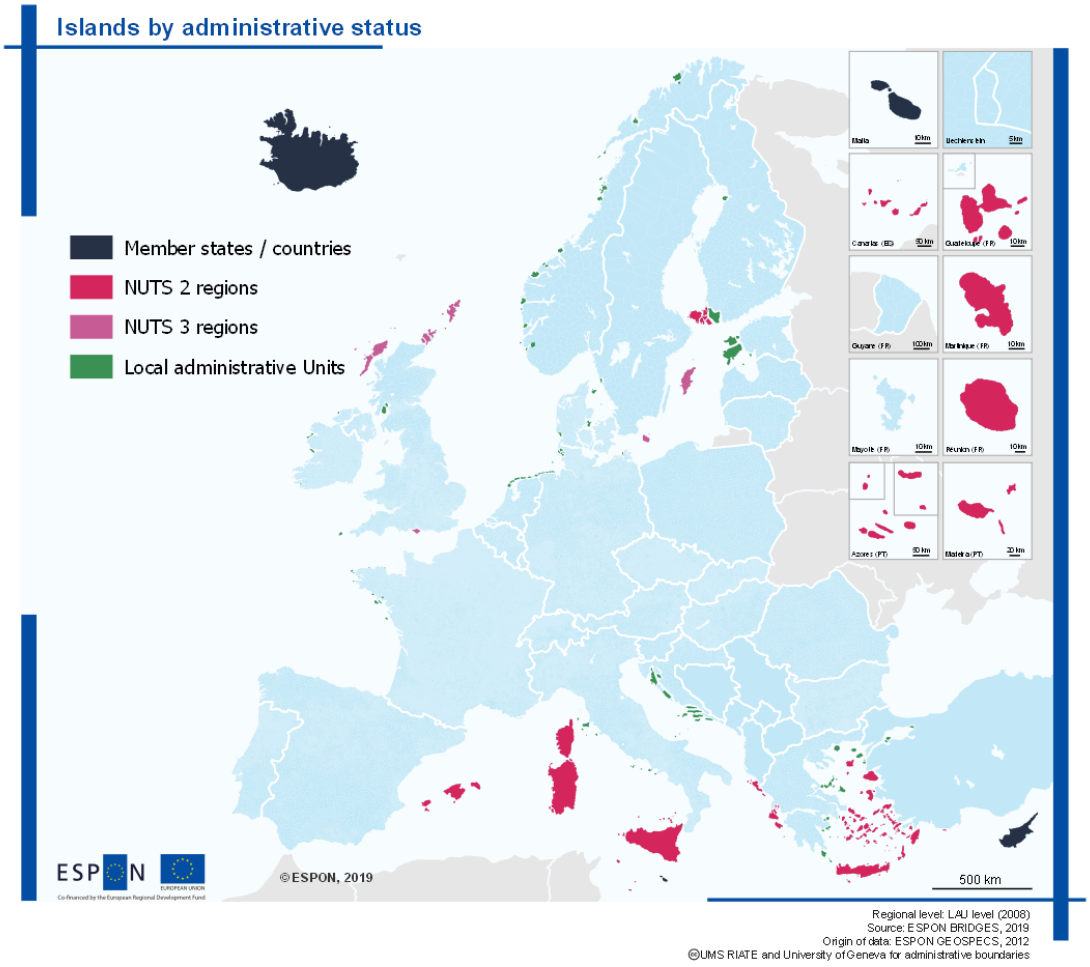
Map 2-1: Transnational mountain massifs



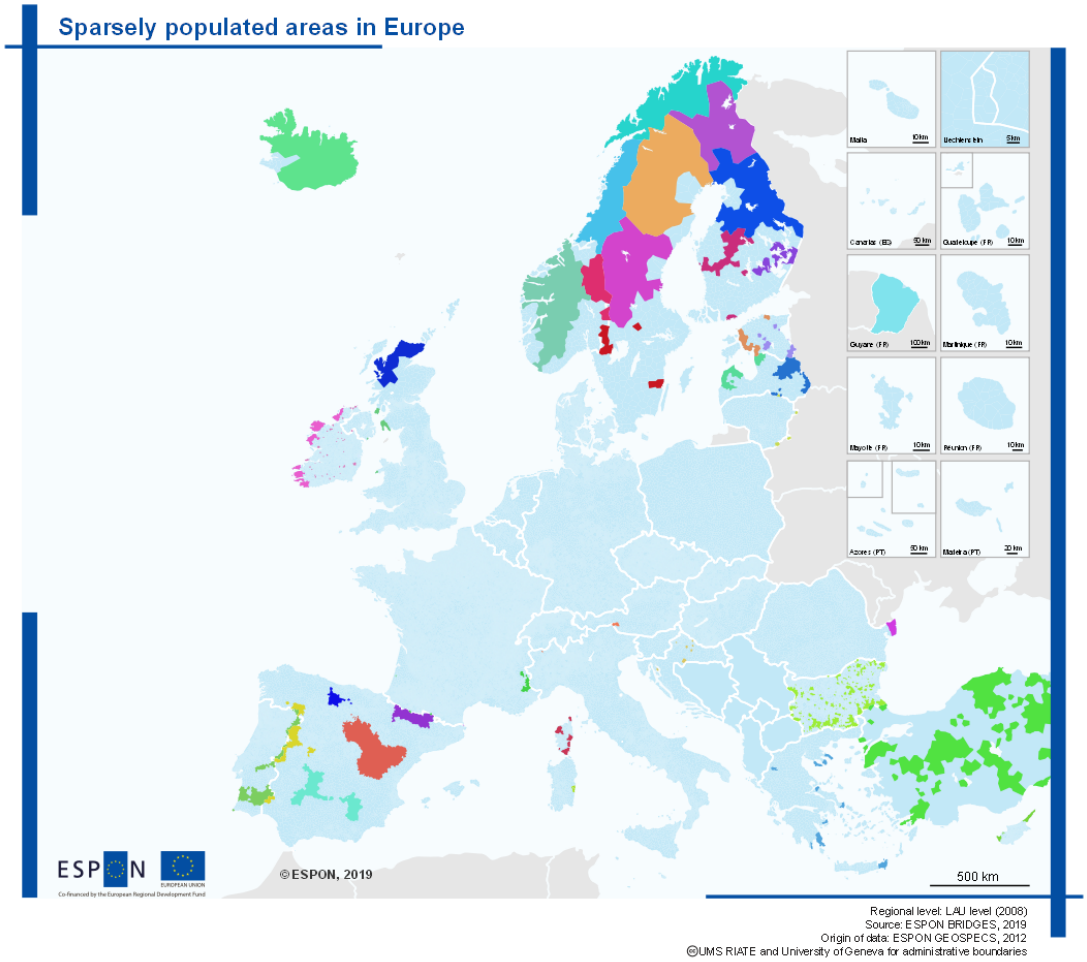
- **Sparsely Populated Areas (SPAs):** Traditionally, SPAs are identified on the basis of population densities, with threshold levels of 8 inhabitants/km^2 for Regional Policy and 12.5 and 8 inhabitants/km^2 in the guidelines for national regional aid. The resulting delineations are largely determined by administrative boundaries. For this project, SPAs have been delineated on the basis of population potentials, i.e. the number of persons that can be reached within a maximum generally accepted daily commuting or mobility area from each point in space. Two approaches were used, with a threshold of 100,000 persons (i.e. 12.7 persons/km² within 50 km) to: 1) to delineate SPAs, based on the isotropic distance, i.e., the possibility to commute 50 km from a point in all directions equally; 2) to delineate “poorly connected areas”, based on population potential using 45-minute travel times along road networks, as a proxy for the maximum generally accepted commuting distance. SPAs were clustered into 39 ‘sparse territories’ (see Map 2-3). SPAs cover 24.7% of the ESPON space, and are home to 3.7% of its population.

- **Coastal areas:** As various types of coastal effects are associated with different ranges of mobility and interaction, a general delineation of coastal areas cannot be produced. However, one may consider that being within commuting distance from the coast is particularly relevant from a social and economic point of view. To delineate the corresponding areas, Map 2-4 presents a 45-minute travel time by road as a maximum generally accepted commuting distance. These areas cover 22.9% of the area of the ESPON space and are home to 34.7% of its population.

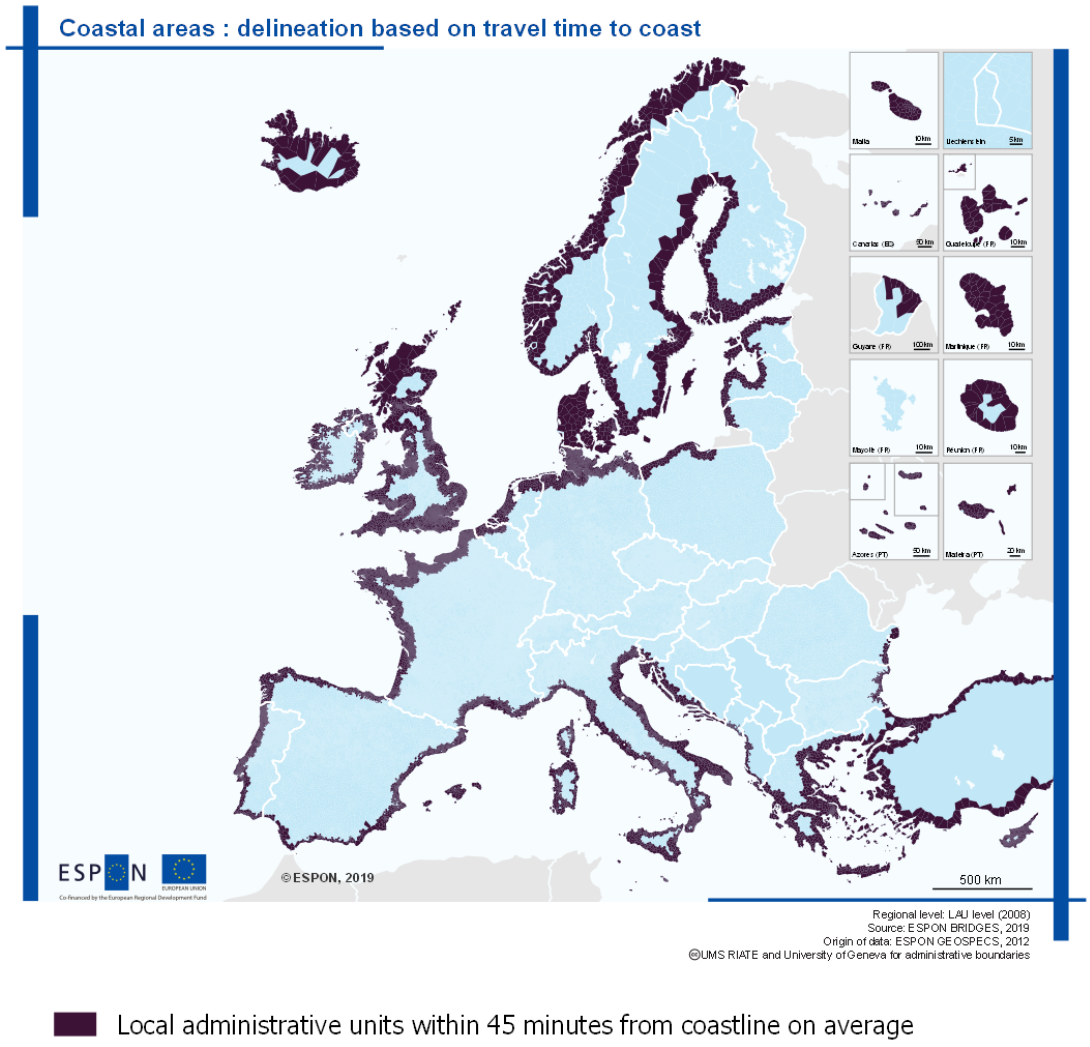
Map 2-2: Islands by administrative status



Map 2-3: Sparsely populated areas in Europe



Map 2-4: Coastal areas: delineation based on travel time to coast



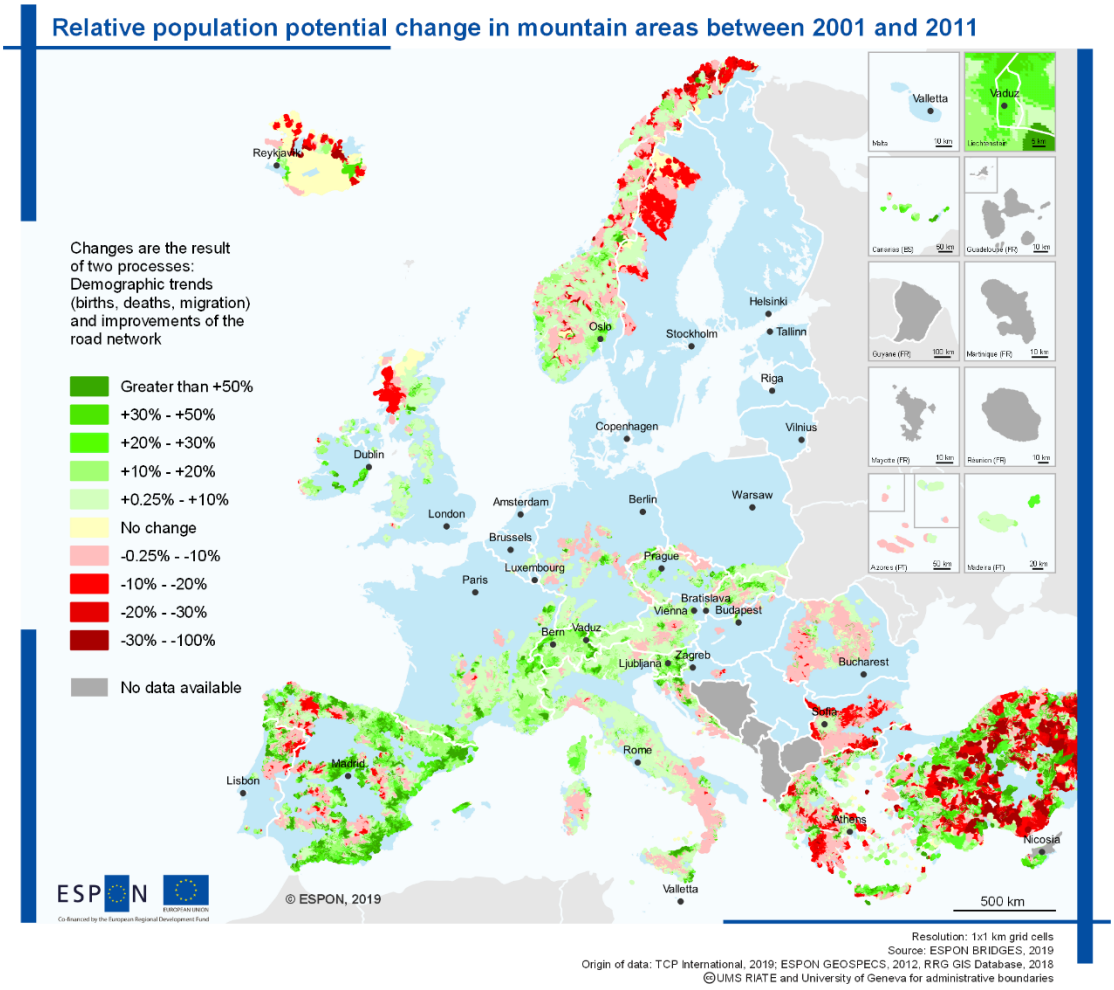
3 Demographic trends in areas with geographic specificities

Demographic change is a powerful synthetic indicator of social and economic trends. ESPON BRIDGES has produced representations of demographic trends using the notion of population potential, i.e. numbers of inhabitants within 45 minutes travel time by road. This threshold is used a proxy for a maximum generally accepted daily commuting and mobility range. This approach is preferred to traditional maps of demographic trends at the level of local administrative units (LAUs) for the following reasons:

- LAUs are of different sizes and are delineated in different ways across Europe. As a result, European figures at the LAU level are not comparable. Applying a uniform 45-minute threshold across ESPON space makes it possible to compensate for this bias.
- From a regional and local development perspective, the accessible population mass is of critical importance. This determines whether individuals can access essential services, and whether labour markets can be sufficiently large and diverse to be resilient. From this perspective, it is important to consider not only population change, but also transport infrastructure provision.
- Population potential figures take into account relationships between TGS areas and their surroundings, e.g. mountain and piedmont, SPAs and nearby urban centers. This is consistent with the 'relational' approach to geographic specificity adopted by the ESPON BRIDGES project.

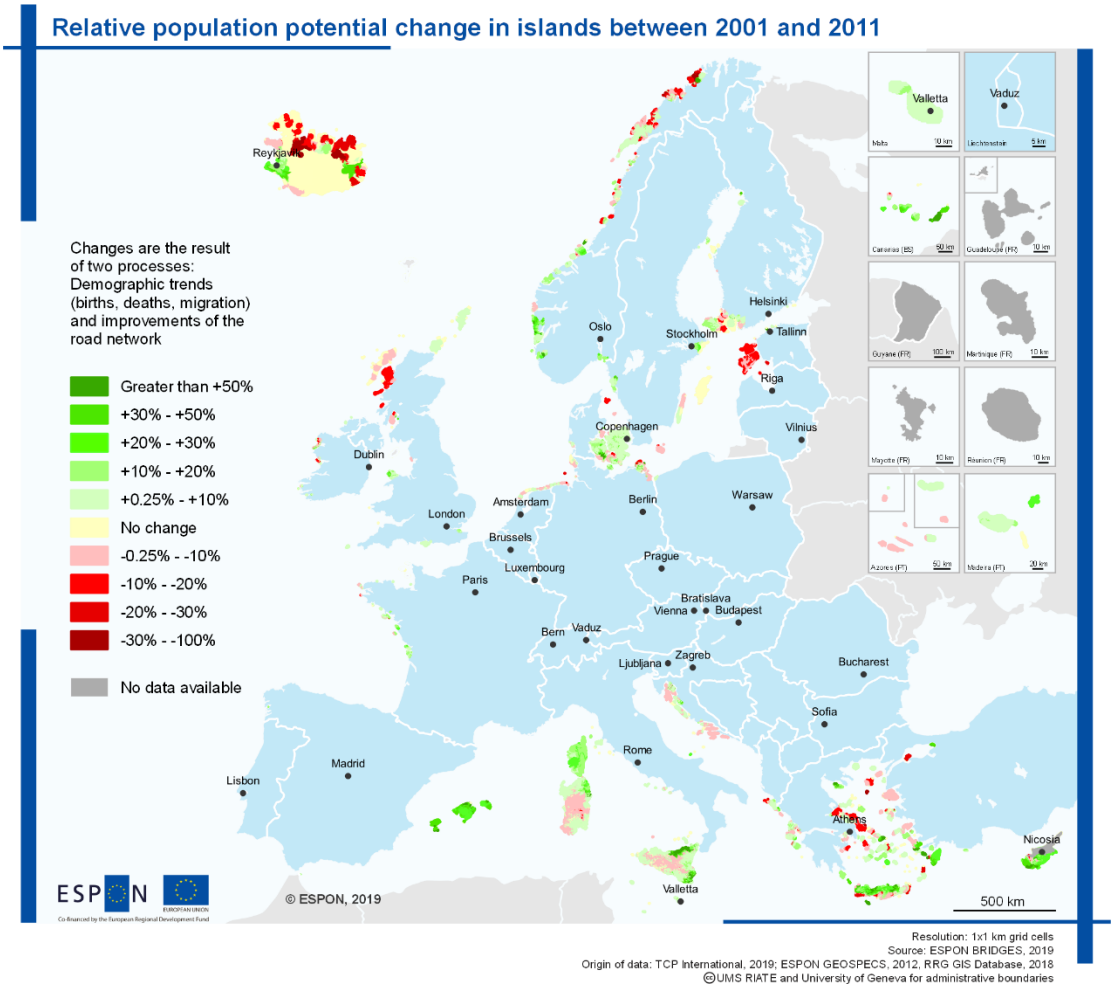
Maps 3-1 to 3-5 below shows the results of these calculations. They first illustrate the diversity of demographic trends across Europe. The fact that population is growing in a number of TGS demonstrates that these are territories whose development possibilities have been effectively exploited. Rapid increases in population potential figures, rising by more than 50% in ten years in some areas, especially in coastal areas and islands, imply challenges for local and regional authorities. Adapting infrastructures and ensuring the responsible use of land and natural resources may be difficult in the context of such demographic pressures. However, the maps also show that a significant number of territories are experiencing rapid demographic decline. Often these are areas with an already low population potential that may be exacerbated by a self-reinforcing spiral of demographic decline as limited service provision and a narrow range of employment opportunities generate imbalanced demographic flows. Gender imbalances may also accelerate decline in these areas.

Map 3-1: Relative population potential change in mountain areas between 2001 and 2011



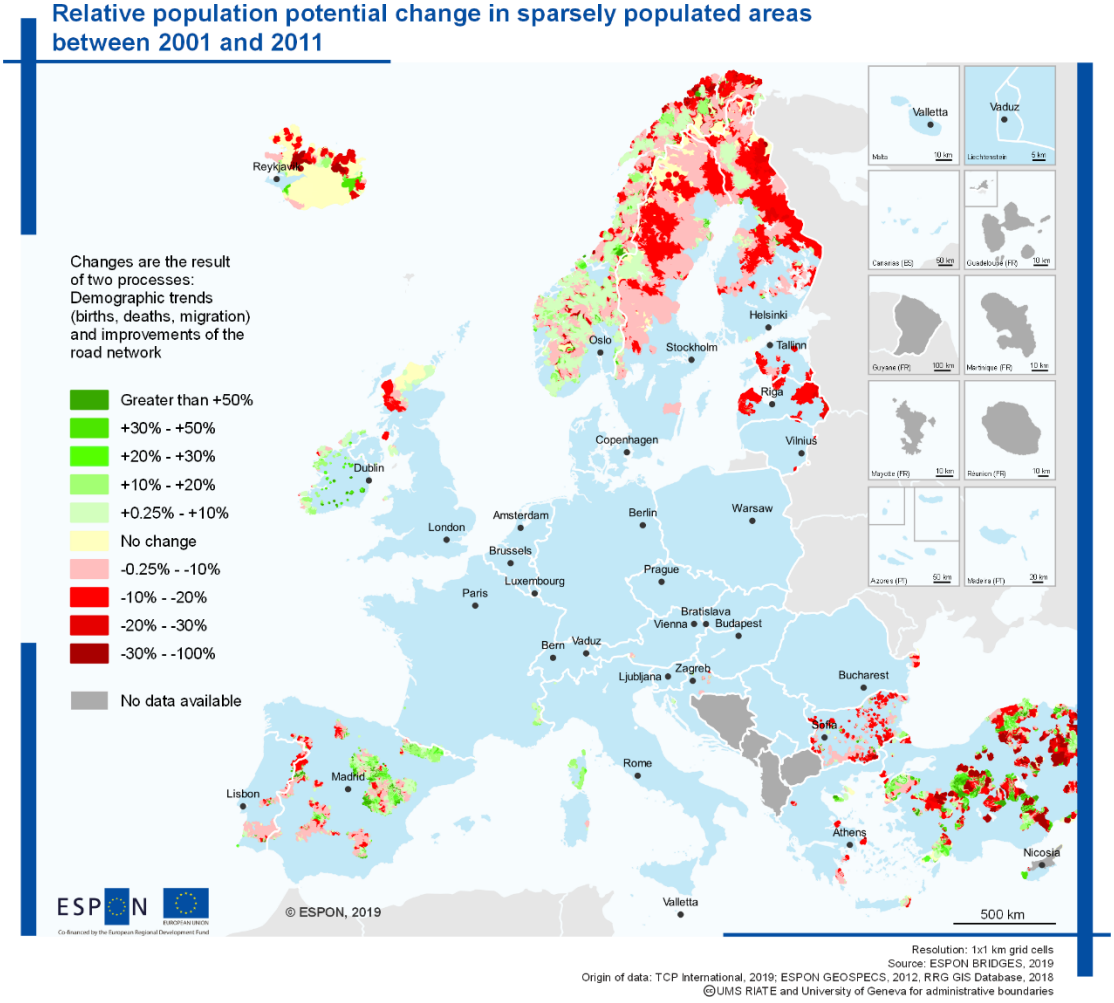
Patterns of relative population potential change vary considerably across Europe's mountains, at the levels of both mountain ranges and most countries (Map 3-1). One key element that stands out is that many of the areas with negative change are also sparsely populated: in the Nordic countries, the Highlands of Scotland (UK), the Iberian Peninsula, Bulgaria and Turkey. Apart from these, other areas with higher levels of negative change are in other parts of Turkey and also in Greece, while areas with lower levels of negative change are found particularly in other parts of Bulgaria, the southern Apennines of Italy, and most of the mountains of Romania. Nevertheless, there are also parts of Greece and Turkey with positive changes, which are also found also in the northern Apennines. The highest levels of positive change are found mainly in Spain, both along the coast but also in the centre of the country. Throughout most of the Alps (except for inner parts of Austria), Pyrenees and Polish/Slovak Carpathians, positive changes are evident. At a smaller spatial scale, there are clear differences between the coastal and inner parts of some large mountainous islands (e.g. Sardinia and Sicily in Italy), but not others (e.g. Corsica, Cyprus).

Map 3-2: Relative population potential change in islands between 2001 and 2011



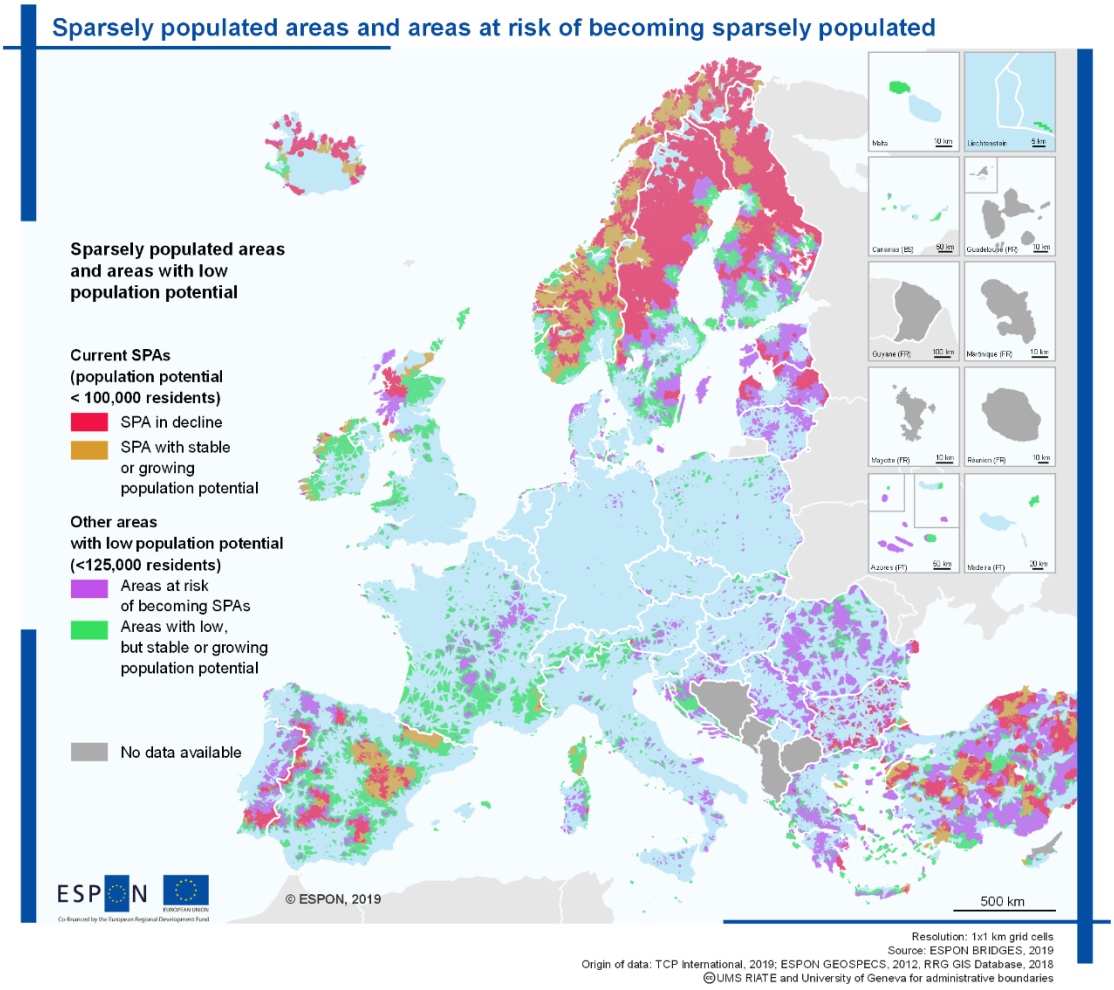
Diverse demographic trends are also observed in islands across Europe. Access to urban areas and to key infrastructure, such as airports, have an impact on the quality of life and are determining factors which lead to changes in the population levels. Map 3-2 shows some significant population growth rates, exceeding 50% in particularly attractive parts of Cyprus, Sicily and the Balearic Islands. These well-connected islands have used connectivity in order to tap into development opportunities. In contrast, the population level of a number of remote islands, such as those of western Scotland (UK) and Norway, and parts of Iceland have recorded a decline of population potentials of 10 to 20% since 2001. Demographic trends in islands can also be attributed to social and economic trends at national or transnational levels. For example, the demographic decline in the Estonian islands of Saaremaa and Hiumaa corresponds to that observed across most of the Baltic countries outside the areas of influence of the capital cities. In Greece, more detailed enquiries would be needed to establish whether the population decline observed on a number of Greek islands is linked to the economic crisis.

Map 3-3: Relative population potential change in sparsely populated areas between 2001 and 2011



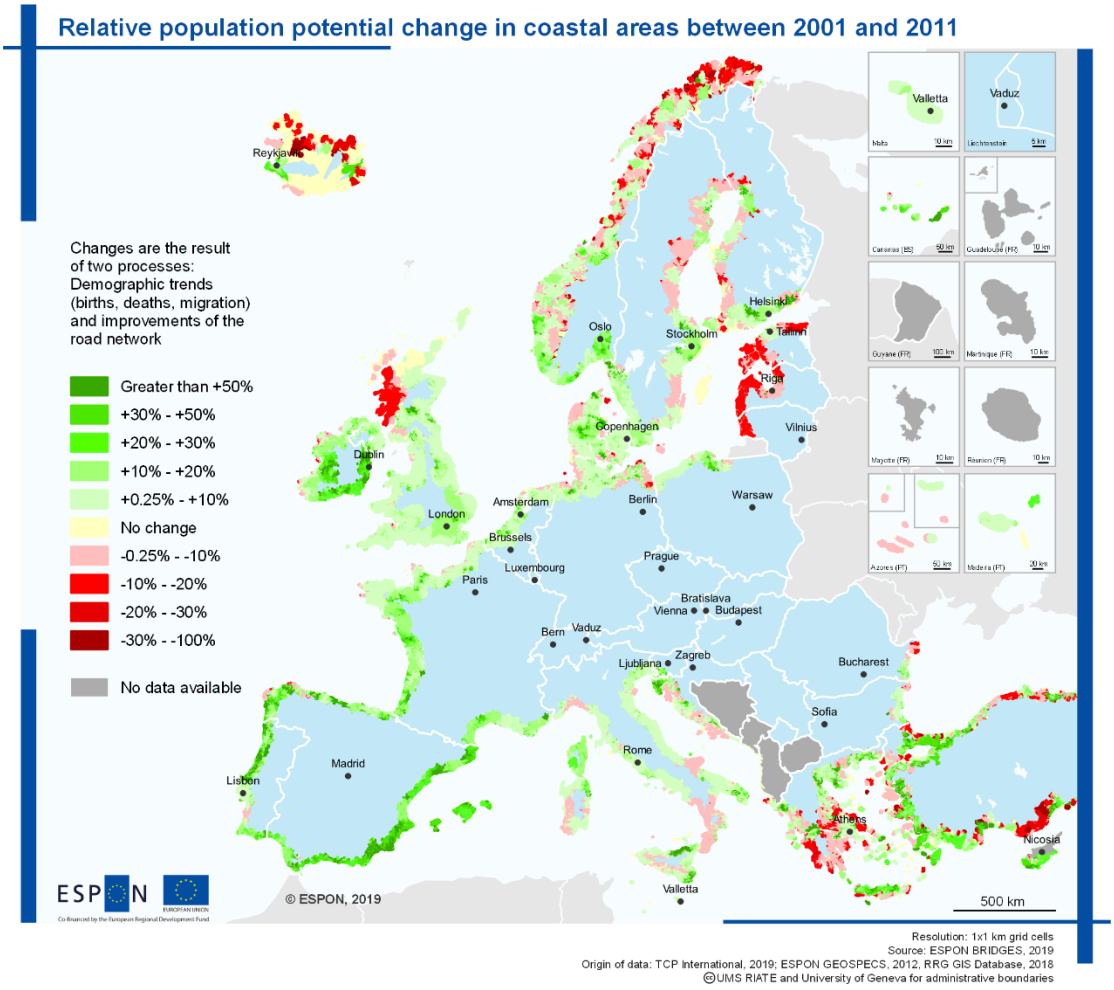
Unlike other geographic specificities, the delineation of SPA is impacted by demographic trends. Map 3-3 shows changes in population potential figures between 2001 and 2011 in areas identified as sparse using 2001 figures. This reveals significant demographic change and/or changes in levels of accessibility. A significant proportion of SPAs have experienced losses of population potential above 10%. This is particularly the case in northern Sweden and Finland, Bulgaria, Western Scotland (UK), Turkey and areas along the north-eastern border of Portugal, in both Portugal and Spain. In these areas with demographic "shrinking", challenges inherent to sparsity, such as access to services of general interest, are likely to have become more pronounced. However, some SPAs – mainly in Norway, Central Spain and parts of Turkey – experience a stabilisation or even a positive development of their population potential. Further enquiries would be needed to establish the extent to which this can be ascribed to infrastructure improvements. It is notable that, at broader spatial scales, all SPAs to some extent experience demographic polarisation, as declining and growing areas are intertwined within wider regional contexts.

Map 3-4: Sparsely populated areas and areas at risk of becoming sparsely populated



In addition to considering the delineation of SPAs based on 2001 data (Map 3-3), demographic trends were analysed in areas that either meet the criteria for sparsity in 2011 or where population potential levels are so low that they may fall below the threshold level of 100,000 inhabitants within 45 minutes by road in coming years (Map 3-4). This second category was defined as areas with a population potential below 125,000 inhabitants. This analysis first shows that a dual process of urbanisation and thinning out is taking place in Europe's northern periphery, with many peripheral towns in Norway, Sweden and Finland experiencing population growth. Second, there are extensive areas "at risk of becoming sparsely populated areas" e.g. in south-eastern Europe, along an axis running from Asturias to Algarve in the Iberian Peninsula, within the so-called 'empty diagonal' in France, in western Scotland (UK), and in the Eastern Alps. If demographic decline continues in these areas, they will rapidly reach thresholds below which service provision and economically and socially sustainable development become challenging. This suggests that sparsity may become a pressing issue is a larger proportion of European regions in the coming years.

Map 3-5: Relative population potential change in coastal areas between 2001 and 2011



Between 2001 and 2011, coastal communities faced substantial population change, with some areas showing more extreme change than others (Map 3-5). Overall, most coastal regions show positive trends in population change, in line with the worldwide population trends. Growing populations in coastal regions, which often are characterised by fragile environmental conditions, call for place-based policies. In Northern European peripheries, such as the Scandinavian or Icelandic coasts, one can observe negative trends, with some coastal areas experiencing extreme population losses. Communities around the Baltic and Adriatic-Ionian Seas show a more diverse picture, with both positive and negative developments. However, in the Baltic States, coastal trends are not different from those of inland areas. With the exception of the three Baltic countries, Greece, and Turkey, strong demographic decline mainly occurs in peripheral and remote coastal communities, such as Western Scotland (UK), northern Iceland, and northernmost Norway. Atlantic coastal communities mainly experienced positive population change. French, Spanish, and Portuguese coastal areas are among the areas with the fastest growing populations in Europe, along both Atlantic and Mediterranean coasts.

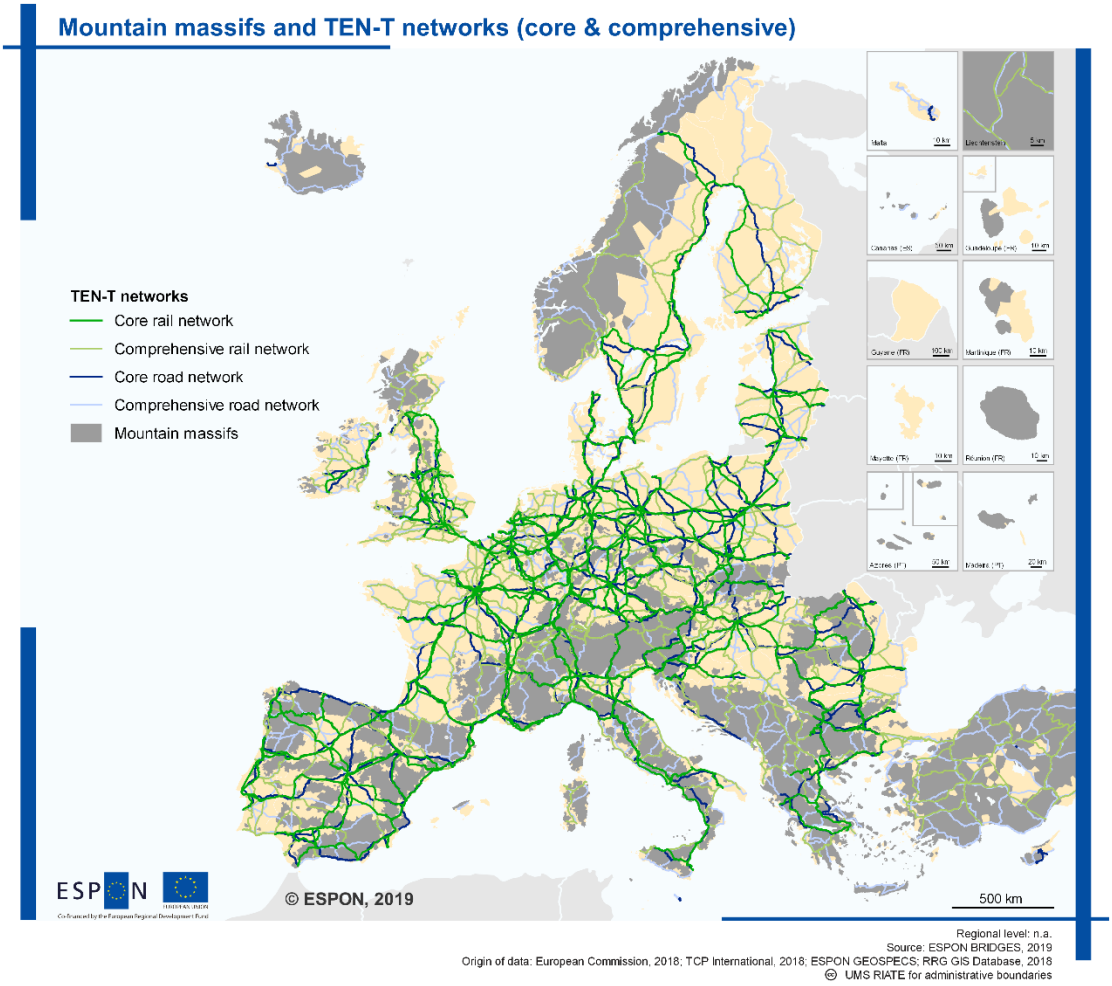
4 Mountain areas

Using consistent topographic criteria deriving from global norms, Europe's mountain areas have been defined as covering 36 % of ESPON territory (Price et al., 2017). This delineation is for analytical purposes, based on a 1 km² grid. The resulting proportion is, for most parts of Europe, rather different from that used in publications in the context of Cohesion policy that, though using similar criteria, define mountain areas at the broad scale of NUTS 3 regions, which generally combine topographically-defined mountains with neighbouring lowlands: e.g. (Monfort, 2009; European Commission, 2010. Consequently, the various reports considering Europe's mountain areas as a whole – either specifically (Gløersen et al., 2004) (European Environment Agency, 2010) (Gløersen et al., 2016) or, as in the present report, in the context of TGS (ESPON and University of Geneva, 2012) – have generally used a finer spatial definition. Exceptions are ADE (2012) and Raugze et al. (2017), which define mountain areas at the NUTS 3 level, which allows certain comparisons to be made between the statistics produced using different spatial resolutions. This chapter begins with key findings from these reports, which provide the context for the specific work done within ESPON BRIDGES.

Mountain areas are found in most European States (except for the Baltic States, Denmark, the Netherlands, and Malta) and in almost all parts of the continent: from the Arctic to the Mediterranean and from the Atlantic to the eastern edge of the European Union and Turkey. Consequently, they exhibit a very wide range of climates and ecosystems (European Environment Agency, 2010a). The spatial configuration of these mountain areas varies considerably, from long mountain chains (e.g. the Alps, Apennines, Carpathians, Pyrenees, Scandes) to isolated massifs such as those of Central Europe (e.g. Belgium, non-Alpine parts of Germany), Spain, and mountains on many islands of various sizes. Within each mountain area, there is also great diversity, in terms of both climate and ecosystems and human populations and infrastructure. For example, mountain areas contain both remote, sparsely-populated rural areas and major urban centres; while some valleys have almost no transport infrastructure, others include part of the Trans-Europe Transport Network (TEN-T), although – with the exception of the Alps and, to a lesser extent, the Carpathians – the core networks largely go around rather than across mountain areas (see Map 4-1).

Due to these and other factors, trends in both the size and structure of the populations of mountain areas, totalling 114 million across ESPON territory (European Environment Agency, 2010a), are increasingly dynamic. From 2001 to 2011, the only transnational massifs with significant decline in population were the Carpathians, the Balkans/Southeast European mountains and the mountains of the British Isles. In other mountain areas, populations were stable or rising, especially in the Alps and Pyrenees. However, such statements refer to very large spatial units; and within each of these, contrasting trends may be found (Gløersen et al., 2016).

Map 4-1: Mountain massifs and TEN-T core networks



One example of contrasts at different scales is with regard to age structure. Thus, while Raugze et al. (2017) found that old age dependency ratios in mountain areas defined at the NUTS 3 level were broadly similar to those of NUTS 3 areas as a whole, ESPON and University of Geneva (2012) found that, at the level of municipalities, the proportion of the population over 60 in mountain areas (particularly rural areas) is markedly higher than for countries as a whole – although there are exceptions: in parts of the Alps, along the Czech-German border, and around some major urban centres.

At the NUTS 3 level, both GDP per head and employment rates vary significantly across mountain areas (Raugze et al., 2017); analyses at finer spatial scales have not been done for Europe's mountain areas as a whole. However, analyses of sectoral employment at LAU2 level also reveal great diversity, although there are some general patterns (ESPON and University of Geneva, 2012). Despite the fact that forests cover 41 % of Europe's mountain area and, together with various agricultural land uses, comprise the cultural landscapes that are widely associated with mountain areas, the primary sector accounts for a relatively small proportion of

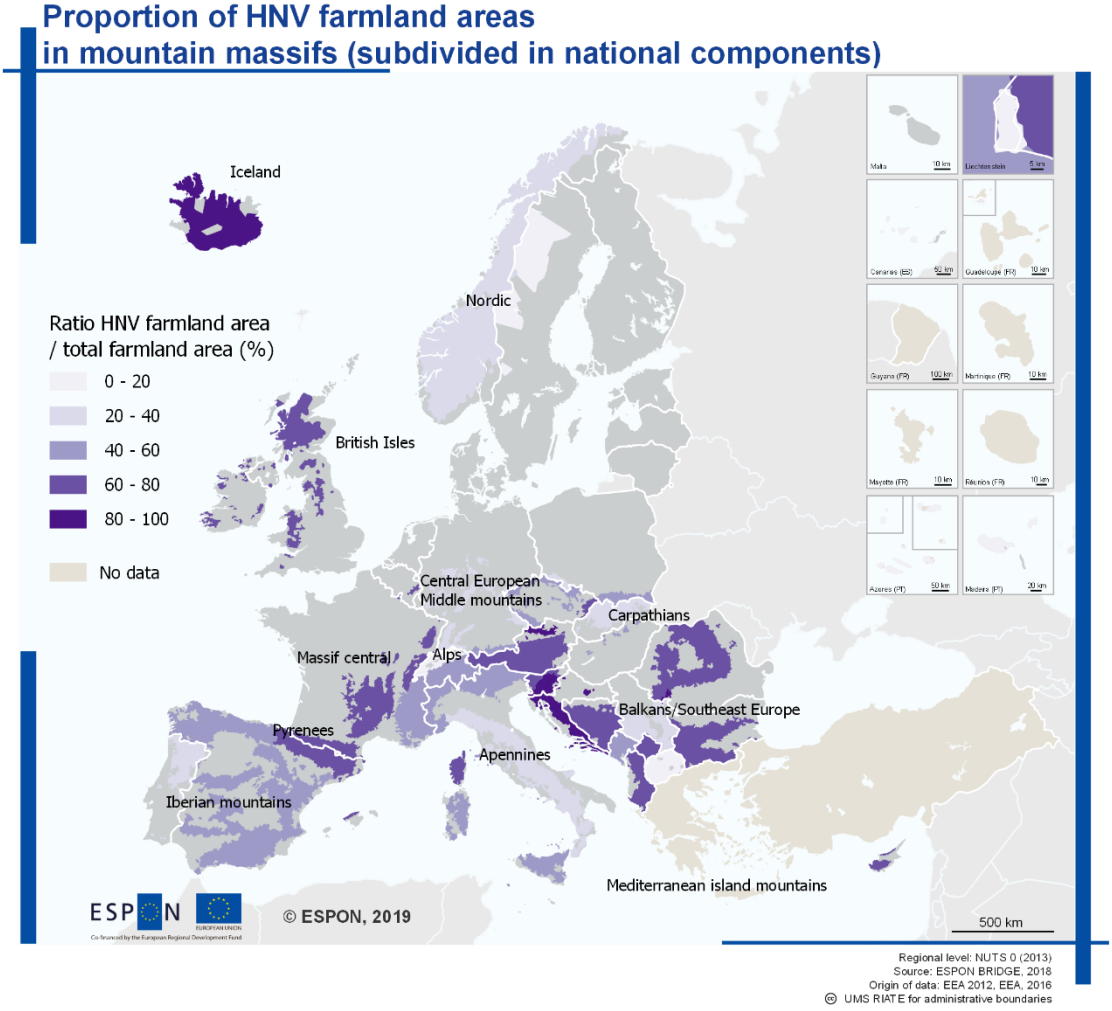
employment. Across Europe's mountain areas as a whole, most employment is in the tertiary sector, most markedly in Norway, Corsica, and the Swiss Jura.

Despite the great diversity of Europe's mountain areas, they also have certain commonalities which derive particularly from their verticality. From an ecological point of view, this means that different ecological zones and habitats are found at different altitudes over relatively short distances, and also on slopes with different aspects. In addition, during the last Ice Age, many mountain areas were isolated, so that their species evolved separately; many species are only found in one area (i.e. endemic species). For all of these reasons, most of Europe's 'hotspots' of biodiversity are in mountain areas, often within High Nature Value (HNV) forests (European Environment Agency, 2014) or HNV farmland (European Environment Agency, 2010a) (see Map 4-2). This emphasizes the importance of Europe's mountain areas as cultural landscapes, which have evolved through millennia of human interaction with mountain ecosystems, many of which have been significantly modified – even in sparsely-populated mountain areas which are sometimes described as 'wilderness' (Carver and Fritz, 2016a). In many cases, to maintain the particular ecological and cultural characteristics of these landscapes – and also their attractiveness for tourism and potential to produce high-value products – continued intervention is required; agri-environment measures under Pillar II of the CAP have been critical in this regard.

These various characteristics of Europe's mountain areas are part of the wide set of ecosystem services that they provide to the citizens of Europe. A further key ecosystem service provided by mountain areas is the provision and storage of reliable supplies of freshwater; they are the continent's 'water towers'' (European Environment Agency, 2010a). However, as discussed in more detail below, the provision of these services is being altered by climate change; a trend that is likely to continue.

A further set of commonalities relates to the definition of administrative units. Mountain ridges are often used to define boundaries between administrative units, from nation-states to municipalities. However, these are only the highest parts of these boundaries; other parts may be topographically-defined (e.g. by rivers) but also have other derivations. One consequence, as noted previously, is that, at larger and larger spatial scales (i.e. from municipality to nation-state), administrative units usually include both mountain and non-mountain land. It should be noted, however, that the lower topographic boundary of mountains is rarely a functional boundary: mountains and their adjacent rural and urban areas are usually closely integrated in many ways – with regard to transport and other infrastructure, downhill flows of water and commuters, and uphill flows of recreationists and tourists.

Map 4-2: Proportion of High Nature Value Farmland by national components of massifs



4.1 Three typologies of mountain areas

As discussed above, although Europe's mountain areas have many commonalities, they are highly diverse at all spatial scales; a conclusion reached at the conclusion of the first analysis of these areas when, rather than one typology, three were developed: on social and economic capital; infrastructure, accessibility and services; and land use and land covers (Gløersen et al., 2004). In a policy context, this underscores the need for place-based policies at an appropriate spatial scale, i.e. for areas smaller than NUTS 3 regions (Gløersen et al., 2016); a conclusion that will be reviewed below.

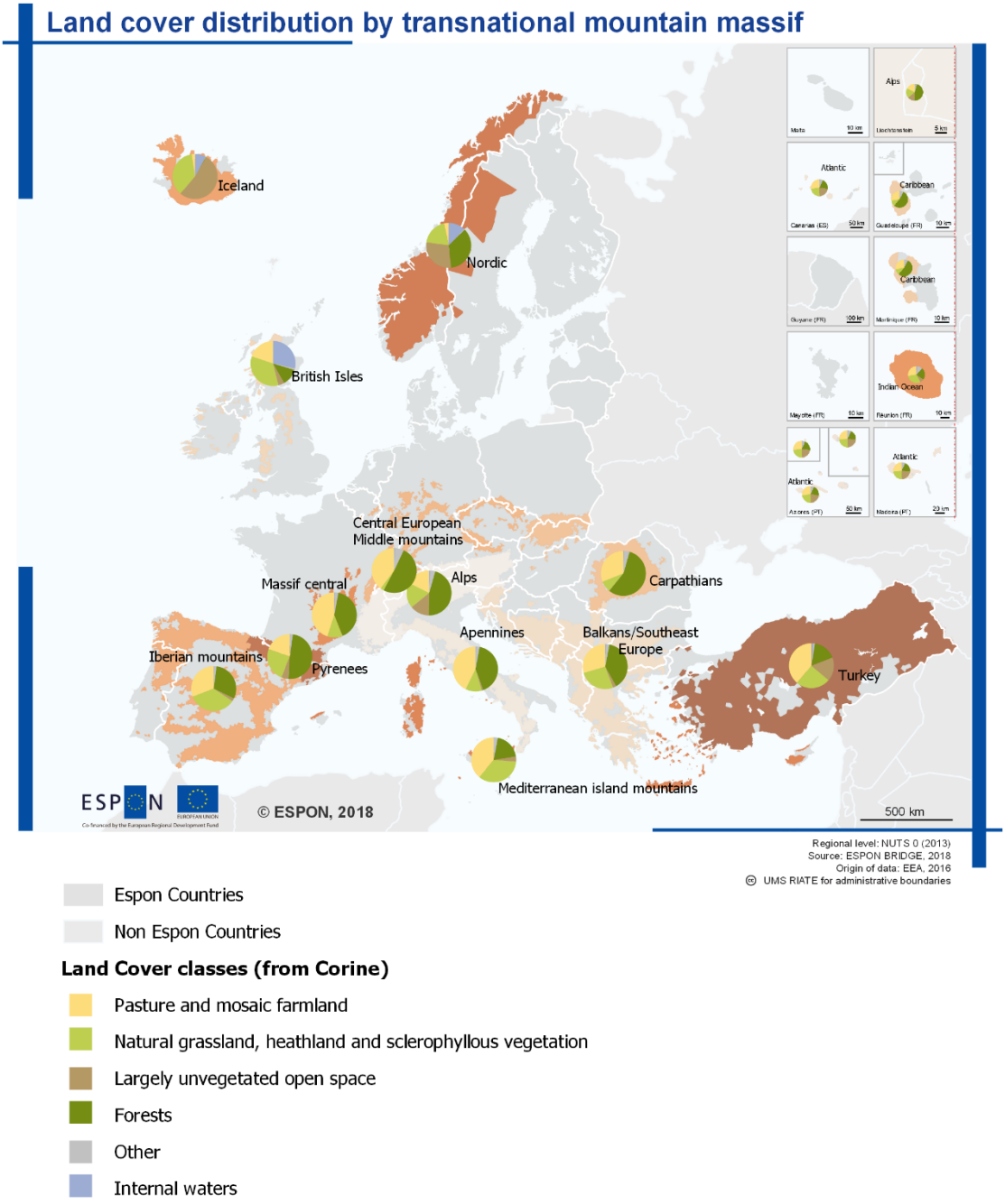
For the purposes of this report, it may be useful to outline three typologies of European mountain areas. The first relates to the land covers of these cultural landscapes (European Environment Agency, 2010a). Forests cover 41 % of the total mountain area, including more than half of the Carpathians, Central European middle mountains, Balkans/Southeast Europe, Alps, and Pyrenees. They are the dominant land cover except in the Nordic mountains, where unvegetated open space is most common. Three land cover types each cover just under one-sixth of the total mountain area: 1) pasture and mosaic farmland, especially in Central and

southeastern Europe; 2) natural grassland, heathland and sclerophyllous vegetation, especially in the Nordic mountains, Turkey, and the Iberian mountains; 3) largely unvegetated open space, especially in the Nordic mountains and Turkey. Arable land is most common in southern Europe (see Map 3-3). The respective combinations of land covers have been presented as a typology by Gløersen et al. (2004) and at the scale of States and trans-national massifs in European Environmental Agency (2010a).

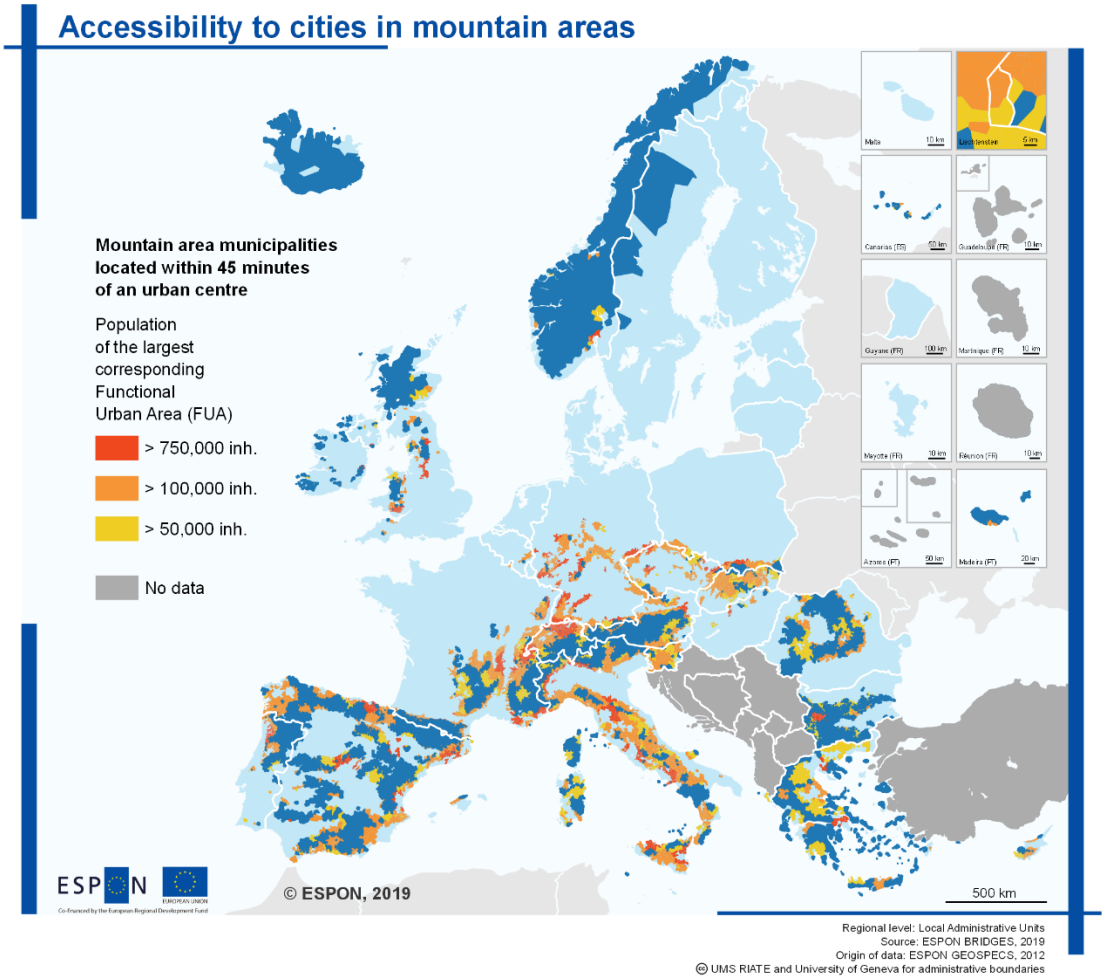
The other typologies relate to socio-economic criteria. The first concerns the relative accessibility or remoteness of mountain areas from urban centres and their populations (see Map 3-4). For relatively narrow mountain areas, as well as large parts of the northern Alps and much of the Apennines, Sicily, and the Slovak Carpathians, most mountain municipalities are within a 45-minute commuting distance of urban centres. The accessible proportion is less in other mountain areas, including other parts of the Alps; and, in the mountain areas of the Balkans and Southeast Europe, only 23% of the mountain population is within commuting distance (ESPON and University of Geneva, 2012). However, such statistics need to be put in their national contexts. While this typology exhibits large-scale patterns, it is made more complex as a result of the construction of major transport infrastructure through mountain areas, both above ground and going through tunnels, which can greatly increase the accessibility or previously quite remote mountain valleys (Ravazzoli et al., 2017) – both main valleys and others with secondary infrastructure associated with major nodes. This means that some main valleys in previously less accessible parts of large massifs, particularly the Alps, have become more accessible. (see Map 3-1 p. 32)

The other typology relates to tourism, and operates at a finer scale of spatial resolution. Tourism is unquestionably the economic backbone of some mountain areas, particularly those with skiing resorts or year-round tourist offers. However, such dominance is typically at the scale of individual municipalities (or small groups of municipalities), especially those at higher altitudes. For instance, even though the Alps are one of the world's most important tourism destinations, the economy of only 10 % of the municipalities is based on tourism (Permanent Secretariat of the Alpine Convention, 2013). At a coarser spatial resolution, there are few national parts of massifs where employment in hotels and restaurants reaches at least 10%; apart from the German Alps, these are almost all on mountainous islands. Related issues are discussed below.

Map 4-3: Land cover distribution by transnational mountain massif



Map 4-4: Access to cities in mountain areas



4.2 Mountain areas are exposed to multiple objective factors of constraint

Most factors of objective constraint identified in the terms of reference of the ESPON BRIDGES project are relevant for mountain areas (Table 4-1).

Table 4-1: Objective factors of constraint in mountain areas

Factor of constraint	Issues in mountain areas
Lack of critical mass (demographic and/or economic)	Mountain areas face specific challenges with respect to relationships between neighbouring settlements, as communications between valleys may be difficult. However, the linear organisation of settlements in valleys can facilitate economies of scale, e.g. in the organisation of transport. Tourism is often highly dependent on temporary in-migrants due to a lack of local people to work in the sector, though this can be mitigated if other employment possibilities are available in the off-season for tourism. While value chains based on the production and marketing of quality products can provide opportunities for the economic development of mountain areas, a lack of the necessary manpower and expertise due to the loss (through depopulation) or retirement of economically-active people can be a challenge in realising such opportunities.
Remoteness from urban centres	Piedmont areas are attractive for urban development, as exemplified by the numerous metropolitan regions surrounding the Alps. As a result – and as long as the necessary transport infrastructure and services are in place – large parts of mountain massifs are within commuting distance from cities, or can capitalise on the proximity to urban areas through the development of tourism, secondary housing and leisure activities. In contrast, remote mountain areas do not benefit from such advantages. Their specific social and economic issues (compared to accessible mountain areas) tend to be the same as in other sparsely populated areas.
Low potential accessibility in Europe	A number of mountain areas are located in central parts of Europe, e.g. the Alps or the Ore mountains. European potential accessibility can therefore be good compared to more marginal mountain ranges near the edges of Europe, e.g. in the Nordic countries, Iberian Peninsula, Carpathians and Balkans.
Low potential accessibility in national context	Many mountain ranges are constitutive elements of national borders and therefore have a marginal position within Member States, and relatively lower accessibility in their national contexts.
Insularity (physical or metaphorical)	Mountain areas have historically been characterised by intense transit traffic along narrow corridors. As producers of hydroelectricity, mountain areas are also well-connected to electricity grids. The concept of 'insularity' may therefore only apply to mountain areas (entire or in part) that are isolated from these numerous infrastructures crossing mountain areas. 'Seasonal' or 'occasional' insularity may also occur in mountain areas that are dependent on few transport connections that are disrupted as a result of natural hazards, e.g. landslides, floods, and avalanches.
Vulnerability (limited resilience in the face of external shocks or limited capacity to cope with change)	Mountain areas are particularly exposed to climate change, affecting all environmental resources and economic sectors. To build resilience in the face of uncertainty requires multi-level and cross-sectoral coordination and resources. This may be facilitated by the long traditions of mutual collaboration in mountain societies, to address the challenges of seasonal access to resources and to respond to natural disasters.

	Further challenges relate to tourism. Climate change is likely to have major impacts on snow-based tourism, especially at lower altitudes; and fashions for specific types of activities change. Consequently, investments need to be made in year-round tourism and its integration with other economic sectors.

4.3 Distance to urban areas: a major differentiating factor

Urban areas, whether within (i.e. in major valleys) or near to mountain areas, have significant interactions with these areas. For mountain inhabitants, these urban centres are usually where regional colleges, universities, hospitals (Gløersen et al., 2004) and large shopping centres are located; and they often provide employment opportunities that are not available in small urban centres and rural areas in the mountains. Thus, for commuters living in the mountains to take advantage of such opportunities, reliable transport links are essential. Such links are also important for people living in large urban centres next to, and sometimes even some distance from, the mountains, who identify strongly with them, sometimes because of family ties, but also because mountains provide recreational opportunities. Such links may be emphasized through the existence of governance structures, such as the regions of Lombardia in Italy and, more recently, Auvergne-Rhône-Alpes in France, with their respective main cities (Milan, Lyon) on the plains.

4.4 No integrated EU policy for mountain areas

There is no single, sectorally and territorially integrated policy framework for Europe's mountain areas (European Environment Agency, 2010b). At the pan-European level, during the 1990s, various structures within the Council of Europe developed a draft European convention on mountain regions, though the Council of Ministers did not approve this.

As far as Cohesion Policy is concerned, the Common Provisions Regulation (CPR) (Regulation No 1303 (2013) Art 121(4)(a)) allows for the modulation of co-financing rates in mountain areas. Mountain areas are otherwise only considered specifically in two EU policies: in the Rural Development Regulation, as Areas with Natural Constraints (ANCs; previously Less Favoured Areas, LFAs), and in Delegated Act 665/2014 on mountain products. In both cases, the delineation of the territories in which these policies should be applied is devolved to Member States. Nevertheless, other EU policies refer to mountain areas. For example, as noted above, mountain areas are 'hotspots' of biodiversity; and of the 1148 species listed under Annexes II and IV of the Habitats Directive, 311 are exclusively or mainly found in mountain areas. Similarly, of the 231 habitats listed in Annex 1, 42 are exclusively or almost exclusively found in mountain areas, and 91 also occur there; thus, 43% of the area designated as Natura 2000 sites is in mountain areas (covering 14% of their area) (European Environment Agency, 2010b). Mountain areas also include most of Europe's high wilderness quality areas, for which specific guidelines have been produced (Carver and Fritz, 2016b; European Commission, 2013c); and 33% of the area designated as HNV farmland (almost double the proportion for the EU as a

whole), much within ANCs. In addition, some elements of Cohesion policy directly address mountain areas, particularly those within Interreg (e.g. the Alpine Space programme, numerous cross-border programmes within mountain ranges, as these are often national borders). Certain Member States have implemented activities in mountain areas using dedicated instruments under their Operational Programmes (France, Greece, Italy). However, as Cohesion policy is primarily designed to be implemented within NUTS 2 regions, the territories to which such programmes and activities apply also include adjacent lowlands.

In 2016, following extensive debate, the European Parliament adopted, by a large majority (553 votes out of 665), a resolution that called, inter alia, for a working definition of mountainous regions in the context of cohesion policy, an Agenda for EU Mountainous Regions to form the basis of an EU strategy, and regular assessment of the condition of the EU's mountain areas and of the implementation of cohesion policy programs, to inform future policy development (European Parliament, 2016). These proposals have not yet been implemented to any great extent. More recently, in October 2018, the European Parliament adopted a resolution which calls for an EU Agenda for rural, mountainous and remote areas, *inter alia* to foster cohesion and incorporate a strategic framework for the development of these areas, "coordinated with strategies aimed at lagging and peripheral regions", and that "EAFRD spending continue to be linked with cohesion policy" (European Parliament, 2018).

4.5 Governance challenges at difference levels: global, transnational, cross-border and intra-regional

At the global scale, the importance of the ecosystem services provided by mountain areas is reflected by their inclusion in Agenda 2030 (United Nations General Assembly, 2015), which refers specifically to mountains in relation to water resources (goal 6); and the conservation, restoration and sustainable use of mountain ecosystems and their services (goal 15). Equally, the Convention on Biological Diversity (CBD) has established a programme of work for mountain biodiversity (Conference of the Parties to the Convention on Biological Diversity, 2004). As the European Union and its Member States (and other European states which are not EU members) are signatories to these documents, they have been transposed into European and national legislation.

Given that mountains are often used to define borders between nation-states, it should be noted that all four macro-regional strategies include mountain areas. However, only the EU Strategy for the Alpine Region (EUSALP) focuses specifically on a mountain range – and also, as the area of application is defined according to NUTS 2 regions, its wider context in the adjacent lowlands; as do the Interreg Alpine Space programme and other cross-border programmes including mountain areas. There are two governance instruments directly concerning topographically-defined mountains: the Alpine Convention and the Carpathian Convention, although the latter also concerns territory which is not topographically defined as mountainous. Both of these framework conventions are applied through thematic protocols and a number of

Text Box 4-1: National Strategy for mountain communities in Cyprus

The Troodos massif in Cyprus has experienced continuous depopulation over the last 30 years. Young people leave for educational purposes and rarely come back after graduation. As a result, local resources are not exploited: agricultural land is abandoned, forest and water resources cannot be managed properly and development of tourism activities is limited.

As a means to address these issues and retain population in the mountain area, the government of Cyprus commissioned a national strategy for mountain communities. This was elaborated in 2018, and promotes a concept of more sustainable development based on functional integration with neighbouring areas and cross-sectoral coordination. The strategy also addresses concrete social, economic and spatial issues of development in mountain areas: the need to increase activities in agriculture and craft, ensure access to services of general interest (in particular health), and improve connectivity to coastal areas.

Its economic development approach is inspired by the successful transformation of the village of Kalopanayiotis into an attractive tourism destination in recent decades. While adaptation of measures to the specific situation and potentials of each locality is a central component of the strategy, the Kalopanayiotis case has demonstrated that economic and demographic decline can be reversed[4].

Improvement of income generated by local economic activities is considered in the strategy as a key to enable the younger generation to stay in the mountain area. To do so, the strategy will support the implementation of three coordinated actions: (1) support to the development of high-quality local products and branding, in order to make these products more visible for potential consumers; (2) support the coordination of stakeholders along the value chain through the emergence of professional organisations; (3) education programmes to raise the awareness of pupils regarding the value of local resources and to enhance entrepreneurship. This is expected to lead to a regeneration of local small-scale agro-food chains. A similar approach will be promoted for tourism development.

In order to overcome common obstacles in spatial planning and local development projects in the Troodos massif, it was decided to recognize the specificities of mountains in regulatory frameworks. This recognition is the first step to address common obstacles in project development in municipalities included in a defined perimeter. It will be used as a legal basis first to allow projects (supported by national funds) to be evaluated on the basis of the production of a service (or result) rather than on the basis of the number of beneficiaries. It will also justify the inclusion of the cost of non-intervention to balance the potential benefits of new developments. The progression of forest and moorland in former agricultural areas generate maintenance costs that need to be taken into account when assessing the value of a project for the community. The mountain strategy in Cyprus shows the increasing popularity of cross-sectoral strategies in soft territorial cooperation areas and the importance of multi-level cooperation to trigger economic and demographic change.

[4] EDRF funding contributed to this reversion of the economic and demographic situation in Kalopanayiotis
https://ec.europa.eu/regional_policy/en/projects/cyprus/old-stones-and-new-life-in-kalopanayiotis

institutions, e.g. for protected areas and communities, are associated with them. At the national level, Croatia, France, Greece, Italy, Romania, and Switzerland have mountain legislation (Castelein et al., 2006) (European Environment Agency, 2010); in Italy, a further mechanism, mainly applying to mountain areas, is the National Strategy for Internal Areas (NSIA), under the 2014-2020 Partnership Agreement. These instruments generally focus on promoting the socioeconomic development of mountain communities while protecting mountain environments through targeted funding, often through specific institutions. In Cyprus, a Commissioner for the Development of Mountain Communities has recently been appointed, and has coordinated the elaboration of a National Strategy for mountain communities (see Text Box 4-1). Other countries, particularly the federal states of Austria, German and Spain, take multi-sectoral approaches which are mainly implemented at the sub-national level. In addition, three Integrated Territorial Investments (ITIs) (Sterea Ellada, Greece; Valdevecchia, Italy; Isonzo valley, Italy/Slovenia) specifically target mountain areas, as does one CLLD (Tirol-Trentino, Austria/Italy). There are also numerous LAGs in mountain areas.

4.6 Key issues for mountain areas: climate change, Energy production, sustainable tourism, demographic change and innovation

This part of the chapter focuses on the issues addressed by the nine BRIDGES modules, including findings from the case study areas. Of these, six may be regarded as predominantly characterised by their mountainous nature: Alto Turia (ES), Apuseni mountains (RO), Inland of Cote d'Azur (FR), Isernia (IT), South Tyrol (IT), and Tatra mountains (PL). Others overlap with other TGS categories, with certain issues relating to their mountainous characteristics: East Iceland (IS), Nordland (NO), Tenerife (ES), Western Lapland (SE), and Wester Ross (UK). However, for each of these case study areas, the information compiled relates to only three modules, providing a rather limited picture of the situation across Europe's very diverse mountain areas. Accordingly, the text below also draws on existing publications and databases in order to give a more comprehensive evaluation. As much as possible, emphasis is placed on the 'objective factors of constraint' (Table 3-1), while recognising that, in certain cases, such 'constraints' may be regarded as opportunities, as proposed in the Green Paper on Territorial Cohesion 'Turning diversity into strength' (European Commission, 2008).

4.6.1 Climate change

Climate change is considered first because its effects influence and interact with every other issue – although it must also be recognised that, at least for the near future for certain issues, other driving forces may be at least as important.

Temperature rises in Europe's mountain areas have been greater than the continental average, and all of the continent's glaciers are decreasing in volume. As for Europe as a whole, precipitation is generally increasing in northern mountain areas and decreasing in southern

mountain areas. These trends are likely to continue, and the frequency and magnitude of extreme events are likely to increase (EEA, 2017). Increasing numbers of natural hazards (landslides, avalanches, rockfalls, etc.) will endanger not only local people and the infrastructure on which they depend, but also the major transportation routes that link the lowlands on either side of mountain areas. Consequently, the alignment between disaster risk reduction (DRR) and climate change called for in the European Commission's Action Plan on DRR (European Commission, 2016a) is particularly relevant. Mountain areas are also major destinations for tourism, a key element of many mountain economies. While these areas may become more popular for summer tourism as coasts and islands become hotter, opportunities for tourism in winter, especially at lower altitudes, are likely to change as precipitation falls as rain rather than snow, and glaciers melt – and therefore snow is not reliably available for skiing and other activities. In turn, such trends influence the timing and amounts of water available for use, not only in the mountains but downstream, for agriculture, industry and energy production, thus influencing the provision of many of the ecosystem services that derive from mountain areas.

Even though our knowledge of historical and recent changes in mountain climate is improving, as are climate models, there are still significant uncertainties about future spatial and temporal patterns not only of mean climate variables (temperature, precipitation, etc.) but, even more, of extreme events. There are two particular reasons: first, most climatic data for mountain areas are collected in valleys, with very few stations on slopes or summits, thus providing a limited basis for developing and testing models; second, the topographic diversity of mountain areas and the resulting complexities of their climates are particular constraints on developing such models. This implies a need for continuous monitoring and research, as has been fostered to some extent by the Horizon 2020 programme – and should be through Horizon Europe. Yet, despite the many uncertainties about the future impacts of climate change, which are often identified by stakeholders, both public and private, there is a critical need for administrations, as well as businesses, at all levels to consider all aspects of climate change through developing and implementing plans that allow adaptation to gradual change and foster resilience, especially to extreme events.

This requires multi-level and cross-sectoral coordination and resources for development and implementation, as called for in the national climate change adaptation strategies (CCAS) that the European Commission encourages Member States to adopt and, for example, in the Action Plan for EUSALP (European Commission, 2015a), and the guidelines published by the Alpine Convention (Alpine Convention Platform "Water Management in the Alps", 2014) (Alpine Convention, n.d.). These link to the need – and opportunities – for increased trans-regional action through the macro-regional strategies, instruments such as the Alpine and Carpathian Conventions, and Interreg programmes to develop capacity by sharing knowledge and expertise both within and between mountain regions. Examples of relevant initiatives include the C3-Alps capitalisation project (2012-14) – which brought together the results of previous Alpine Space projects on adaptation, made recommendations on enhancing implementation of

CCAS and developing regional and local action plans, and established a Climate Adaptation Platform for the Alps[5] – and the current Alpine Space project: Multidimensional governance of climate change adaptation in policy making and practice (GoApply)[6]. Nevertheless, it should be noted that the levels of relevant activity have been far less in mountain regions other than the Alps, although they face similar trends. This calls for an increased focus on climate change within Horizon Europe and Interreg in the forthcoming programming period.

4.6.2 Renewable energy

In the context of climate change, mountain areas have great potential for the production of renewable energy, thus contributing to mitigation targets and decarbonisation goals – and also providing opportunities for the green growth by facilitating the development of mountain economies. The energy available from mountain rivers has been used for centuries as a source of power, particularly for milling and, since the late 19th century, to produce electricity. In the Alps and most other mountain areas, most potential locations for the installation of major hydroelectric facilities have been used. However, there is still potential to increase the lifespan and efficiency of existing plants and to minimise ecological impacts through refurbishment and upgrading, for instance in Germany and Norway, which both have mature and highly developed hydropower sectors (IHA, 2017). In addition, mountain areas are the primary locations for pump storage facilities (Björnsen Gurung et al., 2016) (Soha et al., 2017). However, particularly since the decision to move away from nuclear energy following the Fukushima disaster in 2011, there has been increasing interest in small-scale hydroelectricity development across Europe. Nevertheless, the development of hydroelectricity may have significant impacts, including the loss of agricultural land, settlements, and ecological connectivity of both terrestrial and fluvial habitats. Another source of energy from mountain areas that has been utilised for millennia is wood; this may be a renewable source if sustainably harvested. However, its use as fuel also means the loss of carbon to the atmosphere; and harvesting and transport costs have to be balanced with the potential benefits. More recent sources of renewable energy from mountain areas are wind and sun. While both of these have great potential in these areas, reliability of supply is an issue (i.e. intermittent or too strong winds, cloudiness or snow decreasing inputs of solar radiation) and there are also other concerns with regard to aesthetics and, in the case of wind turbines, impacts on birds.

Historically, most of the hydroelectricity from mountain areas has been exported for industrial and domestic use in lowland areas, bringing few local benefits For instance, it has been estimated that only 25 % of the gross added value generated by hydropower in the Alps remains in the region (Björnsen Gurung et al., 2016). The situation is similar for much of the energy

[5] Further details about the project may be found on the project website.

[6] More information may be found on the project website.

from wind. However, in the context of the six 'D megatrends' of the new energy landscape of the EU's Energy Union (Šefčovič, 2018), renewable energy can contribute to not only decarbonisation, but also decentralisation, democratisation, and diversification. This is particularly relevant in mountain communities which are not connected to main grids, and therefore have often had to rely on expensive fuel imports, for instance in Greece (Katsoulakos and Kaliampakos, 2016).

The development of decentralised renewable energy sources can contribute to energy autonomy and security of supply, and also provide opportunities for economic development and community empowerment (Prasad Koirala et al., 2016). This is especially the case when the development of new infrastructure brings direct income to local communities. They may do this through returns on direct investment, which is often in partnership with external companies or with external support, for instance through the LIFE Programme or Cohesion or Structural Funds (Wishlade and Michie, 2017). Another source of income from renewable energy developments is in the countries where national legislation requires companies to give a proportion of their revenues to local communities, such as Norway and Switzerland for hydropower (Glachant et al., 2015). In Norway, this issue is so important for municipal authorities that they have established an association to ensure the continuation of this system (LVK, 2016). Similar legislation is in place in the UK and Spain for wind energy development. An example is the Eolic Plan in Alto Turia (ES), which delimits the territory where wind turbines can be installed and also created a fund for the redistribution of revenues. Alto Turia also has a forest plan to ensure the sustainable management of forests to produce biomass to be used as a renewable energy resource. It should be noted that both of these plans are under the provincial Valencian Strategy for Energy and Climate Change 2030. This example underlines again the need for cross-sectoral and multi-level approaches to planning that considers both the many opportunities for renewable energy production in mountain areas and effective ways to use this energy, and revenues from it, so sustain mountain economies in the context of climate change.

More widely, such issues emerge in many different mountain areas, underlining the importance of trans-national mechanisms to test different approaches and share both positive and negative experiences, for instance, the IMEAS project, funded by the Interreg Alpine Space Programme, which aims to develop practical guidance for the creation and integration of roadmaps based on multi-level approaches to climate change mitigation, energy innovation potentials, economic structures and control of energy plans in mountain areas[7].

[7] Additional information is available on the IMEAS project website.

4.6.3 Protected areas and sustainable tourism: key opportunities in cultural landscapes

National governments have designated 15 % of Europe's mountain area as protected areas under national legislation. Comparably, 14 % of the EU's mountain area has been designated within Natura 2000 sites – a proportion that is 50 % greater than for the EU as a whole (European Environment Agency, 2010a). Many of these areas have additional global designations as World Heritage Sites, UNESCO Global Geoparks or as the core areas of biosphere reserves designated under UNESCO's Man and the Biosphere Programme. While all of these designations are intended to preserve the biodiversity (and, in some cases, geodiversity) of these sites, they are largely cultural landscapes. Thus, while the management objectives of some of these protected areas refer solely to biodiversity conservation, those of others also stress other aspects of sustainable development: notably nature, regional, and landscape parks (Köster U, 2016), biosphere reserves, UNESCO Global Geoparks and, in some countries such as Scotland, national parks.

These newer models of integrated conservation recognise the importance of stakeholder engagement and often emerge 'from the bottom up' through the action of local governments and civil society. This is in contrast to protected areas with a dominant focus on biodiversity conservation, which have generally been established by national governments and have often been associated with conflicts between stakeholders with this focus and those more concerned with economic development. However, in certain mountain areas, often beyond the boundaries of protected areas, such conflicts continue to occur, particularly with regard to large carnivores (e.g. wolves, bears), which farmers may regard as presenting unacceptable risks to their livestock, while other stakeholders support increases in the range and populations of these species either from ecological principles or to attract tourists. To address this issue, the EU Platform on Coexistence between People and Large Carnivores has been established[8]. Comparable opportunities for exchange of knowledge and experience are also available through the networks of protected areas for the Alps and the Carpathians, and have been supported through Interreg projects.

While the formal reason for the designation of protected areas, whether under national legislation or by UNESCO, emphasises the conservation of biodiversity and, in some cases, other aspects of sustainable development, a significant reason for their designation in many mountain areas – especially those that are experiencing demographic and economic decline – is to provide a means for attracting tourists and providing opportunities for markets for high-quality products that are explicitly aligned to their areas of production through branding, thus providing opportunities for both employment and the maintenance of cultural landscapes. Such goals are also more widely associated with many projects to foster the development of tourism in mountain areas, supported through ERDF, LEADER and LIFE projects and other European

[8] For more information, see the Platform's website

and national instruments. Consequently, while it is recognised that protected areas have specific legislation and policies, and particular challenges, it is appropriate to consider protected areas within the broader context of sustainable tourism.

Tourists to protected areas, and mountain areas in general, are attracted by the dramatic scenery, many aspects of cultural landscapes, and attractive animals, plants and other species. Mountain areas also provide the setting for a number of activities which only, or mainly, take place in these areas (e.g. mountaineering, alpine and touring skiing, mountain biking). However, unless carefully managed, increasing numbers of tourists can result in significant environmental impacts, such as erosion, waste, and pollution along trails and around tourist facilities and access routes, as exemplified by the Tatra mountains (PL). An over-dependence on tourism can also exacerbate processes of land abandonment and issues relating to affordable housing, as discussed in later sections. This implies that tourism needs to be planned within broader contexts, as part of integrated regional economic development based on site-specific conditions and assets, so that income from tourism is used to maintain and reinvest in the cultural and natural heritage on which it is based. This is a key reason for investment to be from local sources rather than from distant cities: a key difference, for example, between the development of mountain tourism in the French and Austrian Alps.

For the managers of protected areas, taking a more sustainable approach means closer cooperation with stakeholders in the tourism sector. Another particular set of opportunities relates to the more effective integration of tourism and agriculture through agri-tourism, which may include tourists staying on farms and the production of local food, drink, and other products that are marketed as deriving from the specific territory. These may be branded and sold to local hotels and restaurants, strengthening local identity and creating other positive feedbacks, and also minimising transport costs. This is also true for local crafts, which should be sold as souvenirs, rather than imported products. Similarly, branding may also be established for entire resorts, such as Geilo, an official Sustainable Destination, recognized as such with a Norwegian label following a standardized process to integrate sustainability in local economy and identity. This label has helped Geilo to boost its touristic strategy and promote local identity and values (Jensen, 2016).

At a larger scale, the Alpine Pearls network facilitates cooperation between 27 communities from seven Alpine countries (www.alpine-pearls.com/en/). It links environmentally and climate-friendly tourist transportation destinations, so that guests may arrive without a car and have easy access to public transportation on site. While the network resulted from two successive Interreg projects, long-term sustainability has been achieved through membership fees. The success of this initiative is notable in the context of the conclusion by (Ogrin, 2012) that, despite the Protocol on tourism under the Alpine Convention, signed in 2005, any success in its implementation derived from local initiatives. This situation may have changed subsequently. In the Carpathians, the publication of the Strategy for Sustainable Tourism Development of the Carpathians followed consultation among more than 1200 individuals and organizations

(Ecological Tourism in Europe, 2014). However, the case study of the Tatra mountains (PL) showed that, while ESIF-related investments such as OP funding, or programmes such as LIFE or Interreg, provide means for introducing sustainable solutions, the local-level approach may not be harmonized with such interventions and too few actors profit from them.

In principle, trans-national and national strategies for mountain tourism (e.g. those of Austria and Norway) have important roles in supporting the development of sustainable tourism in mountain areas recognising, in particular, that, while such tourism needs to originate and be developed by stakeholders in mountain communities based on local knowledge and assets, their financial, technical and managerial resources are often limited, so that institutional support and capacity-building are necessary. This has been the approach taken in Isernia (IT), where support was provided under the NSIA for a coherent local development strategy including the concept of 'slow tourism', which was developed by a multi-level group of stakeholders.

Finally, it should be emphasised that all aspects of the tourism industry are subject not only to changes in fashions (e.g. from downhill skiing to snowboarding and snowshoeing in recent years), but also to the impacts of climate change. These may affect the resources for tourism directly (e.g. inadequate snow, whether throughout the entire season or at specific times, such as school holidays) or indirectly: whether positively (e.g. as mountain areas become more popular for summer tourism as coastal destinations become hotter) or negatively (e.g. through increased costs of transportation as fuel prices rise, or more frequent interruptions to transport systems by natural hazards). Recognition of such uncertainties emphasises even more the need for tourism to take place year-round rather than seasonally (with other benefits such as continuous employment and use of infrastructure) and to be integrated into regional economic planning that involves local stakeholders, public administrations, and NGOs, as well as the tourism industry.

4.6.4 Retaining active populations

As noted above, patterns of demographic change and sectoral employment vary greatly at every spatial scale across Europe's mountain areas. Compared to national averages, most mountain municipalities have a higher proportion of inhabitants over 60. Trends are more varied for the proportion under 15, which is lower in some areas – notably in the Pyrenees, the mountains of northern and eastern Spain, the Massif Central; Corsica, and the Italian Alps and northern Apennines – but higher in others, such as the Carpathians, most of the Alps, southern Spain, the southern Apennines, and Sicily. Proximity to urban areas appears to be an important factor, especially for the population over 60, but also, in most cases, those under 15 (ESPON and University of Geneva, 2012). Consequently, the goal of retaining an economically-active population is an imperative in many mountain areas – especially those which have no major urban centres or are far from these – as exemplified by the Interreg IVC 'Policies against

depopulation in mountain areas' (PADIMA) project[9]. Conversely, some mountain areas are experiencing increases in population, particularly those closer to urban centres to which commuting is possible, and also through the process of amenity migration. This section explores these two contrasting processes which, in some cases, may occur in the same area.

For young adults, key challenges in many mountain areas include: few possibilities for post-secondary education and training with direct relevance to mountain situations; limited, and often seasonal, employment, with low wages; limited economic diversification; and, in many cases, lack of affordable housing. With regard to the first, it should be recognised that many young people prefer to gain their post-secondary education away from the home area (whether urban or rural). In such cases, a key need is the availability of jobs that attract them to return to a place to which they have a strong attachment, thus reversing the 'brain drain' (Ferrario and Price, 2014). Nevertheless, some younger adults do wish to stay in their home areas, and academic institutions throughout Europe's mountain areas have been developing educational and training offers that specifically address issues of relevance to these areas. These may be at any level from skills training to post-graduate education, and may range from brief training or upskilling courses to multi-year degrees. Delivery may be place-based (e.g. on mountain agriculture, tourism and outdoor recreation, hazard management) in mountain locations or based on distance learning, which can provide access to education without travel and, if part-time, allows students to combine education and employment. Both delivery strategies (which may be combined in 'blended learning') are also relevant for more 'mature' individuals in order to retrain or upgrade their skills and knowledge. In areas where youth unemployment is over 25%, the Youth Employment Initiative (and similar national initiatives) may provide complementary support through funding apprenticeships, traineeships, job placements, or further education leading to a qualification[10].

The challenges of providing attractive, year-round, well-paid employment in rural mountain areas are complex. In many of these areas, key economic sectors, such as tourism, agriculture, and forestry, provide employment that is mainly low-paid and often seasonal. In some cases, this is not a problem – for instance, some people employed in European ski resorts work there in the winter months and then, during the rest of the year, either in European island or coastal tourism destinations or at ski resorts in the southern hemisphere. Such jobs often attract workers from other parts of Europe, particularly the new Member States (Sole et al., 2014) (Henningsen et al., 2014). However, such long-distance migratory patterns are not desirable or possible (e.g. for family reasons) for everyone. This implies a need for reliable year-round employment and/or self-employment; rates of the latter are often particularly high in mountain areas. In some cases, people may work in one sector – such as tourism, especially where different activities can be developed to attract visitors in different seasons. In other cases, one

[9] Information about the project, including the final report and guidelines, is available on the project website.

[10] See webpage at http://ec.europa.eu/social/main.jsp?catId=1176

solution is sequential employment in multiple activities, such as skiing in winter and forestry in summer; here, collaboration between employers in the different sectors, facilitated by chambers of commerce or government agencies, can be critical. Another solution may be through the development of new economic activities through entrepreneurship and innovation, as discussed in the following section. A further option, which has long characterised many mountain areas, especially those with larger urban centres, is pluriactivity (i.e. simultaneous work in multiple sectors, such as agritourism or working in a factory on weekdays and farming over the weekend and/or in the evening) – whether for an individual or a family, e.g. (Weiss et al., 2016). Such situations are not easy to analyse from employment statistics.

While the availability of a source of income is one critical factor for maintaining populations in mountain areas and/or attracting people to live there, another may be the availability of other prerequisites to attract people to live there for other reasons. A first set of these relates to attractive landscapes, with opportunities for recreation and a high quality of life, bringing in amenity migrants, who may be working – often in 'lifestyle' occupations (whose primary motivation may not be their income) or remotely (whether using digital means, travelling to an urban centre for a few days a week, or both) – or partly or fully retired (Moss and Glorioso, 2014). For these different groups, a second set of prerequisites relates to the availability of infrastructure, particularly high-speed broadband, mobile phone access, and reasonable access to urban areas where other amenities (e.g. health care, shopping) are available. However, amenity migration has both positive and negative consequences. Of the latter, perhaps most critical is that the financial assets and disposable income of the new arrivals are typically greater than for many longer-established residents, often resulting in price increases, especially for housing – so that indigenous young people can no longer afford to stay in their home areas, and young families cannot afford to move in. It should be noted that this issue also emerges when people from urban centres buy property for second homes which they only use for a few days or weeks each year: a major issue in many tourist resorts (Hall, 2014). A further negative consequence, especially when the new arrivals are older, is increased demand for medical and social services, which are often already under pressure. Conversely, one of the positive consequences is that the provision of such services can provide new opportunities for employment; another is that the new arrivals may bring new ideas and well-founded experience and have the time to apply this in their new places of residence, which may lead to social innovation, as discussed in the next section. It should be recognised, however, that not only the financial contrasts but also the differing value and belief systems of long-term residents and in-migrants may lead to conflict – until common ground can be found.

Finally, it should be recognised that the availability of reliable transport connections is a key factor in retaining active populations in mountain areas. This has two components: infrastructure and services. The costs of constructing and maintaining transport infrastructure are higher in these areas because of the steep topography and, often, narrow valleys and high risks of natural hazards. TEN-T corridors cross many mountain areas, but these major investments have focused on connecting major urban centres and often concentrate economic

activity near access points (e.g. railway stations, highway interchanges) and can exacerbate disparities of access at increasing distance along secondary transport networks, thus increasing physical and social isolation and limiting opportunities for economic development. Thus, in addition to the imperative of providing a robust, integrated and, where possible, multi-modal transport infrastructure, the provision of reliable transport services is important in many contexts. On a year-round basis, commuters to nearby lowlands or urban centres need to be sure that they can get to their jobs, and back home, every day. Schoolchildren and students often have to travel to other communities – increasingly as the level of education increases, from primary to post-secondary. People who are older, disabled or in low-paid jobs may not have access to a car. Seasonally, both tourists themselves and employees in the tourism industry may depend on reliable public transport. In all of these cases, public service obligations (PSOs) may be required to ensure that these services are provided, despite the lack of critical mass that would ensure profitability in an open market, as explored in the case studies for Alto Turia (ES) and inland Cote d'Azur (FR). Subsidized public transport may also be important in achieving other goals such as energy efficiency, as noted above for the Alpine Pearls network.

To conclude, the various issues discussed in this section – education and training, employment opportunities, and infrastructure (e.g. digital, health, transport) and related services – all interact and need to be considered jointly in cross-sectoral planning and investment at many scales, from individual mountain communities to mountain regions. This is particularly important when limitations of financial and human resources mean that it is necessary to develop and implement shared services which support a number of communities in a regional context, as is the case within many PSOs.

4.6.5 Fostering innovation

Linkages between migration and social innovation in European mountain areas have recently been studied by Gretter et al. (2017) and Perlik and Membretti (2018), who note that, in Italy, about 30% of migrants by necessity (i.e. poorly-trained, low income) or force (fleeing conflict in their home countries) are hosted in mountain areas, mainly in the Apennines. They suggest that efforts to integrate migrants can benefit mountain communities in many different ways, and that these efforts may be regarded as a form of social innovation. While the imperative of refugees in mountain areas has previously been little explored, it combines two of the triggers of social innovation: external shock and processes of demographic change (the other is the gradual deterioration of public services). The case studies from inland Cote d'Azur, Isernia and South Tyrol provide some examples of social innovations deriving from such triggers in

mountain areas, as do case studies in the ongoing 'Social Innovations in Marginalised Rural Areas' (SIMRA) project, funded by the Horizon 2020 programme (Euromontana, 2018)[11].

Historically, people in mountain areas have strong social ties, sense of identity and traditions of cooperation and self-reliance. These come together, for example, in the many institutions found in mountain communities for the cooperative construction of terraces and irrigation systems and the management not only of these, but also of summer pastures and forests. These institutions are typically built on the provision of voluntary labour to ensure both the production of goods for private benefit (e.g. the personal use and sale of crops, animals and their products) and the provision of ecosystem services (e.g. reliable water supplies, protection against natural hazards). In the context of the dynamic processes of change, in-migrants may bring new skills, experience, and perspectives that can complement existing knowledge and institutions. These may be further complemented by the expertise of regional research organisations.

Such drivers may also contribute to innovation processes more widely, taking advantage of other specific characteristics and opportunities of mountain areas to create niche products, for example though the production and processing of high-quality food whose origin can be particularly linked to the specific region by labelling; or the manufacture of equipment for winter sports or mountaineering. Other innovations may derive from local needs; for instance, telemedicine for communities which are too small to have certain medical services. However, national, regional and local governments can play vital roles in facilitating innovations. For example, countries such as Austria, France, Slovenia and Switzerland have proactive development strategies for mountain areas; and Norway has a specific programme to support innovation in mountain areas (Oppland fylkeskommune, 2018). Regional and local governments, often with CLLD funding, can facilitate a culture of innovation through the provision of buildings or office space (often in buildings which are no longer needed for their original purpose), often to create 'clusters' of entrepreneurs; digital infrastructure; and training. The latter is often vital as necessary technical, business and entrepreneurial skills often need to be enhanced or even created. Another need is often to create value chains; for instance, with regard to the use of local foods in tourism establishments, or by creating a circular economy linked to the forest supply chain (Euromontana, 2017). More widely, innovation is a key element of smart specialisation, and may be fostered by the European Commission; one example is the Smart Specialisation Platform on Agri-food[12] which provides links to the activities of many mountainous regions. Again, this emphasises the value of trans-national cooperation for knowledge exchange.

[11] The project database contains many more examples from mountain areas

[12] http://s3platform.jrc.ec.europa.eu/agri-food

4.7 Key challenge for mountain areas: improved coordination and multi-level governance

While Europe's mountain areas share topographic similarities, they are very diverse in every aspect at every spatial scale – both within and between mountain areas. At present, the only specific policies for mountain areas within the EU concern agriculture and quality products. The European Parliament has called for an agenda for the EU's mountain areas which, critically, should aim at "achieving the long-term development of mountainous regions and the areas dependent on them" (European Parliament, 2016a) This recognizes that the opportunities and challenges identified above not only concern topographically-defined mountain areas, but must be considered in wider contexts. For instance, mountain areas provide many ecosystem services and, in particular, may be regarded as the 'water towers' of Europe; the majority of the beneficiaries of mountain water – whether for agriculture, industry or domestic use, or as a source of renewable energy – are situated outside the mountains. Similarly, there are flows of people between mountain areas and nearby urban centres outside the mountains: e.g. commuters, students, tourists, and for recreation, health care, and shopping. These flows operate at various temporal (e.g. daily, weekly, seasonal) and spatial scales. There are many other examples.

Such interactions are one of the challenges identified by Gløersen at al. (2016) with regard to developing a single policy approach to the mountain areas of the EU. A second relates to the criteria according to which they would be delineated, and the spatial scale(s) at which these criteria would be applied for policy development and implementation; for instance, cohesion policy programmes have been designed at too aggregated a level to properly recognise and address the specific characteristics of mountain areas, which usually occupy only part of NUTS 2 (or even NUTS 3) areas. Consequently, Gløersen at al. (2016) conclude that "a 'one size fits all' approach to the mountains of the EU as a whole would not be effective" (p. 60) because of the diversity of situations, including levels of economic development and institutional and governance structures. They propose that integrated approaches are needed to address demographic, economic and ecological challenges and to realise opportunities.

The findings in the present report lead in the same direction: topics such as climate change, energy production and distribution, transport and IT infrastructure and services, and all aspects of regional economic development are connected. Consequently, cross-sectoral coordination is essential to address these complex interactions. This need that is made particularly urgent because of the impacts of climate change, which are likely to be particularly significant in mountain areas – with much wider implications, e.g. with regard to floods and other natural disasters that originate in mountain areas, and the vital transport corridors that cross them. In this context, particular attention should be given to the development of regional climate change adaptation strategies (CCAS) within the context of the national CCAS, called for in the EU's 2013 Strategy for Adaptation to Climate Change. These should be aligned as much as possible to other policy instruments, for instance with regard to natural hazards (cf. the European

Commission's Action Plan on disaster risk reduction) and the development and effective use of renewable energy, in line with the EU's Energy Union strategy.

More broadly, the Common Strategic Framework should ensure more effective and efficient coordination and integration of the various funds at the national level, for instance between ERDF and ESF, ESIF and LIFE, and ERDF and national policy strategies. At sub-national levels, ITIs should be used to develop and implement regional 'place-based policies' tailored to the specificities of each particular mountain region within its broader context. Few Member States did this during the current programming period. At local to regional scales, there is a need to use and develop tools and models to support projects and initiatives that build on regional specificities to capitalise on synergies between different sectors, such as biodiversity conservation, land management (especially agriculture and forestry) and tourism. These include CLLD tools, innovative networks (e.g. Alpine Pearls) and novel approaches such as nature, regional and landscape parks, biosphere reserves and UNESCO Global Geoparks – and can contribute to the goals of Smart Specialisation. Nevertheless, a key prerequisite to such initiatives is the availability of suitable transport and IT infrastructure and services, especially away from major access routes. The key challenge is to improve coordination between EU policies such as Trans-European Networks focusing on the main transportation and communication axes, national and regional measures to develop and maintain secondary connections, and 'soft' initiatives targeting economic and social development in relation to available infrastructure.

At a wider spatial scale, a notable characteristic of Europe's mountain areas is that many are shared between multiple states. There are two conventions which specifically concern mountain regions (the Alps and Carpathians), and one macro-region that is centred on a mountain region (EUSALP) – although its boundaries are more extensive. These governance structures and their associated policy instruments, as well as trans-national and regional Interreg programmes, present particular opportunities for multi-level collaboration in testing approaches to policy development and implementation; sharing of experiences and knowledge; and education, training and capacity-building. While it should be noted that the plethora of overlapping structures can also be a challenge, there are good examples of constructive collaboration, for instance between the Interreg Alpine Space Programme and EUSALP, although its Action Groups are currently focused more on projects than on strategic policy development. Finally, at the European scale, research targeted on the particular challenges and opportunities of mountain areas – especially those other than the Alps, which have long been a primary focus of European mountain research – is needed, and should be prioritised through specific calls in Horizon Europe. A greater integration of policies to enhance socio-economic development trajectories implies more effective cross-sectoral working and the greater participation of all concerned stakeholders: from all levels of government, business, research, and civil society. In many cases, the necessary structures and mechanisms are available; the challenge is to use them more effectively, building particularly on the long traditions of collaboration in mountain areas to foster resilience in an uncertain environment.

5 Islands

The common and inherent characteristic of islands is **insularity, i.e. disconnection from a mainland** (ESPON and University of the Aegean, 2010). Islands comprise all territories which are physically disjoint from the European mainland or the main islands of the British Isles (UK and Ireland). Eurostat defines islands as territories which have a minimum surface of 1km^2, no fixed link between the island and mainland, and a minimum distance of 1km between the island and mainland. The classification of islands also includes a resident population of more than 50 inhabitants (European Parliament, 2016a).

From a statistical perspective, island regions are classified as NUTS 3. The classification can correspond to a single island, be composed of several islands, or be part of a larger island containing several NUTS 3 regions. A number of islands in Europe are statistically classified as NUTS 2 – e.g. the Balearic Islands, Sicily and Corsica – and there are also two island Member States (Malta and Cyprus).

In total, 15 of the 28 EU Member States have islands within their territory. There are 362 islands with a permanent population of more than 50 inhabitants, and another 228 with even smaller populations (European Parliament, 2016a).

While the statistical definition is clear, the characteristics which define islands differ. For instance, population varies significantly from 50 people to over 5 million as in the case of Sicily. The land area also varies from 1km^2 to over 25,000 km^2 in Sicily. The degree of remoteness varies depending on factors such as distance and reliable transport nodes. Some islands are relatively close to centres of economic activity while others, such as the Shetland islands, are remote.

Sanguin (2007) distinguishes between “self-centred islands” which are organised around one main island, such as Malta and Madeira, and islands that are dominated by a capital city, but also have significant secondary cities or towns such as Sardinia, Corsica, and the Balearic and Canary Islands. Some islands also form part of an archipelago and therefore tend to face double insularity issues, including higher costs of accessibility.

Insularity gives rise to several challenges, but also endows islands with natural and cultural assets that are the foundations of development opportunities. The effects of insularity largely depend on an island’s institutional status. The ‘mainland’ of an ‘island state’ is the European continent (and other neighbouring continents); the mainland of an ‘island region’ is the rest of the country it belongs to; the mainland of an island municipality or group of municipalities is the rest of the region. In terms of policy design and implementation, island states and island regions with a large degree of autonomy may experience specific governance opportunities and challenges linked to close ties between a limited number of actors. Other islands depend on the capacity of central authorities located on the mainland to take proper account of their specific situation in their policies, and to take adequate measures to integrate them in networks

of exchange and communication. However, national systems of financial redistribution and solidarity may improve their resilience in the face of changing economic circumstances.

Insularity creates objective constraints such as **remoteness** from urban centres as well as low potential **accessibility** to European and national markets. Islands often have a high dependence on external transport linkages; the standard of service provided by sea ferries and other forms of physical connectivity plays a crucial role in influencing the size of island populations and their quality of life and economies. Virtual tools often attenuate but do not completely compensate for deficiencies in physical connectivity.

Another commonality in islands is that the small population size results in a **lack of critical mass** in markets for resource inputs and consumer base. This often restricts the capacity of island SMEs to exploit economies of scale, scope and diversification, curtailing potential opportunities offered by the European Single Market. Furthermore, the small size and other territorial characteristics of many islands often necessitate the prioritisation of sustainable resource use over the promotion of business competitiveness, especially as compared to mainland regions (ESPON and University of the Aegean, 2010).

In general, most island people live in coastal areas where they face major climate change-related challenges, some of which require urgent adaptation efforts. Islands are particularly vulnerable to freshwater and land scarcity, extreme events and sea-level rise; such impacts could limit access to food, water, land, and energy resources.

Most islands are not self-sufficient in agricultural, energy and industrial products, and tertiary-sector services. This necessitates a higher dependence on physical transport of goods and resources through sea and air connectivity, with consequent exposure to the associated costs and potential risks, also in terms of food and energy security.

The extent of these inherent characteristics, however, differs across islands, depending on factors such as:

- Accessibility to main centres of economic and social activity: islands which are remote and/or face double insularity are more likely to be affected by these challenges;
- Island with a low population base tend to lack critical mass to a greater degree than islands with a high population base;
- Islands with low-lying coastal areas are more likely to face climate change pressures;

Indeed, while islands are similar in terms of their disconnection from other territories, islands have intrinsically diverse characteristics which lead to differences between them. The development outcomes of islands are rather diverse and heterogeneous, and economic growth performance varies widely. For example, Formentera and Fuerteventura (ES) and Gozo (MT) recorded an average economic growth of over 6%, in nominal terms[13], between 2014 and 2016, while the economies of Chios (EL), and Ikaria (EL) shrank in absolute size over the same

[13] Source: Eurostat (2017)

period. Larger islands tend to mirror, more or less, the national growth performance through two-way causal relationships – e.g. Sardegna (IT) – even if the fluctuations may be greater. For instance, the impact of the financial and economic crisis on the Canary Islands was greater than that for Spain as a whole. The migration crisis has had a significant impact on the Greek islands of Lesbos.

There are also notable differences in the distinctive competitive advantages of islands. For instance, some have developed a competitive advantage in tourism, while others have developed a competitive advantage in fisheries and energy (particularly the Nordic islands).

Heterogeneity in economic activity among islands is also reflected in demographic flows, often through two-way causal relationships. Some islands experience population driven mainly by immigrants; others experience depopulation which is very often related to the challenges of ageing populations, as the younger cohorts tend to be most mobile (ESPON and University of the Aegean, 2010),. There also marked differences in environmental pressures across different islands: population densities vary from around 3 inhabitants per km^2 in Iceland to more than 1,500 inhabitants per km^2 in Malta[14].

5.1 Effects of insularity depend on population, institutional status and climate

The degree of autonomy in policy formulation and implementation differs among island regions. Island states, such as Malta and Cyprus, tend to address issues related to insularity more prominently in national policy documents, given that they are island states. Such issues tend to feature less prominently in national policy documents for countries in which island regions form part of national territories, such as those in the North Aegean (EL), Sareema (EE), and the Wadden Islands (DK), which are governed as regions, and Tenerife (ES) and Bornholm (DK) which are municipalities within larger regions. Consequently, as policy autonomy for islands increases, this tends to provide for greater sensitivity to island specificities.

While insularity characterises all islands, the degree of other specificities differs, depending partly on the geographic differences. For instance, islands in the Baltic sea are different from those within the Atlantic and the Mediterranean Sea. The Baltic islands are smaller on average, closer to each other and closer to the mainland. There are almost 1,600 populated islands with the vast majority classified as local communities. In contrast, Atlantic islands are more remote and fewer in number, with rather low population densities. The vast majority of Atlantic islands are also local communities. Furthermore, the Mediterranean region has long been characterised by large numbers of tourists that far exceed the number of local residents. The climatic conditions of islands in the Mediterranean has led to islands in the region focussing

[14] Source: Eurostat (2017)

more intently on the development of tourism, which leads to considerable strains on the local environmental fabric (Baldacchino, 2017).

5.2 Objective factors of constraint depend on each island's characteristics

To a greater extent than for other geographic specificities, exposure to objective factors of constraint vary, depending on the size, population, location, urban endowment and institutional status of each island Table 5-1.

Table 5-1: Objective factors of constraint in islands

Constraint	Issues in islands
Lack of critical mass (demographic and/or economic)	A lack of critical mass translates itself into limited capacity to exploit economies of scale, scope and diversification, thereby curtailing potential opportunities offered by the European Single Market. However, the extent of critical mass varies across islands: islands with a relatively high population base, such as Sicily, Corsica, and Sardinia face fewer challenges associated with critical mass than islands with lower population bases. Challenges associated with critical mass are exacerbated in islands facing depopulation and consequent ageing population challenges.
Remoteness from urban centres	Remoteness from urban centres gives rise to a high dependence on external transport linkages. The standard of the service provided by sea ferries and other forms of physical connectivity has direct implications on the islands' population levels, economy and quality of life. This objective factor of constraint also gives rise to migration to urban areas, which in turn increases the depopulation challenges faced by some islands. However, this objective factor of constraint also differs across islands: some islands, particularly larger ones, are developing their own urban areas and/or centres of economic activity, while other islands are distant from such centres. Indeed, the extent of distance from urban centres and accessibility differs across islands. The most remote islands face the greatest challenges, compared to islands which can more easily access resources from their neighbouring regions.
Low potential accessibility in Europe	Insularity affects accessibility to European markets negatively. These connectivity challenges often lead to additional transport costs which act as an impediment to competitiveness and limit economic and social development. Some islands, such as Malta and Mallorca, have sought to address this constraint through the development of reliable transport nodes which, in part, has been driven by developments in the tourism sector.
Low potential accessibility in national context	Accessibility in the national context for islands is considered in relation to the gateway to and from islands. For instance, islands which face double insularity issues, such as islands forming part of the Greek and Croatian archipelago, face greater accessibility constraints compared to islands which are well-connected by means of maritime and air transport.
Insularity (physical or metaphorical), e.g. disconnection from transport and energy networks	Remoteness from the continent often leads to a situation where islands have isolated and weak energy networks, with a low possibility of interconnection. As a result, islands tend to rely to a greater extent on the use of fossil fuels and energy imports. This has led to a drive for 'Cleaner Energy for Islands' through the promotion of renewable sources of energy for islands. The provision of sustainable transport services, which is in line with the requirements of territorial cohesion, is often not adequately offered for islands due to market failure requiring the need for

	intervention through the provision of public service obligations as outlined in this section of the report.
Vulnerability (limited resilience in the face of external shocks or limited capacity to cope with change)	From an economic perspective, islands tend to be more exposed to external shocks as a result of the relatively higher trade openness, high degree of export concentration, and high dependence on strategic imports, such as food and fuel. From an environmental perspective, islands are more vulnerable to climate change impacts than the continental mainland. Island infrastructure, such as airports, sea ports and highways, is often located near the coast and hence particularly vulnerable to sea level rise and flooding. Governance structures are more likely to face greater challenges, in part due to the close personal connections in island communities, particularly on islands with low population, so that the independence of these structures may sometimes be challenged.

5.3 Variable urban endowment of islands

Different types of situations must be distinguished with respect to the urban endowments of islands:

- Islands with their own urban system (e.g. Cyprus)
- Islands that are part of the influence area of mainland cities (e.g. coastal islands of Croatia)
- Archipelagos and other situations of double insularity, where access to urban employment opportunities and services can be an issue for all secondary islands.

In the two latter cases, the critical issue is whether the market provides transport services needed to access essential services that are provided in urban areas and, when relevant, makes it possible to create a labour market that extend beyond individual islands. As shown in the Public Service Obligation Module (see Annex 1), this is not always the case.

Addressing accessibility is also a key element for islands to exploit the opportunities which may arise from insularity. For example, as highlighted in this report, islands can serve as havens for the conservation of European heritage, which tends to be an attraction for tourists from urban areas. Also, there are opportunities for islands to enhance the potential of their residential economy, by attracting long-term visitors who would like to experience a slower pace of life compared to urban areas.

5.4 EU policies mainly address transport-related aspects of insularity

When it comes to Transport Policy, EU policy recognises that ports play an important role in supporting the exchange of goods within the internal market and in linking peripheral and island areas with the mainland of Europe. Improving accessibility and connectivity for all EU regions, as well as taking into account the specific case of islands, are among the main priorities of the Trans-European Transport Network (TEN-T) guidelines. Indeed, Article 170 of the TFEU, regarding Trans-European Networks, states that EU actions shall take particular account of the need to link islands, landlocked, and peripheral regions with the central regions of the Union. State aid for the development of less favoured regions is mentioned in Article 107(3) of the

TFEU as one of the categories of aid that can be exempted from the Treaty ban on state aid. This Article allows aid to be used to facilitate the development of certain areas, where this does not significantly affect competition ('category c' regions) (European Parliament, 2016b).

In addition, the Common Provisions Regulation (CPR) allows for the modulation of co-financing rates for Cohesion programmes, as per EU No 1303 (2013) Art 121(4)(a) which can be applied for areas with severe and permanent natural or demographic handicaps, including islands. The need for flexibility in the concentration of ERDF and ESF in specific thematic objectives is also recognised for island Member States and the islands in Member States that benefit from the cohesion fund.

There are also specific provisions in EU regulations that eliminate restrictions on the freedom to provide maritime transport services within the EU. Council Regulation (EEC) No 3577/92 of 7 December 1992[15] allows Member States to conclude public service contracts in the interests of maintaining adequate cabotage services between the mainland and its islands and between the islands themselves. The European Economic and Social Committee's opinion on 'Specific problems facing islands' considers that this regulation needs to be improved and that the principle of territorial continuity should be applied by the EU.[16]

Integrated place-based strategies should promote the territorial potential of islands based on their unique characteristics. Furthermore, policy intervention can be needed to enhance term economic resilience in island economies. Specialization strategies must not compromise medium to long term flexibility allowing island to adapt to external shocks. Specific challenges related to the limited employment opportunities in islands can be addressed through targeted policies that foster integration, with employment opportunities across multiple sectors and informal economies, to help avoid risks related to dependency on seasonal employment.

Finally, cooperation is crucial in increasing collaboration in the development, design, and implementation of strategies and policy measures, particularly those which affect islands. With respect to European territorial cooperation, maritime cross-border cooperation programmes are essential for island regions to reduce their isolation and ensure their full integration into the EU. Specific technical assistance schemes to boost cooperation between islands could be also introduced. For instance, the principles of the 'Clean Energy for EU Islands' initiative, which embraces modern and innovative energy systems, can be extended to other initiatives addressing other policy areas. However, some islands, particularly those that face double insularity issues, may also face challenges in establishing such collaborations due to their disconnection from the mainland.

[15] Council Regulation (EEC) No 3577/92 of 7 December 1992 applying the principle of freedom to provide services to maritime transport within Member States (maritime cabotage).

[16] Opinion of the European Economic and Social Committee on 'Specific problems facing islands' (own-initiative opinion), OJ C 181, 21.6.2012, p. 7–13, Conclusions and recommendations, section 1.5.

5.5 Insularity: a governance strength and challenge

One of the greatest strengths of islands, particularly small islands, is that effective decisions can be taken quickly. With an effective governance function at the right level, people can be encouraged to become engaged in both the formulation and implementation of policies.

Some islands have built on their strong social ties and community involvement. This in turn, has helped to trigger innovation and provides a distinct, resourceful environment to implement innovative approaches. For instance, Bornholm (DK) has successfully implemented a social innovation concept based on the creation of business activity in the village of Aarsdale, where all shops ceased to operate after the fisheries crisis. The strong active civil society in Bornholm led to the setting up of a shop purely based on volunteer work; this has led to strengthening the reputation of the village as an attractive place to live.

However, in other islands, particularly the small ones, the excessive proximity between elected representatives, senior officials and stakeholders may induce a degree of clientelism which impedes the proper implementation of policy measures (Baldacchino, 2012; Corbett, 2018). In addition, the ability to capitalise on strong social ties and cooperation in order to overcome an island`s inherent hurdles is not ingrained in all island communities. For instance, civil society in Saaremaa (EE) is still weak. Furthermore, even in islands where collaborative culture exists, this could face threats stemming from excessively rapid demographic change. This change in population dynamics can be a threat to closely-knit communities and common social goals. Consequently, the attraction and retention of necessary demographic cohorts strongly influences the pace of innovation in an island as well as its socio-economic development.

Another possible threat to the community aspect within islands is the over-reliance on central government. This mindset, which is often a barrier to innovation on small islands, limits the benefits associated with a bottom-up approach to policy formation. A centralised governance structure may not always be responsive to the inherent characteristics of the island concerned. For instance, the island specificity is often disregarded in the case of Bornholm (DK), which is an island municipality within a region. Lack of communication between national and regional authorities also leads to untapped opportunities for areas with such territorial specificities. Measures need to be tailor-made in order to address specific challenges within these areas.

Against this background, the implementation and operationalisation of the subsidiarity principle is crucial to ensure that decisions are taken as closely as possible to the citizen and to ensure that EU policies are implemented in a manner which is sensitive to the territorial challenges of islands while capitalising also on the opportunities that exist and which can be spearheaded by islands.

In particular the implementation of the subsidiarity principle can draw on the benefits that are derived from a close-knit community that often prevails, particularly in small islands. Indeed, islands are often characterised by a number of key actors who take on a number of social,

economic and political roles bringing together the different spheres. The decision chain, as explained above, is also typically shorter allowing for the adoption of effective solutions. A case in point is the “bright green island Bornholm” initiative’, which was carried forward by a very small group of people until it was eventually adopted as a strategy by island authorities. The Clean Energy for EU islands seeks to capitalise on such bottom-up dynamics. It supports 26 European islands with technical support, capacity-building activities and networking opportunities to help them become more self-sufficient, prosperous and sustainable. European and national authorities could apply similar approaches to support the strengthening of a governance system which emphasises a **place-based approach** to governance aimed at engaging all levels of governance in the decision-making process

However, the challenges of close-knit island communities also need to be recognised. For instance, the intensity of relationships in islands may also lead to issues of conflicts of interest and clientelism. As a result, adaptations may be required to ensure that specific policy interventions, such as the case in PSOs, address these challenges while ensuring that the process is also functional and effective.

Furthermore, in order to address potential situations of unsatisfactory governance, both vertical and horizontal dialogue should be undertaken to ensure that interactions by local actors is undertaken in a manner which also addresses dialogue at the vertical level. Towards this end, regional development agencies (Hughes, 1998) have an important role to play in bringing together these elements while promoting the socio- economic development of islands.

5.6 Connectivity and energy-related challenges and new development horizons for islands

This section discusses the key issues for islands relating to connectivity constraints stemming from the islands’ insular status, the recognition of relative strengths and opportunities of islands, and the contribution of community ties to their economic and social development. Each of these themes are explored in terms of the findings derived from the module reports as well as the case study areas of ESPON BRIDGES: North Aegean Archipelago (EL), Saaremaa (EE), Bornholm (DK), Malta and Gozo (MT), Middle Dalmatian Archipelago (HR), Tenerife (ES), Nordland (NO), and Wadden Islands (DK).

5.6.1 Connectivity remains an overarching challenge for islands

Transport

Insularity, which leads to accessibility challenges, is often regarded as the most significant impediment to economic and social development for islands. Often, sustainable transport services, which is in line with the requirements of territorial cohesion in terms of quantity, quality and cost of offered services, are not adequately offered for islands (Chlomoudis et al., 2011).

At the same time, the lack of frequent and reliable transport systems has negative impacts on flows of people, goods and services to and from islands and imposes additional costs, often

dubbed the costs of insularity, affecting the economic competitiveness of insular territories (European Parliament, 2016c).

Island residents are dependent on connectivity for day-to-day activities, work, and tourism, and also to meet their basic health and education requirements. For instance, in the Middle Dalmatian Archipelago (HR), the island of Šolta does not have a high school. As a result, many young islanders commute to Split daily for their obligatory high school education. Likewise, tertiary education provision is severely restricted in Gozo (MT) and the Wadden islands (DK), and specialised health care is not available in most islands.

The private sector is often not interested in the provision of transport services, as the small size of the market makes this unprofitable. Consequently, the government intervenes through the provision of a **Public Service Obligation (PSO)** for transport, through which state aid is provided in the form of subsidies to remove the financial burden on the private sector for the benefit of the inhabitants. A number of case studies in ESPON BRIDGES[17] show that, without the PSO guaranteeing the frequency and quality of ferry transport, islands would lose inhabitants, particularly younger and active ones. Indeed, the PSO often plays a significant role in helping to maintain the quality of life for the local population within islands as well as mitigating the negative effects of insularity.

The case studies show the importance for objective factors of constraint for islands to be recognised and prioritised in national transport policy documents. For instance, the accessibility constraints for Gozo are highlighted in the National Transport Strategy for Malta, paving the masterplan on national transport. From a governance perspective, the Ministry of Gozo plays an important role in highlighting the territorial specificities of Gozo and in collaborating with other Ministries both to address the challenges which the island faces and act on opportunities.

The case studies also highlight the importance for PSO contracts to be clearly defined especially in terms of the obligations of the service providers. Contracts should furthermore incentivise the provision of efficient services and take into consideration new mobility needs which might derive from an ageing population and longer peak tourist seasons.

While the provision of PSOs partly alleviates the connectivity challenges faced by islands, inherent challenges remain, as accessibility is a required condition but not sufficient to guarantee further economic development (Raugze et al., 2017). Indeed, while increased connectivity addresses the challenges of insularity, in certain circumstances increased connectivity has also led to human capital outflow from islands. Furthermore, in most islands, the transport service provided through the PSO is the sole mode of transport, leading to significant dependence on the service as well as pressure on the infrastructure.

[17] Case studies were conducted on PSOs for Gozo, Wadden Islands, Bornholm, Nordland and the Middle Dalmatian Archipelago.

These connectivity challenges also lead to additional transport costs. In this regard, the Bornholm Regional Municipality (DK) has been lobbying for road equivalent tariffs, i.e. the principle that travelling 1 km on water should not cost more than traveling 1 km on road or rail. In addition, the aid granted to transport carriers is not necessarily enough to put island industries on a level playing field with those on the mainland. To address these challenges, the CMPR argues that an operating aid scheme for island companies should be set up to cover the additional transportation costs in the same way as the outermost regions and low population density zones (General Secretariat of Conference of Peripheral Maritime Regions of Europe, 2016).

5.6.2 Energy

Connectivity is also an overarching challenge when it comes to energy for islands, as they are often isolated microsystems which are overly dependent on fossil fuels and energy imports. This leads to relatively expensive systems which are polluting and ineffective. For instance, because of remoteness from the continent and fragmentation of the territory, the Canary Islands (ES) have six independent island electrical systems, with small and weak networks and low possibility of interconnection.

The EU is addressing the dependence of islands on fossil fuel through the Clean Energy for Islands[18] initiative. This promotes energy self-reliance of islands through renewable energy production and encourages the reduction of the dependency on costly fossil fuel imports. The case studies point to key factors for this initiative to be successful: notably, favourable framework conditions involving a specific remuneration system applicable to renewable energy installations and the use of EU funding instruments such as ERDF to encourage investment by households and small industry.

Considerations should, however, be made to islands which are very densely populated, as the limited availability of land, land and space fragmentation, and the absence of solar rights impose relatively higher costs of solar energy. Furthermore, while developing renewable energy capacities is an important element in lowering the import dependency of the energy system, the intermittency of these sources may also generate additional system costs. Efficient coordination between different layers of governance is required, and there is scope for disseminating good practices and developing co-operation between islands.

Investments in renewable energy also needs to be complemented by climate adaptation measures, especially as islands tend to be less climate-resilient (Beniston et al., 1998; Nicholls and Klein, 2004). Islands face risks as a result of higher air and sea temperatures, changed rainfall regimes, weather extremes, and sea level rise. Some risks are exacerbated by the fact that island infrastructure – such as airports, sea ports and highways – is often located near the

[18] The initiative was pursued during the Maltese Presidency and signed by the European Commission and 14 EU Member States.

coast and hence particularly vulnerable to sea level rise and flooding. In addition, many islands are strongly dependent on revenues from the tourism industry, and tourists' motivation to visit islands can be compromised by climate-related effects. In this context, the experience gained by Crete[19] deserves recognition, as the region incorporated lessons from other regions into their climate change adaptation strategy. The regional network was considered important for sharing and spreading best practice as well as transferring solutions. In addition, when the adaptation strategy was drafted, different governance levels were consulted so that stakeholders were primed for future action (European Commission, 2013a).

5.6.3 Pursuit of new horizons

Despite the inherent challenges associated with the insular character of islands, certain opportunities arise from the geographical specificities of islands: they can become 'lands of opportunities' by investing in their relative strengths (European Parliament, 2016c).

Conservation

In general, islands tend to be endowed with a strong set of 'natural' assets, such as the marine environment and fishery resources, as well as cultural assets. Cultural assets are a source of attraction for tourism and may be a basis for the development of new tourism niches. Several islands also possess high quality flora and fauna, increasing opportunities not only for tourism but also for bioscience research. In the Middle Dalmatian Archipelago (HR), the ecological cultivation of traditional varieties and breeds, and production of traditional and ecological goods on family farms are an important part of the offering for rural tourism.

There are opportunities for islands to serve as safe havens for the conservation of European heritage: gastronomic, linguistic, artistic and/or culinary. Several island jurisdictions are using place-branding initiatives to turn tourism marketing into a means of diversifying their economies and expanding their innovative capacities. For example, the North Aegean Islands (EL) have been pushing forward a number of innovative activities in the field of agro-food processing, such as creating a label for the honey of Lemnos and developing products from the Mastiha tree, which grows only on the island of Chios. Similarly, the food sector of Bornholm (DK) is its own brand, so much so that Bornholm is known as the "food island".

There are also lessons to be drawn from the North Aegean Islands, which have introduced the "From the field to the shelf: back to the future" initiative, aimed at bringing back products that seem to have been forgotten, but processing them through new, modern and innovative technological means. In such contexts, islands can contribute towards sustainable development in the EU as well as the conservation of European heritage.

[19] RegioClima project, supported by the EU's Interreg IVC.

Sustainable Tourism

A significant number of islands in Europe significantly depend on tourism, with the sector providing job opportunities and contributing towards economic development. However, this dependence does not come without challenges. For example, limited availability of land and concentration of accommodation leads to habitat fragmentation or loss and the reduction of biodiversity. Furthermore, islands are environmentally more vulnerable to the growth of waste from tourism; this is exacerbated by the disproportionately higher cost of waste disposal in islands, due to the limited land availability for landfills and waste treatment infrastructure. Marine tourism has also put considerable pressure on the environment with, for example, growing numbers of yachts and cruise ships in the Greek islands and the Dalmatian archipelago having impacts as a result of anchoring and noise.

A conscious and responsible approach to tourism, taking into consideration an island's ecological capacities and in cooperation with local communities, can bring increased opportunities in terms of economic development and improved well-being for its population. In the long run, making island tourism sustainable is crucial for the livelihood of island communities. Consequently, tourism activities should be monitored in order to avoid over-exploitation of natural scarce resources. While 'sun and beach' marketing provides a considerable competitive advantage, consumption should be optimized in the most sustainable manner. Economic and environmental sustainability aspects could be considered synergistically in order to compensate short-term losses of income through other means. For instance, while most income in summer would be generated from tourism, in winter the focus could be on jobs related to environmental protection.

The **residential economy** also ties in with the concept of sustainable tourism in the sense that the attraction of long-term visitors leads to fewer transport pressures. Furthermore, it is likely that behaviour of the residential economy would be more consistent with sustainability principles. To this end, the Lofoten islands in Nordland (NO) sought to strengthen the residential basis through tourism, by engaging in national and strategic actions to improve the accessibility of the region. These actions included the establishment of a new regional airport and the formation of stronger strategic alliances with the major companies providing passenger air transport to the region. Residency is regarded as crucial in attracting wealth and jobs to a region, and can be the mainstay of various different income sources within a region, whether from work, wealth, annuities or transfers (Segessemann and Crevoisier, 2016). Nevertheless, a strong reliance on the residential basis could also give rise to challenges for regions like Vågan and other parts of Nordland as the attraction of individuals who do not work in the area but spend their wealth in that area also requires a sustainable production base to fund necessary health and welfare services.

Innovation

There are lessons to be drawn from islands which have sought to actively promote innovation policy. Insularity leads to a degree of self-sufficiency in island communities. This may inspire

creativity, since the small scale of most islands results into a relatively short path from 'thought to action'. In this context, public policy measures should be encouraged in order to turn islands into innovative "test-beds" through developing an experimental "probing and learning" environment which could attract young, innovative and entrepreneurial people and activities. For instance, Bornholm (DK) has supported food innovation by offering the use of public kitchens for testing food products before bringing them to market. Similarly, Malta is making headway in regulatory innovation in fields such as distributed ledger technology, generic pharma and, more recently, medical cannabis. The small size of the market implies that any impact of such regulatory innovative concepts would be more contained.

Furthermore, the collaborative nature of islands should also be developed further. One example is the Smart Islands Initiative, which builds on years of collaboration between European islands and seeks to demonstrate that islands can be innovative and host pilot projects leading to knowledge on smart and efficient resource and infrastructure management (Smart Islands Initiative, 2017).

Digital Connectivity

For an increasingly broad spectre of economic activities, access to high-quality broadband is essential. For islands, access to high-quality broadband contributes towards overcoming physical remoteness, ensuring ensure accessibility of services including learning opportunities. Digital connectivity also has an important role in providing access to quality services of general interest, such as education and health, which is a precondition to avoid a decline in population. For instance, Sareema (EE) sought to address the shortage of health and social care specialists by developing a model for remote services in social care, based on video conference services. The island is also encouraging remote working, so that it is considered as a place where people can live but work elsewhere in the region.

5.7 Key challenges for islands: Overcoming disconnections, exploring new horizons and strengthening governance

This section summarises the key challenges for islands taking into consideration key policy frameworks which address the specificities of islands and which can be used to support development of opportunities.

As highlighted in this report, a common and inherent characteristic of islands is 'insularity' or physical 'disconnection' from areas which are the centre of social and economic activity. This leads to islands having certain permanent features including high dependence on marine and air transport. Yet, other factors, such as population and land area, vary between islands and so the challenges they face are not uniform.

As a result of such differences, there is diversity and heterogeneity in the economic development and economic profiles of islands across the EU.

There is also heterogeneity in governance structures. The degree of autonomy in policy formulation and implementation is stronger in island states, such as Malta and Cyprus, compared to islands which are governed as regions, or islands which are municipalities within larger regions.

From a policy perspective, the EU recognises the geographic characteristics of islands particularly in terms of:

- **Accessibility** through the specific provisions of EU regulations that eliminate restrictions on the freedom to provide maritime transport services within the EU (Council Regulation (EEC) No 3577/92).

- **Cohesion Policy:** The ESIF Common Provisions Regulation (CPR)[20] allows for the modulation of co-financing rates which can be applied for areas with severe and permanent natural or demographic handicaps including islands. A derogation for thematic concentration is also applied, as highlighted in ERDF Regulation 1301/2013 (Article 4) which indicates that all NUTS level 2 regions consisting solely of island Member States, or of islands which form part of Member States which receive support from the Cohesion Fund, shall be considered as less developed regions for the purpose of establishing the thematic concentration.

- **Energy Policy**: The Clean Energy for Islands Initiative' focuses on the mitigation of climate change calling for investment in renewable energy sources for islands. To this end, the costs of renewable energy sources should be considered particularly in islands which are very densely populated, as limited space availability imposes relatively higher costs of energy produced by renewable sources. In the context of small islands, intermittency in renewal energy production leads to higher system costs. Islands may also face governance challenges in terms of coordinating stakeholders involved in land planning, environmental and energy issues.

- **Competition policy:** there is no direct reference to islands, but state aid is permissible for the development of less favoured regions, as mentioned in Article 107(3) of the TFEU. In particular, Article 107(3)(c) allows aid to be used to facilitate the development of certain areas, where this does not significantly affect competition ('category c' regions) (European Parliament, 2016b).

In terms of transport and competition policy, a key issue is that sustainable transport services which are affordable and reliable are often not adequately offered, particularly in islands with a small market. This calls for the provision of a PSO, which is facilitated in instances where this objective factor of constraint is identified in national transport policy documents. However, implementing cost-efficient transport through PSO contracts can be challenging when competition between operators is limited.

Other relevant policy areas which can support islands to tap into new horizons include:

- **Research and innovation:** The key challenge for islands is to promote the development of clusters and smart specialisation strategies while encouraging the

[20] Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013

development of niche activities in culture, e-services, food production as well as the attraction of non-seasonal tourism. Networks of innovation between islands can be part of the solution to address this challenge.

- **Education and Training**: Good practices to improve local education and training outcomes and attract specialised skills should be encouraged across islands, particularly those facing brain-drain challenges. Islands are in this respect are subject to the same structurally imbalanced flows as SPAs and some mountain areas. As shown by the Labour Market Transitions module, the promotion of a more knowledge-intensive economic development would need to be accompanied by measures to encourage return migration and attract talents. Existing good practices in terms of place branding can be capitalised on in this respect.
- **Sustainable Tourism:** Taking into account the ecological capacities of islands can help to improve the sustainability of tourism activities. Islands, particularly small ones which rely significantly on the tourism sector, also have limited resources to address the challenges of tourism with regard to the treatment and disposal of waste, water resources including wastewater, and land development to accommodate the sector. A sustainable tourism policy would capitalise on the comparative advantages of individual islands, while taking into account ecological fragilities and conserving unique features. In this respect, there should be a focus on establishing governance structures capable of effectively imposing a long-term perspective and promoting more sustainable approaches to the development of tourism.
- **Climate Change:** From a policy perspective, specific efforts should be undertaken to address the greater vulnerability of islands to the impacts of climate change. This has been highlighted in the Paris Agreement, which calls for specific support to islands to implement climate change action, including support for capacity building.

A key element in the effective implementation of these policies is the governance structures supporting policy. The impact of investment funded through Cohesion Policy can be enhanced by focusing on capacity building and territorial governance structures. Local actors are aware of the specific challenges and opportunities faced by their island, but do not necessarily have the knowledge and resources needed to set up corresponding applications for EU support. In some islands, proactive strategies to support more participative approaches to economic and social development would also be needed. In some islands, the strong social ties and community involvement have served as catalysts for such structures. However, in other islands, particularly small ones, the excessive proximity of personal connections may impede the proper implementation of policy measures (Baldacchino, 2012; Corbett, 2018). Improved multilevel territorial governance, also involving the European level, is part of the solution to address these issues.

Against this background, the need for proper governance structures in small islands is more pronounced. A cohesive and cooperative approach to governance, with an emphasis on a place-based approach, is considered particularly important. The adoption of bottom-up interventions in the application of policy and integrated place-based strategies which promote the territorial potential of islands based on their unique characteristics will help islands to tap into new horizons. However, such approaches need to be accompanied by exchanges of experience and guidance.

6 Sparsely Populated Areas

Sparsely Populated Areas (SPAs) entered the European policy vocabulary following the accession of Sweden and Finland to the EU in 1995. During accession negotiations, both countries, together with Norway which later turned down accession in a referendum, emphasized the legacy and current contribution of these territories in national economic development and the singularity of the geographical constraints that they face. A key argument was that these territories are richly endowed with natural resources (e.g. forest, metal ores, fisheries) and energy sources (hydropower) and that accessing these resources may be an important asset for Europe's overarching development, especially by making Europe less dependent on volatile global commodity markets.

Although the original focus was put on the objective factors of constraint, the role of institutional, cultural, and economic processes in shaping these territories has been more recently highlighted (Dubois and Roto, 2012; Gløersen, 2012). While the geographic characteristics are of a permanent nature and can only be compensated for partially (Gløersen, 2012), the socio-economic and institutional contexts for territorial development, both specifically related to SPAs and more widely, at European and international levels, change. This means that the solutions that can be developed to mitigate the negative externalities inherent to remoteness and sparsity may also evolve and that the potential added-value of 'soft' interventions in creating improved social and economic conditions for territorial development in SPAs is worth examining (Gløersen, 2012).

This focus on soft processes was in line with the shift of regional policy from a redistributive model, compensating certain regions on the basis of their identification as 'less-favoured', to a growth-oriented model that seeks to increase regional competitiveness for all regions. Although this shift did not lead to drastic changes in the way priorities were set and implemented through regional structural spending in territories with geographic specificities, some regions, especially the Nordic regions with SPAs (i.e. Northern SPAs: NSPAs), have given more leverage to these softer interventions by committing more resources to improving labour market conditions and internet rollout (Giordano and Dubois, 2018). This adjustment is one of the signs of the changed perspectives from NSPA local and regional actors about future developments in their regions. A study that enabled these actors to share and produce a joint understanding of future developments through foresight scenarios (Gløersen et al., 2009) led to them addressing future prospects rather than seeking to get (partial) compensation for physical handicaps. Hence, the ability of territorial authorities to tackle the challenges inherent to geographic specificity depends on the extent to which policymakers understand how these constraints impede economic development at the local level (ADE, 2012; Giordano and Dubois, 2018). Regional authorities in NPSAs prioritize interventions and allocate regional funds differently from other European regions characterized as SPAs; this shows that the strategies invoked to tackle 'sparsity' depend on several factors, one of which is the extent to which 'sparsity' is perceived as a constraint by local actors (Giordano and Dubois, 2018).

SPAs can be approached either from the regional perspective, based on population densities, or by identifying areas with low demographic mass based on a continuous spatial approach.

The delineation of SPAs has been the focus of previous studies aiming to rationalize the perception of sparsity and quantify the range and extent of territorial characteristics that 'define' these territories (Dubois and Roto, 2012; Gløersen et al., 2006, 2009). In ESPON BRIDGES, new delineation methods for SPA were not pursued, and efforts were put instead on better understanding how their geographical and socio-economic characteristics influence territorial development potentials. However, we briefly review the key contributions on delineation to set the scene for the analysis below.

Delineating territorial objects is an important part of the policymaking process, not least with respect to spatial planning and regional development. Gløersen (2012) deemed that "different types of rationale for a delimitation of areas with geographic specificities co-exist", particularly the two types mostly used in the specific case of SPAs.

In the 'NUTS' approach, sparsity is conceptualised and operationalised in terms of population density for given statistical units (NUTS 2 or 3). Under a certain threshold, a regional population density is deemed as 'low', and the region itself is considered as sparsely populated. This approach is used by the European Commission to identify sparsely populated regions in binary terms: a region is either sparsely populated or not. Delineations of SPA produced by the ESPON GEOSPECS project show that these are mostly sub-units of NUTS3 regions (ESPON and University of Geneva, 2012). Some NUTS3 regions happen to fall below EU population density thresholds that allow them to be characterized as 'sparse'. However, this is mainly a result of the ways in which regional boundaries have been drawn.

Another approach promotes a more functional understanding of sparsity as a spatial phenomenon. Using population potential, calculated on the basis of the actual number of persons living within a certain distance from any point, to operationalise this approach aims at reflecting the 'sense of isolation' and the perception of the living conditions for communities, i.e. both people and businesses, especially in terms of relative isolation and remoteness from the main agglomerations and between neighbouring small communities (Dubois and Roto, 2012).

Applying the latter approach to pan-European LAU2 population data (with grid cell data for the Nordic countries due to the large size of municipalities in those countries), the ESPON GEOSPECS project proposed a European map using both 50km and 45-minutes isochrones to calculate population potential. Using an equivalent threshold to the one in the NUTS approach, the project identified 3 main areas where extensive SPAs can be found (Dubois and Roto, 2012): the northern and eastern part of the Nordic countries, the Scottish Highlands and Islands; and north-eastern areas of Spain (roughly within the Madrid-Barcelona-Valencia triangle). In a few other parts of Europe – e.g. in France, Ireland, Greece and Turkey – SPAs may be found, but in much more local patches.

6.1 The different challenges and opportunities of Sparsely Populated Areas within and outside the Nordic countries

6.1.1 Northern Sparsely Populated Areas

To understand the role Northern SPAs may play in Europe's future territorial development, one must first consider the circumstances under which this category was first introduced in EU regional and territorial cohesion discussions. This occurred as part of negotiations regarding the accession of Finland, Norway and Sweden to the EU, which led to Finnish and Swedish membership in 1994. These three countries wanted to ensure that various policies that had supported the concerned territories in previous decades would not have to be discontinued as a result of EU membership, and that they could also be pursued in the framework of EU regional policy.

Besides the Nordic countries, SPAs can be found in all parts of the world, especially in the largest countries (Australia, Brazil, China etc), but SPAs with *similar climatic constraints* than the ones found in the Nordics can be found in other Arctic nations (Canada, US, Russia). Nordic countries are not the only countries with SPAs. Similar territories can be found in North America and Australia. As in northernmost Europe, they include territories whose development since the 19th century has primarily been based on the exploitation of natural resources through mining, forestry and fisheries (Lloyd and Metzer, 2013). The incoming populations settled in resource-based communities, which are the backbone of current scattered settlement structures. These resource-based communities are often exposed to the volatility of the global commodity markets and the 'booms and busts' of resource cycles (Dubois and Carson, 2018). In that respect, the high level of specialisation in primary industries leaves these local societies vulnerable to exogenous factors of development. Traditionally, resource operators have invested heavily in the social fabric of these communities, e.g. by sponsoring recreation infrastructure or cultural facilities. Hence, downturns in resource cycles have significant systemic effects affecting multiple sections of the local economy (e.g. regional subcontractors or service providers to these operators) and society.

Historically, functional linkages between regional centres (e.g. Umeå, Tromsø, or Oulu to name the larger ones) and surrounding resource-based communities have been rather limited (Carson et al., 2017; Carson and Carson, 2014). Regional centres were essentially set up as administrative centres, allowing national states to control exert state power in these areas and to provide essential services. However, the role of regional centres as drivers of socio-economic change became more apparent in the last two decades with the implementation of regional development and innovation strategies supported by ESIF. As a result, resource-based communities have progressively come to be considered as the 'hinterland' of these regional centres, which have established themselves as knowledge economy hubs through large nationally funded endowments in R&D and higher education infrastructure. The role of smaller towns and settlements in these SPAs as the engine of economic development through the exploitation of natural resources has received less attention (Dubois and Carson, 2016). As a

result, their centrality within their field of economic specialisation tends to be underestimated. The regional economy of NSPAs is still largely dominated by the highly profitable and globally integrated resource-based activities, such as mining and forestry. As these assets are immobile, the actors engaged in these industries cannot be relocated elsewhere (Dubois et al., 2017).

The NSPAs are a contested space and their contemporary territorial structures still reflect the complex historical, cultural, political, and historical processes that shaped them. NSPAs have been for decades at the centre of the development of the national welfare state of the Nordic countries, as the abundant natural resources sold on international markets enabled the consolidation of the values and principle of their specific model of society. Built on this legacy, the Nordic countries developed a two-tier system of government: with strong municipal authorities having extensive responsibilities for spatial development and the ability to raise taxes to ensure public service provision (schools, elderly and primary care, housing infrastructure); and a powerful national state legislating and enforcing regulations and policies through decentralised regional offices, the County Administrative Boards (Hörnström, 2013).

Nowadays, an important driver of the NSPA cooperation is the Arctic dimension. The global relevance of the Arctic with respect to climate change, energy sources, transport routes and geopolitics has put the NSPAs 'at the centre' of the EU's attempt to engage with its direct neighbourhood. Moreover, the presence of the Sami people across the NSPAs and North West Russia is a common feature which requires a certain level of cooperation across national boundaries (See Text Box 5-1).

Text Box 6-1: Representations of Sami people (Finland, Norway, Sweden)

In the NSPAs, there are several organizations that represent the interests of the Sami people.

The **Sami Council** is a voluntary Sami organization (a non–governmental organization) with Saami member organizations in Finland, Russia, Norway and Sweden, founded in 1956. Its primary aim is the promotion of Sami rights and interests in the four countries where the Sami live.

There are dedicated **Sami parliaments** in each of the three Nordic countries. Finland was the first to establish a publicly elected Sami body, which was formed in 1973. The Sami Parliament in Norway was established in 1989. In 1977, the Swedish Riksdag recognized the Sami as an indigenous people in Sweden. The Sami Parliament in Sweden (Sametinget) was inaugurated in 1993.

The Western Lapland case study showed how the Sametinget is engaged in work on climate change adaptation. A reindeer herding impact assessment tool (Renbruksplan) developed by the Sametinget to plan reindeer herding activities can be instrumental in supporting the implementation of CCAS for Sami activities. In particular, it provides a platform for cooperation with other local stakeholders and land users, for instance forest owners, developers or energy production companies, as their cooperation is deemed instrumental for

effective adaptation interventions. It also provides a body of knowledge that can feed into strategic documents from other authorities, from the region to the government, as in the case of the government's proposition for an integrated climate and energy policy (Löf et al., 2012).

Sources: www.saamicouncil.net; www.sametinget.se; and Josefsen (2010)

Iceland and the Scottish Highlands and Islands have similar territorial characteristics. In the case of Iceland, the settlement structure followed the location of fisheries, which are still a key driver of economic development, thus leaving the bare inland mostly depopulated. In the case of the Highlands and Islands, the mountainous terrain and climatic conditions did not favour high-yield agriculture, and a crofting system, consisting of small-scale landholdings, was put in place – a geographically scattered settlement structure that still persists (Caird, 1964; Shucksmith and Rønningen, 2011). Hence, although these territories belong to the delineation of SPAs, they result from distinct territorial logics that are more related to their insular and mountainous characteristics. Nevertheless, certain examples from these two territories are described below where they are of relevance to SPAs as a whole.

6.1.2 European SPAs outside the Nordic countries

European authorities delineated SPAs on the basis of population densities at the NUTS 3 level, with "swapping rules" making it possible to exclude some of their most densely populated LAUs, and to include less populated LAUs located within neighbouring regions. They have also consistently granted significant additional funding to these SPAs, which has been managed in the framework of ERDF-funded programmes. This has triggered a limited number of southern European regions to identify themselves as 'sparsely populated', especially in order to promote a certain level of public intervention in relation to EU cohesion policy. However, there is often no tradition in the national regional policy agenda to address territorial development perspectives for these areas in terms of 'sparsity'. In that regard, these territories aim at positioning themselves to receive more substantial and targeted EU policy interventions, especially for the modernization of transport and ICT systems and support to their land- and resource-based small local economies.

There are essential differences between these non-Nordic SPAs and NSPAs, with respect to both their geographical configuration and history. NSPAs are vast territories. They have historically been 'frontiers' in the construction of Finnish, Norwegian and Swedish states, and are currently an interface to the increasingly important Arctic region. By comparison, non-Nordic SPAs are a sub-category of Inner Peripheries, exposed to particularly acute challenges with respect to service provision and economic and social sustainability. Some of these SPAs are located at the geographic edge of national territories and have been able to benefit from cross-border programmes: for example, the Pays niçois in the ALCOTRA cross-border initiative that connects these areas with similar areas on the other side of the France-Italy border.

Another interesting case with respect to the disparity between territorial governance and institutional contexts is the Spanish SPA which, like the NSPAs, covers a sizeable continuous area. Unlike NSPAs, this territory is located between large metropolitan areas (Madrid, Barcelona and Valencia). However, a common feature is their propensity to depopulation. Although this territory 'makes sense' in spatial-analytical terms, it is not identified as a 'policy object' in the Spanish institutional context. Indeed, as shown in Map 6-1 p. 79, the Spanish SPA is an aggregation of low-density and depopulating rural areas that are at the margin of several provinces and autonomous regions. This means that the area is institutionally fragmented, which makes it more difficult to address its territorial development issues in a comprehensive and holistic perspective. These challenges encouraged the creation of a formalized cooperation platform, the Southern SPA (SSPA), between authorities from the Spanish SPA in order to collectively voice their concerns, especially towards the Spanish government and the EU, and find new ways forward[21].

6.2 Differences between objective factors of constraint in NSPAs and in other SPAs

The comparison of objective factors of constraint in NSPAs and other SPAs help to illustrate the essential differences between these two categories (Table 6-1).

Table 6-1: Objective factors of constraint in NSPAs and Other SPAs

	NSPAs	**Other SPAs**
Lack of critical mass (demographic and/or economic)	The scattered distribution of small settlements limits the ability for local and regional authorities to develop a cost-efficient system of service provision. This puts a financial strain on these authorities. As the commodity market is largely international, the small size of the regional domestic market was not traditionally a constraint. However, the low concentration of actors is a challenge for the development of less resource-intensive and knowledge-based economic activities through diversified regional innovation systems.	Small villages poorly connected to each other by road infrastructure limit the creation of an integrated local labour market favouring the pooling of action capabilities of these communities.
	Cost-efficient provision of SGIs is a challenge in all SPAs.	
Remoteness from urban centres	Adjacent to NSPAs are several 'medium-sized' urban centres	Many of these areas are relatively close (within 2

[21] The network of Southern Sparsely Populated Areas (SSPA) was initially a cooperation between three Spanish organisations: the Confederation of Entrepreneurs of Teruel (CEOE Teruel), the Federation of Sorian Business Organizations (FOES) and the Confederation of Entrepreneurs of Cuenca (CEOE-CEPYME Cuenca). The three provinces of Cuenca, Soria and Teruel are NUTS3 regions with a population density below 12.5 inh./km^2. In 2017, two other sparsely populated regions of Southern Europe joined the network: Lika-Senj county (Croatia) and Evrytania region (Greece).

	(e.g. Umeå, Oulu, Tromsø). These centres are thriving economically. They attract in-migrants from their respective region and other areas. These centres are endowed with extensive educational and R&D infrastructure, have well-functioning service industries and are generally considered competitive in national, and often European, comparisons. Long distances to these centres limit spill-over effects of their economic dynamism to the more remote parts of their hinterland.	hours) to large metropolitan areas (e.g. Madrid, Valencia or Barcelona in Spain, or Nice in the inland Côte d'Azur). They are often used as recreation areas for short-term regional tourists. Insufficient public transportation and road systems limits the increase of these flows.
Low potential accessibility in Europe	NSPAs are located far from the European economic core ("the 'Pentagon'). This peripheral position has strengthened a 'northern' regional cultural identity. The critical issue for NSPAs is to access logistic hubs and world markets, rather than distance to the European core.	Other SPAs are concentrated in the Iberian peninsula, South-Eastern Europe, the Baltic countries and westernmost Ireland. They are therefore mostly on the outer margins of Europe.
Low potential accessibility in national context	NSPAs have historically constituted 'frontiers' in the construction of Finnish, Norwegian and Swedish nation states. Significant efforts have been made to integrate them in each country's transportation system. NSPA natural resources generate significant incomes. NSPAs are also an important interface to the Arctic region in economic, political, environmental and cultural terms.	These areas are often located at the margins of the administrative boundaries of regional or provincial authorities. This means that territorial development issues for these territories are often given low priority across multiple governance levels, increasing their marginalisation on regional and national policy agendas.
Insularity (physical or metaphorical), e.g. disconnection from transport and energy networks	A significant proportion of NSPA towns are beyond daily commuting distance from their closest neighbours, and therefore constitute autonomous labour markets. They are also self-sufficient with respect to essential SGIs (e.g. school, primary health care).	Poor access to public transportation isolates these communities from surrounding areas.
Vulnerability (limited resilience in the face of external shocks or limited capacity to cope with change)	Harsh climatic conditions can be disruptive, which leaves communities at risk of being cut off from the rest of the area. The importance of cars as a means of transportation leaves the most fragile sections of the population (youth, elderly, disabled) at risk.	As areas in the 'shadow' of metropolitan regions, other SPAs have to overcome an insufficient visibility/or a negative perception of their development potentials.

6.3 NSPA are primarily urban, other SPAs are inner peripheries

The process of demographic thinning out witnessed in most European SPAs often occurs in parallel to the demographic and economic polarisation of the regional economy towards the

largest urban centres (Dubois and Roto, 2012). In the NSPAs, Akureyri in East Iceland, Umeå and Luleå in Sweden, Oulu and Rovaniemi in Finland, and Tromsø and Trondheim in Norway have developed expertise in service and knowledge-based industries, attracting new flows of persons and capital. One factor was that these cities benefited from substantial national investments aimed at developing regional universities. Moreover, as shown in the north Swedish case, even activities such as manufacturing, which traditionally developed around the sites of natural resource exploitation in the SPA, are more dynamic around these centres (Dubois, 2015). Consequently, these cities, which can be considered, in European comparisons, as small or medium-sized urban centres, play a proportionately much greater role in territorial development in the SPA than centres of similar size in more densely populated rural regions.

Compared to the NSPAs, southern European SPAs can be more accurately characterised as extreme cases of 'inner peripheries'. Their main development concerns relate to poor connectivity to both primary and secondary transport networks, creating a sense of isolation. Even though some are of these SPAs are close (about 2 hours) to major urban regions (Nice for the inland Côte d'Azur; Madrid, Barcelona and Valencia for the Spanish SPAs), these urban centres are 'hard to reach', especially as collective transport options are under-developed. Moreover, the lack of a dense secondary road network connecting individual communities does not allow them to exploit their inner population potential, although this would be large enough when considering 'as-the-crow-flies' distance, i.e. theoretical physical distance separating these places, not the daily experienced one. Such characteristics were recognised for 'poorly connected areas' in the ESPON GEOSPECS project (ESPON and University of Geneva, 2012). Crossing the delineation of SPAs with the characterisation of inner peripheries from the ESPON PROFECY project confirms that most of the non-Nordic SPAs are indeed affected by a "lack of access to regional centres and/or services" (ESPON PROFECY, 2018). The PSO module illustrates that it is possible to developing novel approaches to pragmatically address this issue.

The development of new SPA-urban relationships is necessary to unlock new development opportunities for these areas while addressing their long-lasting challenges. However, one should not consider SPA as 'hinterlands' of their closest urban centres. Strengthening urban-rural relationships in the context of SPAs thus necessitates identifying development avenues that may benefit both types of territories. For instance, the rise of bio-based regional economies would enable mutual benefit from the synergy of know-how in managing natural resources in SPAs with the knowledge capabilities of nearby urban centres, in developing value-adding products and processes.

6.4 The specific status of NSPAs in EU policies

In the current Cohesion Policy, under Annex VII of the Common Provisions Regulation (CPR) (Regulation 1303/2013), a special allocation to NSPA NUTS2 regions is foreseen, corresponding to an aid intensity of EUR 30 per inhabitant per year. In Swedish NSPAs, the

special allocation is used to augment public intervention to strengthen the connectivity (transport and ICT infrastructure) and consolidate the specific socio-economic fabric by supporting regional SMEs.

In addition, Article 121 of EU Regulation 1303/2013 also provides for the ESIF co-financing rate to be modulated to take account of sparsely (i.e. fewer than 50 inh./km^2) and very sparsely (fewer than 8 inh./km^2) populated areas (EPRS, 2016), thus giving more room for manoeuvre for Member States to target certain strategic priorities for these areas.

In the framework of EU Competition Policy, there are specific provisions for modulating regional state aid for Article 107(3)(c) regions, which are disadvantaged in relation to the national average. These regions are defined on the basis of a wider range of criteria, including criteria that reflect socioeconomic, geographical, and structural problems at national level. These include sparsely populated regions, former Article 107(3)(a) regions, and other problem regions as proposed by Member States. For instance, in the SPAs of Scotland and the Nordic countries, it means that the aid intensity for large enterprises is at a level of about 20% of the Gross Grant Equivalent (Brief, 2014).

6.5 Asymmetric governance relations in SPAs

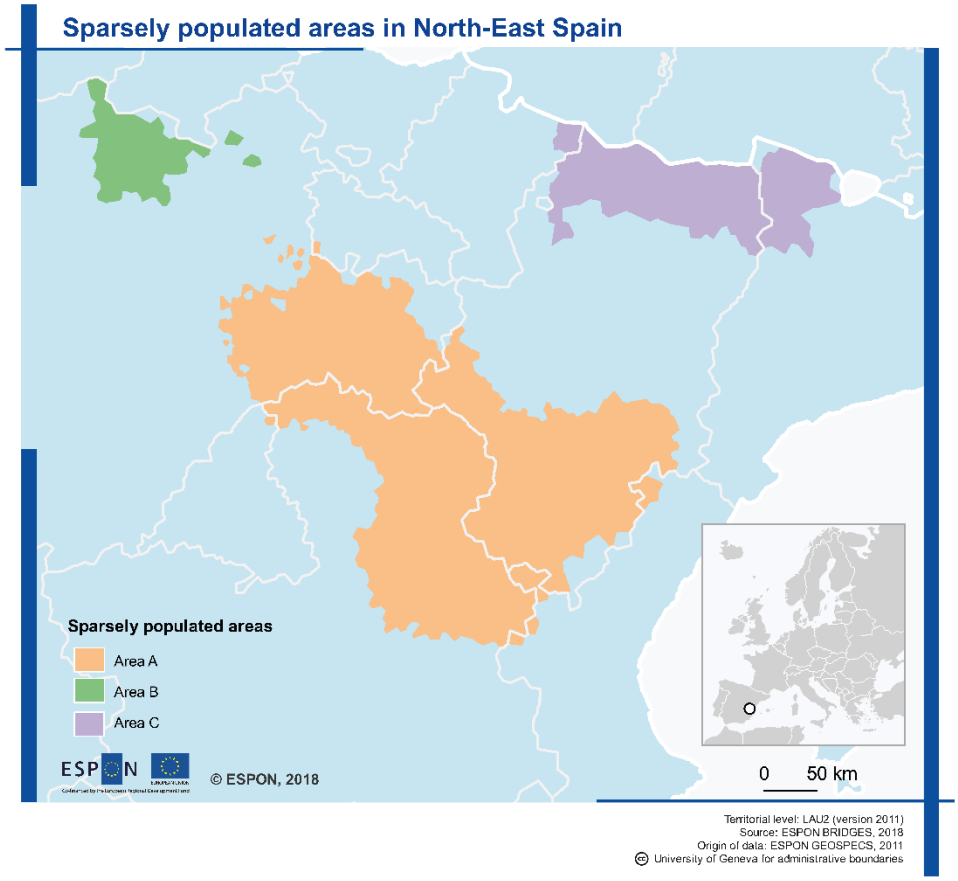
NSPAs have to overcome specific challenges linked to **relationships between local actors and external actors**. Resource peripheries are inherently dependent on external actors who control economic activity and markets for resource commodities (Watkins, 2007). These activities are undertaken by large international corporations and mainly produce raw materials that are sold as such on the global commodity markets. In the Nordic countries, national authorities are still heavily involved in the development of these industries, either through new concessions and regulations or as the main owner-investor in domestic companies. Whether decisions are made by large corporations or by national authorities, local economic development in NSPAs mainly continues to be shaped exogenously.

Other SPAs are extreme cases of inner peripheries, in the wider influence area of metropolitan regions. In contrast to the NSPAs, they generally do not host primary activities of interest for global corporations. However, the need for the empowerment of local stakeholders in economic development processes is the same.

The innovation and economic transformation avenues described in section 5.6.1 could help to strengthen the influence of local actors. A multi-level territorial governance strategy for NSPAs and southern SPAs would seek to change their relationships with neighbouring urban agglomerations as well as other localities and regions with which they interact. The empowerment of actors in NSPAs and other SPA regions is key to the more balanced and sustainable development of these areas. This also requires targeted measures to modify self-perceptions in concerned communities.

Strengthening the awareness of actors in SPAs with regard to their shared challenges and opportunities is another component of their empowerment. SPAs can be schematized as a patchwork of poorly connected local economies and societies, physically (e.g. secondary transport infrastructure), institutionally (e.g. lack of inter-municipal cooperation), or functionally (e.g. lack of commuting across municipal borders). In the Spanish case, continuous SPAs are can be observed both along (area 'B') and across (areas 'A' and 'C') the borders of NUTS2 regions (see Map 6-1). Communities confronted to sparsity on different sides of regional borders could join forces to more effectively create a critical mass of economic and social ties. This would increase their collective ability to solve joint challenges and unlock shared opportunities. In the case of the NSPAs, EU membership has been a major driving force leading to enhanced transnational dialogue and cooperation between localities and regions confronted by sparsity.

Map 6-1: Overlay of Spanish SPAs and regional borders



Another interesting case is the cooperation organization Region10, developed by 10 sparsely populated, inland municipalities of north Sweden. This seeks to improve the ability of these municipalities to address socio-economic change in a more efficient way by pooling their resources and joining efforts. This is especially important in order to tackle complex development issues, such as climate change adaptation. In Western Lapland, municipalities are large in terms of area but small in terms of population. This means that municipal authorities have relatively limited human resources, consisting of 'generalists' instead of 'specialists'',

although they need to tackle the same range of issues as municipalities in metropolitan regions. There is thus a need to build the capacity for action in different way, e.g. by pooling resources across municipal borders in order to afford hiring such specialist competences. Municipalities have a strong role in the implementation of Climate Change Adaptation Strategies (CCASs). Their traditional responsibilities in environmental protection, physical planning and building permits are key leverages to implement CCASs locally. However, municipalities have not been granted extra-financial resources by the national state for undertaking these tasks, and thus municipalities, especially the smaller ones in our case study region, have limited resources to address these issues operationally (Västerbottens län, 2014).

Text Box 6-2: Municipal doctoral students (SE)

Small municipalities often cannot afford to hire the service of a 'specialist' in order to address specific issues regarding land-use planning. Municipal authorities also have limited awareness of scientific studies on these issues.

In order for municipalities to become more attuned to research outcomes and develop specialist in-house competences, there is a new trend in Sweden to support the career development of individuals working in a municipality by funding their PhD studies. The funding comes from different financiers such as national agencies, e.g. the Innovation Agency (Vinnova) or the Growth Agency (Tillväxtverket), and research councils, in addition to the local or regional authority itself.

Source: Sveriges Kommuner och Landsting (2014)

Territorial governance arrangements are thus important in order to support the improvement of the organizational and resilience capabilities of territorial authorities both individually and collectively. In an era of increased mobilities, such arrangements are needed in order to create a living space able to manage the in- and outflows of persons (i.e. transitional economy), to valorise the human and financial capital of its inhabitants (i.e. residential economy), and to mobilize extra-local networks to source new knowledge supporting community development.

An important feature of territorial governance is the ability of territories to use external funding opportunities to finance their own vision of their community or territory's future. For example, integrated territorial investments (ITIs) allow the pooling of funding from various OPs and the option of developing specific governance arrangements to tackle specific territorial issues or features (Giordano and Dubois, 2018). However, the potential of ITIs has yet to be exploited in the context of SPAs. Indeed, in Sweden and Finland, the EU countries with the largest SPAs, ITIs are used to promote Sustainable Urban Development, especially in the more densely populated regions of these countries (Ferry et al., 2018). In Finland, for instance, the only ITI is the 'Six City Strategy', which is implemented jointly in the country's six largest cities, including Oulu. Although this is immediately adjacent to the Finnish SPA, the ITI is not used as a tool to promote integrated urban-SPA inter-relationships.

In the post-2020 proposal made by the European Commission, there are multiple financial instruments that may be used in combination in order to fund ambitious local development projects, in addition to the Structural Funds, these include ITIs, Community-Led Local Development (CLLD), LEADER, ESIF, and the Asylum, Migration and Integration Fund (AMIF). In Sweden, a large proportion of the newly arrived refugees were distributed across the country. In smaller northern municipalities, retaining even a small proportion of these newcomers, who generally move towards the more cosmopolitan metropolitan areas when their situation is clarified, could revigorate the local labour market and service provision.

6.6 A focus on innovation and connectivity

As introduced above, the exploitation of natural resources is a fundamental component of the regional economies and identities of NSPAs. Finding new ways to develop more sustainable exploitation of these natural assets is the most challenging development for regional and local authorities in those areas. Specific challenges can be identified in this context:

- their ability for these industries to combine sustained economic viability with social responsibility

- environmental stewardship, i.e. balancing the exploitation of the land and underground with the protection of natural habitat and cultural heritage.

6.6.1 Innovation and economic transformation

The OECD has recently published a report on the state of regional development in NSPAs (see Text Box 5-3) The study uses the concept of Low-density Economies (LDE) as a way to describe the economic development processes taking place in those regions. The study argues that NSPAs can overcome their locational disadvantages through the vertical integration of nature-based activities, by offering high wages to workers or providing environmental amenities. The study identifies the “absolute advantages” of NSPAs as deriving from the exploitation of the physical environment: minerals and energy, fisheries and aquaculture, forestry, renewable energy (geothermal, hydropower…) and tourism-related services (OECD, 2017).

Text Box 5-3: OECD study on NSPAs

According to the OECD study on NSPAs, the key policy question is how to add value around unique physical assets, and to advocate the potential for smart specialisation to unlock such opportunities through skill development, exchanges of innovative ideas and business development (OECD, 2017). The study also stresses the importance of continued investments at the regional level to improve the connectivity to markets through broadband as well as east-west linkages (OECD, 2017). At the national level, the study proposes to strengthen the mechanisms by which to better understand and frame the effects of national

sectoral policies, instruments and programmes on territorial development processes. This is a variant of the “rural proofing” policies that have been implemented in, for instance, the UK (Shortall and Alston, 2016, Atterton, 2008).

One policy initiative that currently addresses territorial development issues in NSPAs in the EU is the EU Arctic Policy. This aims at “advancing international cooperation in responding to the impacts of climate change on the Arctic's fragile environment, and on promoting and contributing to sustainable development, particularly in the European part of the Arctic” (European Commission, 2016c). It highlights the connection between arctic and SPA issues – “the European part of the Arctic has a sparse population spread over a wide area and is characterised by a lack of transport links, such as road, rail or east-west flight connections” – and stresses the lack or scarcity of transport connecting these territories to the rest of the continent as the main shortcoming for its future sustainable development. The policy emphasizes the rich endowment of European arctic regions in resources such as fish, minerals, oil and gas. In this sense, it focuses on the issue of natural resource management, and emphasizes the legacy of these regions as resource peripheries regarding territorial development. Development opportunities are identified in the field of the Green and Blue Economy, such as multi-source energy systems, eco-tourism, and low-emission food production. The policy specifically identifies renewable energy production as a future growth sector for these territories, including on- and off-shore wind power, ocean energy, geothermal energy and hydropower. In a link to territorial governance, it promotes the organisation of territorial stakeholder fora. In addition, the policy sees an increased role for the European Investment Bank in helping to finance the (costly) infrastructure projects in the NSPAs. Overall, the Arctic Policy focuses on macro-development issues in the European arctic region and, although it mentions the need for the European Commission to continue their engagement with local and indigenous communities, there is no concrete understanding of what this engagement should look like.

Many studies have discussed the extent of entrepreneurial behaviour in the NSPAs, especially showing how newcomers create new activities (DA Carson et al., 2016; Hedfeldt and Lundmark, 2015; Iversen and Jacobsen, 2016; Munkejord, 2017), and how these pave the way for wider local development. These observations suggest that experimentation is key to finding new ways to solve territorial issues. High levels of social capital and trust among actors, the presence of internationalized actors and global channels linked to resource-based activities, and the high degree of internet roll-out and usage are favourable conditions promoting knowledge exchange and innovations in the NSPAs. This ability to experiment is why many sparsely populated regions recognize themselves in the ‘entrepreneurial discovery process’ central to smart specialisation[22] (Dubois et al., 2017). Focusing on small-scale experimentations provides

[22] http://s3platform.jrc.ec.europa.eu/entrepreneurial-discovery-edp

empirical learnings of what seems to work (or not) that are necessary before mainstreaming such initiatives, for instance to other sparsely populated territories.

The involvement of civil society and intermediary organizations is key for aligning the expectations and motivations of entrepreneurs and businesses with those of local public authorities. In this respect, the Highlands and Islands of Scotland and Västerbotten, Sweden, recognised the notion of Quadruple Helix as central for the design and implementation of their smart specialisation strategies. The Quadruple Helix approach aims to deepen the relationships between traditional regional innovation actors – such as firms, universities and public authorities, as in the Triple Helix concept – and the rest of the regional civil society. In the regions of Aragon and Västerbotten, it was also found that intermediary organizations, such as business and trade associations, ought to play a larger role in linking actors and establishing multi-actor activities through which new patterns of knowledge exchanges may be brokered (Dubois et al., 2017).

Text Box 6-4: Implementing Local Smart Specialisation in Nordland (NO)

The transnational REGINA project, which was funded by the Northern Periphery programme, brought together local and regional authorities, research centres and societal actors from SPAs in Finland, Greenland, the Highlands and Islands, Norway, and Sweden.

Aquaculture has been important in Alstahaug and Brønnøy (Norland County, Norway) for decades. Following structural change in the 1990s, the industry has shifted from small family-run businesses to large-scale international companies with more cost-effective operations. People responded positively to the change (economic growth), but there are environmental concerns and a mismatch between the local labour market and the requirements from the new companies.

One of the main challenges in the region is to interest young people in education. Many young boys start working early in the fish industry and have no need for further education. Since the oil industry started in the region and with an increase mechanisation, there is a need for skilled and educated workers. Matching the local labour market to the initial requirements of the industry is a challenge, especially when a large-scale industry begins operating in a region that lacks pre-existing industrial activities of the same scale. Another issue is the integration of labour market immigrants to the local communities.

Local authorities identified a ‘missing link’ connecting education and trade in the local economy. The idea was thus to promote enhanced local cooperation between schools and industries. Another initiative sought to better integrate the natural resource industry with emerging service activities such as tourism and the creative industries. An example is in the Brønnøy municipality where the local project leader brought together the Kulturcompaniet and the mining company extracting limestone to organize concerts on the mining sites.

Source: www.reginaproject.eu

Focus on process development and more sophisticated products

Regional bioeconomy strategies can be instrumental in reducing over-reliance on commodity markets. An example is the development of new wood-based materials using green chemistry. Investing in processing facilities that transform raw materials into more sophisticated products or materials could open new markets and insert these into new global value chains. In terms of incremental innovations, developing even slightly more sophisticated products could suffice to make the demand for them less dependent on a single sector. Such incremental developments would engender new manufacturing jobs near the sites of resource exploitation and thus increase opportunities to generate larger revenues from residential and transitional economies. Bioeconomy development should focus on increasing the value of products derived from biomass, and increasing the uses of side streams created by bioeconomy activities: examples include the use of fish side streams for pharmaceutical products, and wood residues in textile production (Nordic Council of Ministers, 2018). Bioeconomy development thus represents a fairly new policy development that may trigger new investments in SPAs, which are rich in terms of biomass production but often do not have the economic and industrial means to valorise this production.

Text Box 6-5: Processum Örnsköldsvik (SE)

Örnsköldsvik is a municipality in Västernorrland County, located along the Gulf of Bothnia in northern Sweden, with a population of 56,139 (SCB, 2017). The main industries of Örnsköldsvik are pulp and paper, forestry and engineering.

During the 1990s, the pulp and paper industry suffered from a global recession, creating a risk of substantial slowdown in regional economic activity and the loss of around 5,000 jobs in the area. Regional entrepreneurs and local and regional authorities collaborated to find new ways of revitalising this industry. The outcome of this ‘experiment’ was a new regional biorefinery initiative, marking industrial transformation towards higher-value outputs. The biorefinery is based on an existing infrastructure on the site of the original paper pulp mill.

Ten years of cluster cooperation within the framework ‘The Biorefinery of the Future’ have resulted in 61 new products, services or processes; 58 prototypes; more than 100 approved patents; 10 new companies; and about 30 business expansion investments or establishments. While there are 20 paying member companies, the functional network is much larger, including national and international partners from industry, academia, and research institutes. The number of companies involved annually in R&D projects has doubled over the past five years, now amounting to more than 100.

Source: (Dubois and Kristensen, 2019)

Engage in post-staples activities

Natural resource exploitation benefits not only large operators, but also a dense network of regional SMEs that develop specialised services and products for these industries. These SMEs often do not actively seek other clients in other sectors or value chains. Hence they are not able to fully valorise their know-how by engaging in 'post-staples' activities which can involve the technological and service aspects of the resource industry (Mitchell and O'Neill, 2016). Post-staples economies can also incorporate alternative forms of resource exploitation, such as tourism and energy generation (DB Carson et al., 2016). Here, smart specialisation strategies can be central in promoting trans-sectoral entrepreneurial activities.

Text Box 6-6: Smart Specialisation: Green Industry in Nordland (NO) and Marine Renewable Energy in Scotland (UK)

The design and implementation of regional smart specialisation strategies is an opportunity for regional and local authorities, together with entrepreneurs and the civil society, to rethink the future place of natural resources in the construction of the regional model of society.

Nordland, one of the northernmost Norwegian regions, plans to develop new industries that could benefit from the energy surplus of the region. Smart Specialisation in Nordland addresses wind energy prospects, and proposes a strategic approach including a comprehensive public program on spatial planning for green energy production.

In Scotland, the smart specialization strategy seeks to better valorise the renewable energy potential and better utilise the local know-how and expertise, first in the development of hydro power and then in the oil and gas sector, to feed into and serve new renewable energy projects. Scotland has the vision to become a world leader in marine renewables. A focus of activity is the European Marine Energy Centre EMEC - tidal and wave power R&D and test centre in Orkney Islands.

Source: Teräs et al. (2015)

Increasing circularity and value-adding processes from natural resources

Forestry is still a major industry in the NSPAs, involving both large corporations in the pulp and paper industry and many smaller operators engaged in logging activities. Forestry is also an important source of revenue for small land owners such as farmers. However, apart from its use to build individual houses, wood is essentially an export commodity. At present, there are experiments to promote the use of wood in the construction of multi-storey buildings in north Sweden. Creating regional eco-quality labels for wood, as has been done in the French Vosges massif (Lenglet, 2018), could contribute to increasing the valorisation of wood as a resource for a wider range of local actors. Wood can also be used to produce renewable energy. The East Iceland case study region hosts the only biomass power station (using woodchips) in Iceland, used to heat private housing and public buildings in the surroundings of the station. In Alto Turia

(ES), which has large, and currently under-used, forested areas, forest-based activities are perceived as having potential to pursue sustainable economic development.

An important tension in NSPAs is the one between resource management practices and their impacts on the quality of life local communities. Here the core issues are environmental stewardship, fair retribution of land exploitation, and land-use planning practices. The exploitation of natural resources alters the physical landscape and changes the rapport of local societies with their environment. Large-scale developments, such as mines, hydropower plants or smelters, tend to create new flows of material for which local infrastructure needs to be upgraded. Issues of waste and pollution are especially important as these tend to be very localized. Large-scale projects also constrain the ability of other outdoor industries (e.g. farming) to develop.

In the East Iceland case study, it was noted that the aluminium plant in Reydarfjördur has an impact on the regional emissions of greenhouse gases and the natural landscape, leading to a conflict of interest between nature conservation and energy utilization. In Alto Turia (ES), the rich biodiversity of the area has yet to be valorised in the local economy. Hence, the 8 municipalities in the area plan to apply to UNESCO to develop a Biosphere Reserve (BR) as a long-term strategy to create economic activity based on eco-tourism. In doing so, the local authorities hope that these activities would give them the economic means to revitalize the social fabric of local communities (e.g. by stopping depopulation) whilst caring for the local environment.

These examples highlight the importance for SPAs to innovate in finding new ways to implement operational models for ecosystem services, which would ensure that the global contribution from ‘good’ environmental stewardship practices in those areas is recognized as contributing to the wider public good and also providing new economic models in resource peripheries.

The issue of fair benefit-sharing from the exploitation of resources is directly related to issues of quality of life and jobs. Traditionally, local economies benefitted from natural resource exploitation through high levels of employment. Through the residential economy, these revenues generated internal flows of money that sustained other businesses and services. Now that the same industries require far fewer workers, the issue of fiscal redistribution of the revenues that they generate has been brought to the fore. In the Energy module, it was emphasized that national taxation models impact the local revenues from energy production such as hydropower: in Norway, taxes on these revenues are directly collected by municipalities; in Sweden, the taxes are collected nationally before being redistributed through a national redistribution scheme. In the former model, some of the revenue is directly reinjected into the local economy where revenues are produced, through social and ‘hard’ infrastructure. This is especially important in the case of hydropower because it is so widespread in the Nordic countries.

Large-scale developments have positive impacts on local economies and welfare, although their viability over time may be debated. In the East Iceland case study, it was shown that the aluminium smelter plant in the region was the main reason for the development of a new hydroelectric power station in 2007. As a result, more than 800 new direct and indirect jobs were created, which changed the economic structure of the region. For instance, the closest town doubled in size. This, of course, also means that local authorities need to invest heavily in order to create the infrastructure to support and sustain this development. Nevertheless, the development of hydroelectricity plants in general aims to strengthen regional socio-economic development and stop the outmigration of people from a region. In the Côte d'Azur inland (FR) and Wester Ross (UK) case studies, the development of new resource-based activities, such as forestry and tourism, was considered as a new way to 're-equilibrate' the distribution of income by creating new inflows of revenues from other places.

The ESPON BRIDGES project has identified a number of instances where newcomers generate their own economic activity in SPAs. Attracting entrepreneurial in-migrants is therefore a component of SPA development strategies. For example, 'pockets' of positive population change in northern Sweden have been associated with the blossoming of the tourism industry (Johansson and Stenbacka, 2001) making it possible to experience 'real winter' and wilderness. 'Creative outposts,' such as tourism 'hot spots', often act as catalysts for innovative local development because they act as a melting pot between newcomers, visitors, and locals and thus help to regenerate the (depleting) local social capital (Brouder, 2012).

What becomes clear is that 'high amenities' areas in the SPAs, mostly related to the natural, cultural and industrial heritage, may play important roles as sites for incubating new economic activities and social practices that may then be diffused to other places.

In some cases, the abandonment of a resource-based activity may make resources available for the development of community projects. An interesting case derives from the East Iceland case study, where the fish factory in the village of Stödvarfjördur was transformed into a cultural centre after it closed down: an example of social innovation. The closing down of the fish factory in this small community was an economic catastrophe. The creation of the cultural centre was a community project, involving volunteering villagers. While the centre aims to promote local initiatives, some parts of the building are still used for local fish industry activities, which has allowed some people to maintain their former jobs. While the economic impact of the centre is not as large as for other sectors in Eastern Iceland (fish and aluminium), it has had a strong local cultural and social impact as it enriched and broadened community life. The centre attracts artists, tourists, and volunteers from outside Eastern Iceland, which in turns favour the creation of local jobs mainly related to services. The benefits of the centre also extend to adjacent villages. In this case, the unused 'hard' infrastructure (the factory building) from former industrial development was used to host a combination of social and economic activities. In summary,

this example indicates the importance of the development of local skills and competences in order to create new types of activities.

6.6.2 Connectivity

Two defining features of SPAs are long distances from large urban centres (remoteness) combined with spatially scattered and demographically thin settlement patterns (sparsity). On this basis, the issue of connectivity can be related to the upgrading of communication and transport systems (CTS) to support the development of both *extra-regional* and *intra-regional* relationships. Besides these necessary improvements in physical infrastructure, 'softer' types of interventions focusing on networking capabilities and adaptation capacity are important. This enables the potential induced by improved connectivity to be turned into "untraded interdependencies" (Storper, 1995), generating new social relations and economic activities. Soft measures include organisational innovation (e.g. in the provision of services of general interest), efforts focusing on labour market transitions (e.g. in and out-flows of workers), and capacity-building in the use of opportunities offered by ICTs.

Text Box 6-7: The Inland Route (SE)

The Inland Route is an old railway line going through the Swedish SPA from Östersund to Kiruna. The original purpose of the line was to allow the development of mining and forestry activities in the North Swedish inland by shipping out bulk freight (ores and timber) and importing heavy machinery.

With the development of other routes for shipping out the raw material, through the Norwegian seaports which are much better connected to the global market places of North America and East Asia than Swedish seaports, the usage of the line reduced considerably, leading to lower maintenance investments.

The European Investment Bank is now supporting a project aiming to refurbish the line. There is an increased focus on attracting visitors to use the line as a way to discover different places in the Swedish north inland, as it stretches over 1000km across Sweden in a north-south direction. The focus is put on tourism development, especially by offering packages in conjunction with excursions in popular Norwegian fjords (Hurtigruten). The line also allows residents to commute short distances between the small towns which it serves' and there is also an 'on-demand' service for companies to hire the line, to transport either freight or large groups of people. One priority for the refurbishment project is to recommission this inland route not just to 'normal' standards for both freight and passenger traffic, but to withstand winter conditions.

Source: www.inlandsbanan.se

As described above, local economies in the NSPAs are open economies. They have been integrated in global flows of investments, material and competences for decades. This openness to external relationships is a territorial asset that should be better valorized to promote entrepreneurial and innovation processes as well as commodity value chains (cf. Copus and Lima, 2014). While a *constant* feature of socio-economic developments in the NSPAs has been the ability to adapt to changing external conditions, openness requires an enhanced resilience capability in order for territorial agents to adapt to changing circumstances.

The importance of extra-regional connections is usually overlooked in the context of regional policy, although it is often promoted in other sectors of EU policy (e.g. competition, innovation), especially for peripheral regions (Huggins and Johnston, 2009). The focus on endogenous processes in regional development policies often neglects the importance of extra-regional sources of knowledge (Uyarra, 2009). These extra-local factors need to be better incorporated through the mobilisation of local resources, which implies an enhanced capability of local actors to work together (Bosworth and Atterton, 2012).

A recent study on the implementation of smart specialisation in SPAs highlighted the importance of a combined improvement of physical mobility and digital connectivity in order to promote distance-bridging practices both within and outside these regions (Teräs et al., 2015). Some regions with extensive SPAs have integrated 'connectivity' in the design of their smart specialisation strategies. In Aragon, which lies at the geographic core of the Spanish SPAs, connectivity is one of the three key priorities of the smart specialisation strategy, implemented through a logistics cluster initiative in 2011–2014, largely based on the EU Regions of Knowledge Initiative (Teräs et al., 2015). In a similar fashion, in the Scottish Highlands and Islands, the role of connectivity (both physical and digital) is acknowledged for opening new market opportunities. In the Lapland regional development strategy, the mobilization of external resources was promoted through the establishment of 5 "new wave clusters/cluster initiatives" (Cleantech on Arctic industries, Arctic safety and security, Arctic Smart Rural Communities, Arctic innovation and testing environments, and Arctic design), connected to the Arctic Smartness Portfolio project. These initiatives enabled regional actors to connect with actors from other Arctic regions. Finally, in Nordland (NO), the absence of a well-developed internal research infrastructure, perceived as a potential bottleneck for the development of internationally competitive domains, is partially compensated for by developing privileged relationships with foreign research institutions (Dubois et al., 2017).

These examples show that developing effective connectivity strategies for SPAs requires conjointly addressing the extra/intra-regional dimensions and the physical/digital investment dilemma, as reflected in the case studies. Most of these identified tourism as a potential for territorial development, but also a further strain on the territory's coping capacity. Tourism creates inflows of seasonal visitors and, during peak tourism seasons, the 'local' population increases manifold. This means that local infrastructure – roads, public transportation, and also primary and emergency health care – needs to be designed to be efficient during these peaks.

In Alto Turia (ES), the poor connection to the energy grid was regarded as a constraining factor for unlocking tourism potential. In the Côte d'Azur inland (FR) and Western Lapland (SE) cases, the issue of secondary homes was raised, as these tend to push local authorities to allocate funding for maintenance of basic infrastructure (e.g. roads, sewage, water) for houses that are only inhabited for a small portion of the year. In Wester Ross (UK), increased tourism impacts the local housing market which may 'force' residents to relocate. Moreover, for most of the time, the infrastructure developed to accommodate large Short-term flows tend to be under-used.

'Local bottlenecks' may have wider consequences on the ability of SPAs to part take in 'global' flows of persons, goods, and capital. Addressing these bottlenecks often requires the development of tailor-made solutions for providing basic services to individuals and business. In Alto Turia (ES), on-demand services and geolocation of services were incorporated in the design of the PSO for local bus transportation. The idea was that fewer, but more regular, bus services increased the connectivity of the area because residents and travellers alike could better 'anticipate' their journey. In the Côte d'Azur inland (FR), public transportation includes, in addition to regular bus and railway lines, a demand-responsive transport system through virtual lines. This allows routes to be activated on demand, enabling the public transportation offer to be enhanced at the specific times and locations when it is most needed. This is designed to improve inter-connections between networks to improve travel time from the inland to the coast or large cities. These cases highlight the instrumental role of digital applications in reinforcing the capacity of territorial authorities in SPAs to design, organize, and operate access to services despite a scattered and thin population distribution.

Digital solutions can also improve access to health care. In Western Lapland (SE), the demographic structure is changing as elderly people remain in small communities. This led local practitioners, in collaboration with local authorities, to experiment with alternative ways of organizing primary care. One innovative project is the Virtual Health Room (VHR) developed by the Centre for Rural Medicine in Storuman. The VHR is a room in a public building (in this case an old school) equipped with connected medical instruments, where patients could be advised by a general practitioner without having to drive to the nearest municipal cottage hospital. This is not aimed to replace all types of face-to-face patient-doctor interactions, but to optimize both patients' and doctors' time by reducing these interactions to the most necessary ones. The VHR approach is currently being developed in other municipalities throughout northern Sweden. This example shows is that good internet provision is a necessary pre-condition for developing such distance-bridging alternatives.

Similar developments can be found in other SPAs. In the Highlands and Islands smart specialisation strategy, the development of digital healthcare is thought to benefit from the combination of increased digital connectivity and life science business/academic expertise. This focus illustrates how territorial characteristics, in this case ageing and dispersed populations, can be better valorised and become a resource for the development of specialised skills and competences in an SPA, that may be exported (Dubois et al., 2017).

6.7 Key challenge for SPAs: Organising a Socially Sustainable Future

In contrast to other geographic specificities, sparsity is by definition an objective factor of constraint, as it relates directly to the idea of not reaching a critical population mass. This perspective is rather abstract, as there are no clear rational understandings of where this critical level lies and, ss shown by the example of the NSPAs, this does not have to entail low regional development levels or limited capacity to innovate. However, a series of challenges need to be overcome. As shown by the ESPON GEOSPECS project (ESPON and University of Geneva, 2012), SPAs are not only found in Europe's northernmost regions. An increasing range of actors from different parts of Europe mobilise the notion of sparsity in discourses on the specific development challenges and opportunities. 'Sparsity' is thus increasing perceived by territorial stakeholders as a locally federating notion that promotes the idea that other 'alternative' forms of development in Europe are not only possible, but also desirable in order to maintain and enrich the territorial diversity and cohesion of the continent. These alternatives are founded on the place-based approach that aims at maximizing the potential of these territories while persevering their ecological and social structures.

Beyond the apparently similar spatial structures, SPAs in the Nordic countries and the rest of Europe are very different territories. First, NSPAs have a strong global position in their respective fields of economic specialisation (e.g. iron ore in Sweden, fisheries in Norway, forestry and ICTs in Finland). Second, NSPAs include the home region of an indigenous people, the Sami people. Any territorial development taking place in these areas needs to consider ways to preserve of their traditional livelihoods, especially reindeer herding. Third, NSPAs have long constituted an establish area of transnational cooperation between Nordic countries, through the Nordic Council and the Barents cooperation. Translating this 'Nordic added-value' to the EU context has been a key contribution of the NSPA network, enabling them to connect their development challenges and opportunities to the objectives of cohesion policy.

The NSPAs constitute a regional phenomenon with its own centrality, whether this is in terms of growing medium-sized urban centres (Oulu, Tromsø, Akureyri or Umeå) serving a large hinterland of smaller communities and acting as gateways to the knowledge economy; in economic and environmental terms, with key resource industries (e.g. forestry, fishing or mining) still being highly profitable and increasing renewable energy infrastructure (e.g. geothermic, hydropower, wind power); or in political and symbolic terms, as the interface between Europe and the Arctic region.

At the other end of the spectrum, an increasing number of regions and territories across Europe identify themselves as 'sparsely populated' and seek to attention from EU and national policymakers in order to design and implement policy interventions relating to this characteristic. However, though these territories share some spatial features of the NSPAs, their historical development has bene very different. They are often faced with steady depopulation trends and a socio-economic slump that has weakened the social fabric and local

economy. Hence, these territories are extreme cases of inner peripheries, as characterised by the ESPON PROFECY project, with a particularly high degree of marginalisation from socio-economic development processes, disconnection from modern communication systems (transport and ICT), and a long history of demographic decline. Given the continued demographic polarisation taking place across the continent, the number of these 'new' SPAs is likely to grow.

People are at the core of the definition of SPAs, and also of their development opportunities. The key challenge is not the lack of economic opportunities, but the difficulty of organising a socially sustainable future. Policy interventions thus need not only to capitalize on the territorial assets of these places, but also to consolidate regional social cohesion. Demographic decline raises the question of whether Europe should accept that extensive areas become depopulated, or should try to maintain a human presence in these areas. Lived experiences of being 'far away' are different for different types of SPA, depending on their historical legacy and current socio-economic dynamics, and thus likely require diverse interventions to alleviate this perception.

A key issue regarding SPAs is the relationship between their territoriality and processes of functional integration. In smaller communities, all aspects of development are connected with each other, as the borders between different economic sectors and societal sections are more porous than in larger urban economies. A single actor often contributes to development in multiple ways through pluriactivity or political engagement. The related variety in the local economy is relatively high. Hence future development initiatives, e.g. linked to smart specialisation implementation, ought not to 'dissolve' these interrelationships but rather to consolidate and expand them. This means that actions from neighbouring territorial authorities are also connected, because resources are limited.

A critical factor for future territorial development is the revitalization of urban-rural partnerships between regional urban centres and the surrounding resource-based communities. In particular, small towns are important for the structuration of social and economic processes taking place in the SPAs. The notion of 'rural poles' serving as local hubs for the provision of services, the mobilization of knowledge, and the shaping of a collective territorial identity appears as a necessary step to structure interventions in these vast territories.

The role of EU cohesion policy can be determinant in allowing national policymakers and territorial stakeholders to grasp this dimension thanks to the design and implementation of territorial strategies at different territorial scales:

(1) *Macro-regional strategies* may be relevant to organise the NSPAs as a transnational region. SPAs are involved in multiple transnational cooperation (e.g. Northern Periphery and Arctic Programme, Barents Region, North Calotte). This open new possibilities for SPA actors. Their interaction with actors from territories sharing similar conditions has helped to compensate for a sometimes marginal position within their respective national policy-making context.

(2) *Cross-border initiatives* allow local stakeholders to test new solutions aiming at improving living conditions, service provision and local transport networks in SPAs and exchange experiences.

7 Coastal areas

Coastal areas are the geographic specificity that covers the largest land area in the EU and is home to the largest share of population (ESPON and University of Geneva, 2012) . Representing the interface of land and sea, they offer the opportunity to build on the economic opportunities of the sea. However, coastal regions face numerous challenges due to their fragile ecosystems, exposure to extreme events, and the continuous need for shoreline management. This chapter focusses on the coastal areas in the EU, while largely disregarding the metropolitan cities that form part of coastal economies.

The historian John R. Gillis argues in his book *The Human Shore* that new coastal dwellers have forgotten how to live with the oceans. The centuries of remaking of coastal landscapes through port creation, territorial gains and creation, the extinction of marine animals and, as he puts it, 'the invention of the beach' have led to a unsustainable relationship of people with the world's shores and the edges of the water (Gillis, 2012). Furthermore, rising sea levels and extreme events resulting from climate change put coastal lands and shores under extreme pressure. Economic globalization and increased connectivity, in combination with the development of a mass tourism industry, have intensified pressures on coastal areas. Future development strategies will need increasing sensitivity to balance conflicting interests in the coastal zone as an economic activity area, a living area and a biotope. There are no one-size-fits all strategies, particularly because coastal areas are incredibly diverse.

An often-cited definition within coastal research is that a coastal area is "the band of dry land and adjacent ocean space (water and submerged land) in which terrestrial processes and land uses directly affect oceanic processes and uses, and vice versa" (Ketchum, 1972). In coastal areas, land meets sea; in other words, they represent the interface between marine and terrestrial areas.

The Dover-Calais corridor with its Eurotunnel and intense ferry activities, or the Normandy-Kent collaboration are only two examples of how coasts function to connect with other regions. The harbour-to-harbour perspective represents an important element of coastal economies: an additional function to urban nodes. The ESPON GEOSPECS project highlighted the considerable variety of real-life or imaginary border effects, which create a pattern of "half-circle social and economic relations" in border regions. Coastal regions have stronger relationships with domestic hinterlands, and comparatively weaker relations across the sea border.

On one hand, this allows for a diverse set of activities unique to coastal environments. On the other hand, coastal areas are exposed to intense competition between diverse, and often mutually incompatible, types of activities. The uses that stem from the interface with the sea are often in competition for the use of space and, even more often, they conflict with one another; for example, between environmental conservation areas and recreational uses or fisheries. Often, sustainable management faces the challenge of balancing natural values and tourism, and to identify sustainable ways to benefit from tourism in fragile ecosystems. Many

coastal areas have national parks (e.g. the Wadden Sea), marine parks, or other forms of protected zones.

Coastal areas also interlink landwards and seawards pressures on a small physical land strip at the water's edges (Table 6-1). Understanding the interrelationships of activities at the sea with activities on the land makes it possible to identify development opportunities and to overcome barriers to development. These developments are mutually constitutive and reflect the importance of the land-sea interface.

Table 6-1: Coastal areas face pressures both towards the sea and land

Landward pressure	**Seaward pressure**
Harbour developments	Waste discharge
Land reclamation	More sailing boats
Ports and jetties	Dredging of shipping routes
Touristic and recreation facilities and services	Sea fisheries
Renewable energy (e.g. offshore wind)	Water sport and swimming
Industrial complexes	Tidal and wave energy
Coastal defence	Aquaculture
Shoreline management	Oil and gas exploration

Source: Goldsborough (2018)

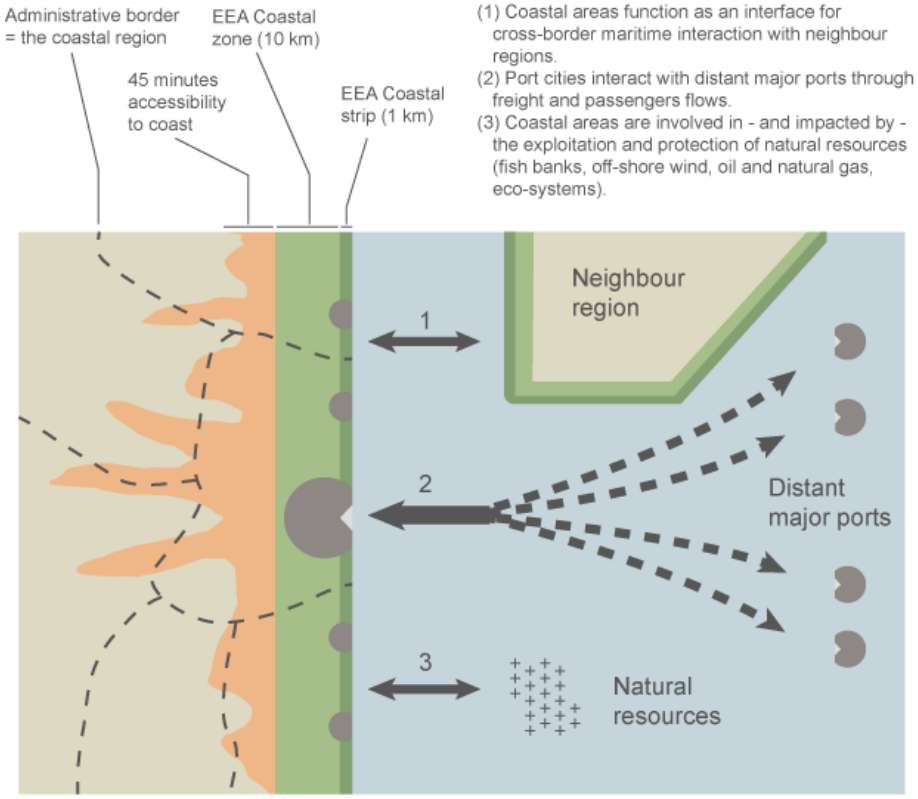
Coasts are interfaces in various ways, differing by uses and pressures. However, development strategies almost always need to take into account the territorial limitation of the sea, the use of the sea for economic activity, environmental safeguarding, and protection from flooding. In a similar approach, the ESPON MSP-LSI project questions land-sea interactions from the sea to the land, focussing on the question of how a framework on land can support seaward development and how development on land can have adverse impacts on the environmental status of the sea. The project also considers the interactions from land to the sea, by questioning how terrestrial development can be supported by marine development, and how the sea's environmental conditions may have impacts on the health and wellbeing of landward communities (cf. (ESPON MDP-LSI and University of Liverpool, 2018). Similarly, the MSP Platform describes the land-sea interaction as a complex phenomenon that involves both natural processes across the land-sea interface and the impact of socio-economic human activities that take place in the coastal zone (European Commission (Directorate General For Maritime Affairs and Fisheries), 2017).

This chapter deals with place-based reactions to land-sea interaction, and the ways in which coastal territories can make use of the land-sea interface. Coastal areas lie at the interface of seas and oceans with terrestrial land in deltas, estuaries, fjords, wetlands, cliffs and beaches.

Delineations of coastal zones differ considerably. Whereas some are based on the reach of the high and low water mark and physical visible elements, others reflect coast-based ecosystems and vegetation, such as dunes. In ESPON BRIDGES, we suggest four different delineations that reflect different aspects of coastalness (see Figure 7-1):

- *The coastal strip* is the band of dry land adjacent to sea and ocean spaces, and delineates the immediate sea-land border.
- *The coastal zone* is the contiguous strip of land influenced by the maritime climate, flora and fauna. Whereas some definitions are based on the reach of the high and low water mark, and physical visible elements, others reflect coast-based ecosystems and vegetation, such as dunes. The European Environmental Agency (EEA) measures the distance from the sea. In order to analyse main changes in land cover and population, differentiating between a 0-1 km coastal strip and a 10 km coastal zone (EEA (European Environmental Agency), 2006).
- *The functional coastal zone* represents the coastal hinterland that is socio-economically and functionally related to activities by the sea. Socio-economic delineations may, for example, be based on population density, travel-to-work distances, or area of influence from settlements. The continuous zone of influence covers at least 45 minutes distance from the sea, though the area of influence is a continuous gradient (see Map 2-4 p. 24).
- The term *'coastal regions'* relates to the administrative divisions of countries located by the sea. For the purposes of ESPON BRIDGES, this most commonly refers to the NUTS-3 regions.

Figure 7-1: Coastal strips, zones, areas and regions



ESPON BRIDGES recognizes the diversity of coastalness, but takes a broad view of coastalness depending on the context. Below, the terms ‘coastal area’ and ‘coastal region’ relate in broader terms to areas covered by this specificity, and are not limited to the immediate coastal stripe, but the area that is functionally connected to the sea.

7.1 The great variety of coastal areas

Coastal regions are incredibly diverse. Some are among the richest regions in Europe, with thriving economies and innovative urban centres; others are remote and sparsely populated. Coastal areas are among the most populated territories in EU countries, and also worldwide.

Coastal regions are diverse in different respects:

(1) **Population distribution**: some coastal regions are among the most densely populated in Europe, particularly in the Mediterranean. Others are remote and sparsely populated, e.g. in Scandinavia. Most European countries are orientated towards the national capital as well as the sea. The Southern European coasts are central to national urban systems (i.e. Italy, France and Spain). (Eurostat, 2011) applied an urban-rural typology that takes into account the population density in contiguous 1 km^2 grid cell groups to the maritime basins, to indicate demographic pressures on the coastal areas. Eurostat identifies the coastal areas in the maritime basins of the North Sea and the Outermost regions as predominantly urban. For the North Sea, large cities such as Hamburg and London influence the typology. The North East Atlantic Ocean and the Mediterranean Sea also have predominantly urban and intermediate characters. In the coastal countries, particularly the Mediterranean countries, a higher percentage of inhabitants live by the sea than inland. The western Mediterranean countries – e.g. Spain, France, Italy – have a higher density than Greece, for example. The population growth rate in coastal regions in 2008 was particularly intense in Central and western Mediterranean regions, as well as the North West and East Atlantic. In 2008, 44% of the coastal Member States’ population lived in coastal areas, and the growth rate in the NUTS 3 coastal regions was above average. This European development follows a worldwide trend, showing movement towards the sea (Gillis, 2012). Despite an overall difference in housing effects on coasts, in general population distribution is changing considerably within maritime basins.

(2) **Economic centrality**: some coastal regions are economic hotspots within their national contexts. Examples are the metropolitan regions of Hamburg, Amsterdam, Genoa, and Lisbon. Other regions are lagging behind economically in their domestic contexts, such as Apulia in Italy and Norfolk in the UK.

(3) **Economic activities**: coastal areas vary in terms of their economic interactions and activities. For example, while many Mediterranean coastal regions are known mainly as touristic areas, the Atlantic and North Sea regions are known for their port activities and fisheries, as well as sea-related tourism.

(4) **Ecosystems**: coastal regions have a huge variety of ecosystems. On a large scale, the European Environmental Agency (EEA) classifies the European Seas as: the Baltic Sea, Barents Sea, Norwegian Sea, Iceland Sea, Celtic Seas, Greater North, Bay of Biscay and the Iberian Coast, Macaronesia, Western Mediterranean Sea, Ionian Sea and Central Mediterranean Sea, Aegean-Levantine Sea, Adriatic Sea and Black Sea. This differentiation largely overlaps with the EEA’s biogeographical regions (see also (European Environment Agency, 2016). However, to understand coastal landscapes

and the subsequent diversity of challenges, one needs to analyse the coastlines at a more detailed level. Within a given region or municipality, coastlines can have a wide range of geomorphologic characteristics (e.g. lagoons, estuaries, cliffs, beaches, deltas) and be exposed to different types of changes (e.g. erosion and deposition). Each of these types of coast requires needs specific types of shoreline and ecosystem management.

(5) **Climate**: coastal areas in Europe belong to different climate zones. Additionally, microclimates can generate substantial differences.

(6) **Institutional**: approaches to securing coastal areas differ considerably between countries. Some countries' legal systems allow for privatisation of large parts of the coasts, e.g. Italy. Other countries support public access to the sea, e.g. Germany.

(7) **Accessibility**: Accessibility of coasts depends on their remoteness and national population distribution. In broad terms, the Scandinavian and UK coastal regions are more remote, whereas the central European and Western European coasts are more accessible (e.g. German and Belgian coastal areas).

7.2 Different sets of objective factors of constraint in northern rural coasts, southern touristic coasts and urbanised coasts

Objective constraint factors include a lack of critical mass, remoteness from urban centres, and low potential accessibility in the European or national context. While insularity tends to be associated with disconnection from terrestrial transport and energy networks, it also produces other types of effects, beyond remoteness and peripherality. Simplifying to some extent, one can identify a North-South divide in Europe's coasts. In Scandinavia, coastal strips show more rural characteristics while, in the South, there is a higher intensity of touristic activities and a higher density of seasonal housing.

Table 6-2: Objective factors of constraint in coastal areas

	Northern Rural Coasts	**Southern Touristic Coasts**	**Urbanised Coasts and Metropolitan Sea Regions**
Lack of critical mass (demographic and/or economic)	Many coastal areas face challenges due to their remoteness and unfavourable demographic developments, with some areas experiencing depopulation.	The lack of a sustainable model for tourism can result in the intensive use of water and land by tourism and leisure facilities.	Urbanised coasts and metropolitan sea regions do not lack a critical mass in terms of population or economic activity. Major seaside settlements have growth limitations due to the sea and therefore need to develop inwards, leading often to long commuting distances to central workplaces.
Remoteness from urban centres	Large parts of these coasts are located in rural areas with only small settlements. This leads to challenges in the provision of services	Not a constraint.	Not a constraint.

	(including those of general interest) and public transport, and brain drain. Other coastal land strips are inner peripheries between major urban centres in Western and central European coastal states.		
Low potential accessibility in Europe	Remote coastal areas are often constrained by low accessibility to urbanised areas and the capital as well as regional centres. Additionally, travel time to airports or train stations that are part of TEN-T corridors is far above average for citizens living in remote coastal areas.	Not a constraint.	Not a constraint.
Low potential accessibility in national context	Low potential accessibility in a national context is a constraint on infrastructure related to connectivity, as well as accessibility to energy grids and major markets. This restrains economic and social development. Public transport provision leads to additional costs.	Coastal areas in Europe's South are in most cases well connected to their urban national network.	Not a constraint.
Insularity (physical or metaphorical), e.g. disconnection from transport and energy networks	Coastal regions may be constrained by limited access to transport and energy networks. Northern coastal regions may profit from a trend towards offshore wind energy and be included in national energy grids.	Most southern touristic coasts are not particularly constrained by insularity.	Not a constraint.
Vulnerability (limited resilience in the face of external shocks or limited capacity to cope with change)	Coastal regions are vulnerable to the impacts of climate change. Northern coasts experience higher rates of extreme weather events that may pose threats to ecosystems as well as to the physical conditions of coastlines and put citizens at risk of flooding and sea	Coastal regions are vulnerable to the impacts of climate change. Southern coasts have experienced increases in high temperatures and droughts. These regions are often highly dependent on touristic activities in the summer season. If temperatures rise, the season becomes	Areas of intense land-sea interaction increasingly face the need to develop climate change adaption strategies and flood prevention strategies, in line with long-term investment strategies, including constant regeneration strategies. Countries such as the

	level rise, for example.	too hot, or fresh water problems occur, tourism may be affected negatively.	Netherlands and the UK which face considerable challenges are providing governance and financial support.

7.3 Links to urban areas

Coasts are attractive sites for urban development, and the most populated cities tend to develop directly on the shoreline. This is linked both to historical and economic factors, positioning the city close to the port and the landing points of fishing boats, and to the attractiveness of coastal areas as living environments. It is to be expected that the growth of coastal populations will continue, with most of the growth concentrated in urban areas. Most coastal tourism is also oriented towards settlement areas, or in close proximity to settlements. The Algarve (PT) is indicative of touristic infrastructure being developed in proximity to urban centres, such as Faro.

A number of European capitals are located by the sea (e.g. Dublin, Oslo, Stockholm, Helsinki, Amsterdam, Lisbon, Athens, Riga, Copenhagen and Tallinn), and others are in close proximity, such as Rome. Urban policies are of immense importance for harbour cities, which must engage in continuous renewal to keep up with the fast developments of international logistical corridors. Hamburg, Rotterdam, Genoa and Antwerp all face continuous challenges to maintaining their places in the global market.

ESPON BRIDGES has chosen not to analyse coastal metropolitan regions, as these raise specific sets of economic and social issues which are beyond the scope of the project.

7.4 A wide range of EU policies address coastal area issues

Coastal areas depend on both maritime and land-based policies, as these address the characteristics of coastal areas and their development strategies.

On the EU level, coastal regions have been targeted directly and indirectly in many policies and regulations. A selection of the most **important directives, regulations and conclusions** is listed below:

- Common Fisheries Policy (started in the 1970s, with the last update in 2014 as part of the MFF)
- Water Framework Directive (2000)
- Integrated Coastal Zone Management (2002)
- Integrated Maritime Policy (2007)
- Marine Strategy Framework Directive (2008) for Good Environmental Status by 2020 (currently under review in Member States)
- Renewable Energy Directive (2009)

- Integrated Maritime Policy (2009)
- Maritime Spatial Planning Directive (2014)

A number of **reports, communications and strategies** highlight the significance of marine themes in EU cooperation:

- Strategic goals and recommendations for the EU's maritime transport policy until 2018 (COM/2009/0008 final) (European Commission, 2009)
- EU Strategy on the Adaption of Climate Change (European Commission, 2013b)
- Strategic Guidelines for the sustainable development of EU aquaculture (European Commission, 2013d)
- European Parliament Study on Improving the concept of the Motorways of the Seas (European Parliament, 2014a)
- A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism (European Commission, 2014b)
- A European strategy for marine and maritime research: a coherent European research area framework in support of a sustainable use of oceans and seas (COM/2014/0254 final) (European Commission, 2014a)
- Report from the Commission to the European Parliament and the Council on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC) (European Commission, 2015b)
- European Commission Joint Communication on International Ocean Governance: an Agenda for the Future of our Oceans (European Commission, 2016b)
- Blue Growth – Opportunities for marine and maritime sustainable growth (European Commission, 2012)and the subsequent report on the Blue Growth Strategy (European Commission, 2017b)
- Commission Staff Working Document on Nautical Tourism (European Commission, 2017a)
- development of sea-basin strategies document by DG Mare

A number of **current and future policy** processes are of interest for the development of coastal regions. Upcoming developments include:

- Six-year review of the Marine Strategy Framework Directive and its implementation in the Member States between 2018-2021.
- The Commission's call for proposals for environmental monitoring programmes, operational in 2018, to support the development of the 'Blue Energy Action needed to deliver on the potential of ocean energy in European seas and oceans by 2020 and beyond'.
- An expert group on skills and career development in the blue economy has been set up by the European Commission to support the Blue Growth strategy.

In addition to these formal processes, policy makers and stakeholders highlighted a number of **key issues** for future development and themes for which project input can be valuable in explorative interviews carried out by the ESPON BRIDGES project in 2018. Examples of these

include the following. The European Commission's proposal for the 2021-2027 Cohesion and Regional Policy suggests some important changes for coastal regions. First, maritime co-operation occurs at a wide range of scales, from individual border areas to sea-basins. Second, the fifth policy objective "**A Europe closer to citizens (sustainable development of urban, rural and coastal areas and local initiatives)**" strengthens the recognition of coastal areas. The formal recognition of rural and coastal areas, and their importance for local initiatives will, depending on the outcome of the current negotiation around the future MFF and legislative package for Cohesion Policy, lead to further attention to development initiatives in the MFF (see section 7.2).

The Cohesion Policy framework, with its various tools – cross-border, transnational and interregional programmes, CLLDs etc. – offers local communities financial support for new initiatives. The above-mentioned Commission Staff Working Document on nautical tourism (2017) is an indication of the increasing attention paid to touristic exploitation reaching further than the traditional use of coastal zones as recreational areas, as it aims to exploit the sea itself for active forms of tourism. For a number of regions, including the Baltic Sea, the North Sea or the Adriatic and Ionian Sea, the Cohesion funds have been integrated into regional thinking on cooperation.

Sustainable tourism development features high in stakeholders' recognition of future policy developments. Linked to the themes of smart specialisation and blue growth, and given the high level of urbanisation of European coasts, the development of sustainable forms of tourism is a challenge. The 2014 European Strategy for more Growth and Jobs in Coastal Maritime Tourism has increased dialogue between, for example, ports and tourism and cruise operators. CLLD initiatives implemented under the European Maritime and Fisheries Fund and the ambition to increase nautical tourism, are examples of the growing interest in enhancing sustainability in the tourism sector through public policy. The Horizon 2020 programme has supported a project focussing on cultural heritage of European coastal and maritime regions. In addition, European stakeholders emphasise to need to develop programmes favouring a more equally distributed tourism flow over the year.

Smart specialisation and blue growth are both themes of high importance for coastal economies. In particular, harbour areas are undergoing substantial changes, due to increasing digitalisation. New technologies for marine economies are under development and have the potential to provide coastal economies with new jobs. The European Union's Report on the Blue Growth Strategy, published in 2017, led to the establishment of an expert group on skills and career development in the blue economy. These developments provide high potentials for coastal areas, making close interactions between local and regional stakeholders a prerequisite for developing place-based strategies.

The **Maritime Spatial Planning (MSP) Directive** and **Integrated Coastal Zone Management** (ICZM) are important EU policy initiatives. The progress review of the implementation of the Maritime Spatial Planning Directive over the next couple of years will help to put it back on the

political agenda. There are major impacts of Maritime Spatial Plans on local communities, e.g. in areas where offshore energy farms provide opportunities for new jobs, or may interfere with the use of traditional fishing grounds. This is also reflected in the recital number 9 of the MSP Directive, stating that MSP should take into account land-sea interactions and promote cooperation among Member States (European Parliament, 2014b).[23] The Marine Strategy and its implementation in the Member States will undergo a six-year review between 2018-2021. In particular, this will look at environmental conditions. The objective of ICZM is to maintain the natural environment and manage the sustainable use of coastal areas through a dynamic and continuous process. This process will remain an important aspect of any development strategy, e.g. when making use of land-sea interactions through smart specialisation, social innovations or the use of renewable energy.

7.5 Governance issues and challenges

While coastal areas and their development strategies depend on both maritime and land-based policies, the governance regimes that influence the framework for local activities rely on international and European, as well as local and regional, governance. Notable is the interdependence between government and governance frameworks for both land-based and sea-based activities, which sometimes overlap, and are often contested.

The multi-level-governance system relies on, for example:

- international structures and cooperation (e.g. the UNEP, International Council for the Exploration of the Sea),
- the EU level (with several EU Directorates General, in particular DG Mare; EU Agency for Maritime Safety; Interact Network Knowledge of the Seas; European MSP Platform; European Parliament Intergroup Seas, Rivers, Islands and Coastal Areas; European Environmental Agency),
- transnational cooperations and arrangements such as CPMR (with its regional Commissions: Atlantic Arc Commission, Helsinki Commission, Balkan and Black Sea Commission, Baltic Sea Commission OSPAR, UNEP with the Interim Secretariat in charge of the Barcelona Convention, North Sea Commission, Islands Commission), Interreg, sea-basin strategies and macro-regional strategies,
- intergovernmental initiatives, such as the North Sea Regional Advisory Committee,

[23] A number of international projects have been developed to support the preparation and implementation of Maritime Spatial Planning and support cross-border collaboration. The MASPNOSE, the INTERREG NORTHSEE project or the Baltic Scope project are just examples. The Adriatic-Ionian macro-region explicitly supports the implementation of Maritime Spatial Planning and coordination among Member States.

- national and regional administrations and cooperations, such as the Baltic Sea Tourism Centre or the Wadden Sea National Park,
- cooperations and associations representing interest groups and NGOS (such as Blue Marine Foundation, World Network of Island and Coastal Biosphere Reserves, Plastic Oceans, Marine Conservation Society).

The number of organisations, private, semi-private and public, that concern themselves with ocean, marine or coastal matters has been growing substantially over the last three decades. In view of the increasing focus on international ocean governance, this will likely continue. Each development strategy therefore must take account of the specific arrangements, ecosystems, development challenge and economic sectors. Maritime cooperation, and the opportunities to make use of land-sea interactions, also depends on international law and jurisdictions (see Text Box 7-1).

There are substantial differences between the structures in individual states. Only a few have dedicated governmental organisations, for example, the UK Marine Management Organisation. The Belgium region of Flanders is an example for a region with an Agency for Maritime and Coastal Services of Flanders. Some countries, such as the UK, the Netherlands and Belgium, have developed National Coastal Management Strategies. However, national approaches towards coast and shoreline management vary considerably. The implementation of Maritime Spatial Plans, particularly planning for the territorial seas (the 12-mile nautical-zone, see Text Box 7-1), depends on the national planning system. Some countries, such as Germany, incorporate the 12-nautical mile zone in their land-based spatial plans. Others grant responsibility to the authorities in charge of sea matters and develop new plans. This difference in dealing with the coastal strip in MSP is an example for the contestation between authorities for sea- and land-based governance, and government.

Text Box 7-1: Jurisdictions and rights in marine space following the UNCLOS Convention

Territorial Seas: Following Art. 3, every state has the right to establish the breadth of its territorial sea up to 12 nautical miles, measured from baselines determined in accordance with this Convention. The legal status following Art. 2 gives sovereignty of a coastal State beyond its territorial land and internal waters to an adjacent belt of sea described as the territorial sea. Sovereignty extends to air space, bed, and subsoil.

Contiguous Zone: Following Art. 33, the contiguous zone may not exceed beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured. The legal status of the contiguous zone gives the coastal State the right to exercise controls necessary to a) prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea; b) punish infringement of the above laws and regulations committed within its territory or territorial sea (Art. 33).

Exclusive Economic Zone (EEZ): Following Art. 55 and Art. 57, the EEZ is an area beyond and adjacent to the territorial sea. The EEZ shall not extend beyond 200 nautical miles from

the baselines from which the breadth of the territorial sea is measured. In the EEZ, the coastal State has sovereign rights: a) for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed, the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; b) jurisdictions as provided for in the relevant provisions of the Convention with regard to i) The establishment and use of artificial islands, installations and structures, ii) marine scientific research; iii) the protection and preservation of the marine environment; c) other rights and duties provided for in the Convention.

Continental Shelf: Following Art. 76 the continental shelf comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.

The rights as per the UNCLOS Convention given to a coastal State include the purpose of exploring it and exploiting its natural resources. The natural resources consist of the mineral and other non-living resources of the seabed and subsoil, together with living organisms, which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil.

Sources: United Nations (1982)*, Papageorgiou and Kyvelou* (2018)

One important policy process for the coastal land strip is ICZM. This can address conflicts between, for example, coastal tourism and other marine and terrestrial sectors; resolve overlapping responsibilities of involved agencies; and increase cooperation between coastal tourism and other marine and terrestrial sectors. ICZM reflects the need for an adaptive process in coordination and resource management for environmentally sustainable development. However, cooperation and coordination in coastal borderland regions proves more difficult than one might assume. (Berzi and Ariza, 2018), for example, show that collaboration at the French-Spanish sea-borders poses a challenge in ICZM, partially because Spanish and French administrations draw the sea border differently These considerations, as well as the case study experiences from ESPON BRIDGES, highlight the importance of providing frameworks for collaboration for the different areas of activity. All over Europe, the increased attention towards the sea through ICZM, the Marine Directive and MSP has led to new governance issues and frameworks for collaboration. The Baltic Sea Region has, for example, actively used INTERREG funding to develop theme-related governance arrangements (see Text Box 7-2).

Text Box 7-2: Theme-related governance arrangements in the Baltic Sea

Interreg projects offer an opportunity to develop networks and provide theme-related governance for transnational coordination on issues of common interests. An example is the

PartiSEApate project in the Baltic Sea, developed to support a pan-Baltic approach to topics transcending national borders and to develop a governance model.

Another example is the Baltic Sea Tourism Centre. This flagship project under Interreg South Baltic (Baltic Sea Strategy) represents tourist organisations, national/regional authorities, and businesses from all programme areas, as well as external partners from neighbouring countries. The project aims to improve cross-border tourism communication and cooperation by establishing a permanent centre and by developing and implementing active tourism products in the green and blue tourism market, to extend the tourist season and thus address seasonality challenges.

Sources: own elaboration

7.6 Reconciling conservation and economic development ambitions in coastal areas

Development constraints are multifaceted and reciprocal as, for example, shown by the relationship between tourism and natural beauty. The case studies showed that potential responses for growth and development strategies need to be based on cross-sectoral and cross-level coordination and collaboration. In most of the cases, dedicated governance approaches and strategic policy and financial frameworks provided the background to implement projects. For example, in Norfolk-Suffolk (UK), a dedicated coastal fund from the government supported regeneration measures, such as the consolidation of the shoreline. The renewable energy and climate change modules revealed that successful policy responses are built on multi-level pushes towards sustainable development.

Contemporary development strategies in Europe's regions reflect the diversity needed to take account of the place-based characteristics and challenges in order to unlock innovation potentials. The case studies illustrate how the use of climate change adaptation strategies, ecosystem management, sustainable tourism strategies, the promotion of renewable energy sources and EU policies to alter local fishing communities can support transformation of local developments and their labour markets, so that regions can respond to declining tourism and the negative consequences of mass tourism.

7.6.1 Conservation and sustainable management: reactions to climate change and biodiversity loss

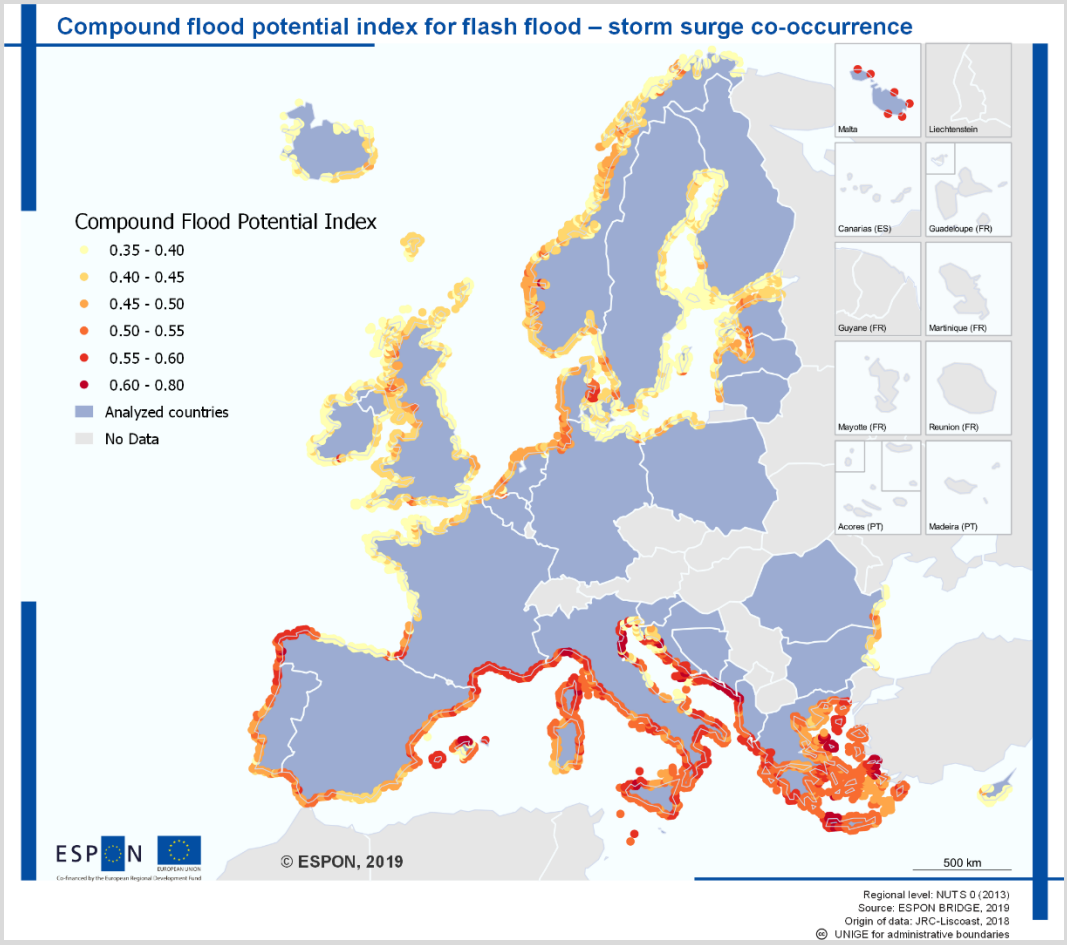
Coastal regions have vulnerable ecosystems and shorelines. They tend to have a high level of biodiversity with high numbers of both land- and water-based habitats and ecosystems, put at risk by human use. In addition, many European coastal regions are likely to be particularly impacted by climate change, which leads to rising sea levels and puts more areas at risk of hazards and extreme weather events such as droughts, floods and heavy rainfalls. Several scientific programmes have tried to project potential scenarios. A number of European policies, such as the climate change adaptation strategy, aim to present policy responses.

The impacts of climate change are manifold. Schuerch et al. (2018), for example, project that coastal wetlands may be lost due to sea level rise. Depending on the rise, these losses may represent between 20% (for low sea-level rise) and 90 % (for high sea-level rise) of the world's wetlands. This would, in turn, lead to the loss of biodiversity and ecosystem services. Such projections can only indicate potential changes. The study describes complex interactions between sea level variations, climate change, coastal erosion, human activities in the coastal zone, and developments in coastal wetlands. It suggests that coastal erosion and flood risks are likely to increase as a result of climate change, generating challenges for coastal risk management. Crucially, these different types of processes and extreme events are interconnected. (Pollard et al., 2018) for example, argue that coastal morphology changes flood hazards; flood risks depend on the shoreline, which may change over time; and erosion and flooding events occur simultaneously. As the precise impacts of climate change on coastal areas therefore can hardly be foreseen, risk prevention strategies need to focus on enhancing resilience in the face of risks that are not clearly identified. International and European cooperation initiatives have started to address these challenges through policies, governance arrangements, and support of project implementation as outlined in the Climate Change Module (see Annex 1). The Danube Delta case study (RO) on climate change highlights the need for local measures, which require related knowledge and cross-sectoral and cross-level coordination.

Text Box 2-1: Flood risks along European coasts

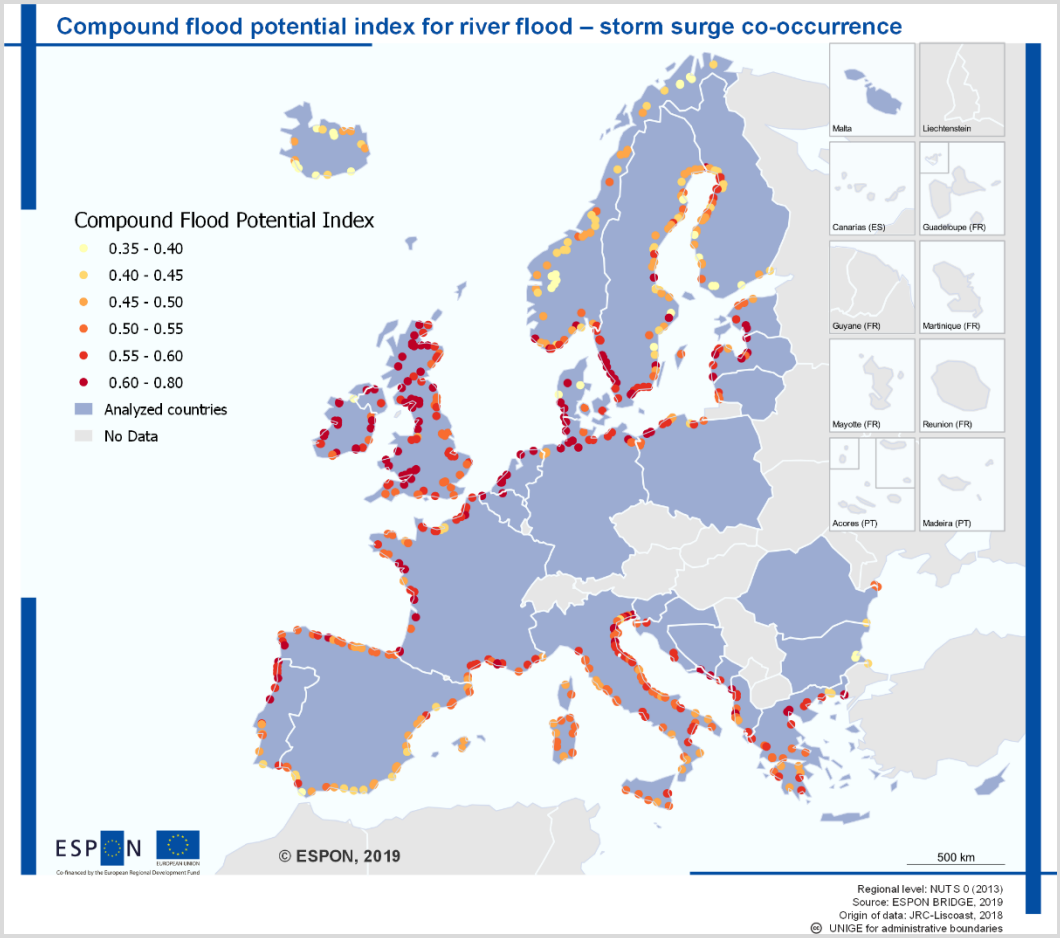
The analysis of the Compound Flood Potential Index for flash flood-storm surge co-occurrence reveals a high risk along the coastlines of the Mediterranean states for flash-flood storm surge co-occurrence (Map 7-1). The Atlantic and Mediterranean coastlines of Spain and Portugal and the coasts of France, Italy, Croatia, Montenegro, Albania and Greece have a compound flood potential index of above 0.55; even higher for most parts of the coasts. In the Adriatic-Ionian Sea Montenegro's coast is at high risk of extreme events. This map indicates the need for measures supporting Mediterranean states, in particular, in flash-flood-storm surge prevention.

Map 7-1: Compound flood potential index for flash flood-storm surge co-occurrence



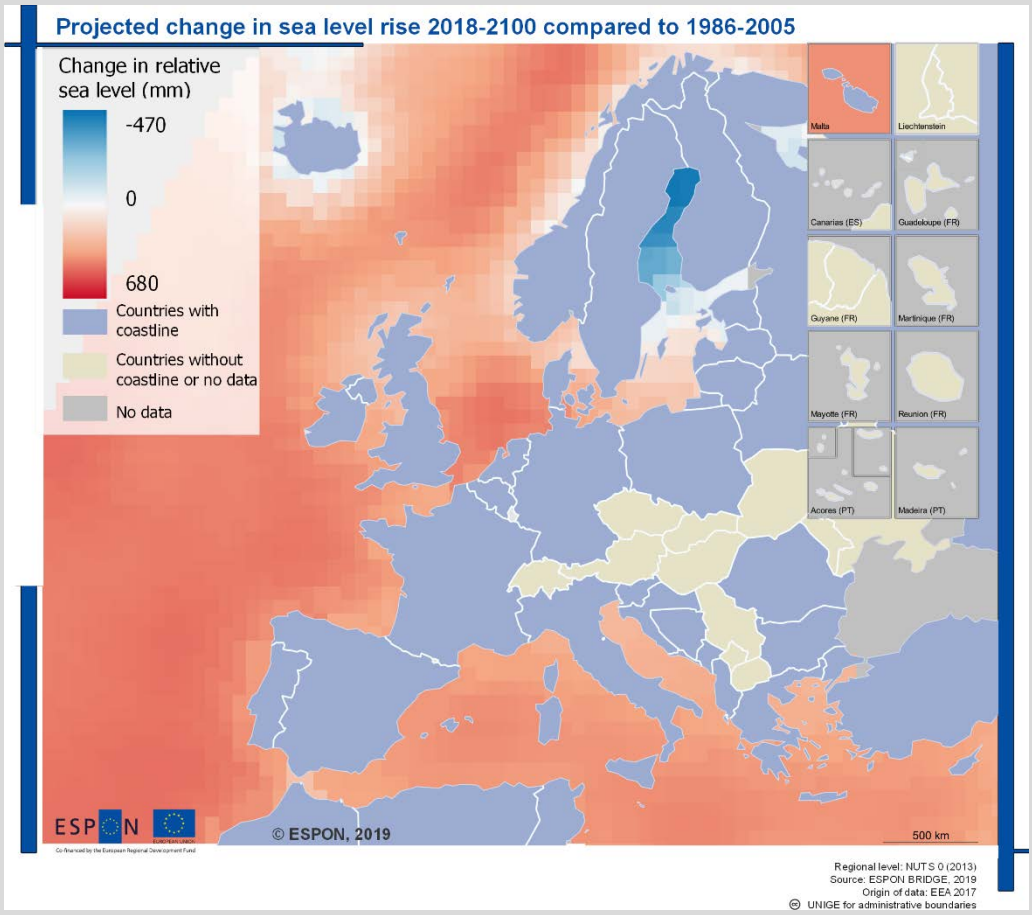
The analysis of the Compound Flood Potential Index for river flood-storm surge co-occurrence reveals a high risk for Northern European states, particularly the UK, Ireland, France, Belgium, Netherlands, Denmark and Sweden (Map 6-2). Due to the number of rivers that flow into the North and Atlantic Seas, as well as the Baltic Sea, these areas are of particular risk of floods due to river flood-storm surges. Policy measures would need to recognise the areas of risk.

Map 7-2: Compound flood potential index for river flood-storm surge co-occurrence



The evolution of such flooding risks in coastal regions in coming decades will partly depend on the change in the relative sea level. The projected change in relative sea level in 2081-2100, compared to 1986-2005, for the medium-low emission scenario RCP 4.5 igives a concerning picture of the sea-level rise (Map 7-3). in this scenario, all European Seas, apart from the Baltic Sea, would experience a change in relative sea-level of +505 mm. Overall, the change in relative sea-level is a little less close to shorelines, with projections of about +300 to +400 mm. The coasts of Iceland, Norway, and parts of Scotland would experience less sea level rise. The northern parts of the Baltic Sea are the only area with a negative change in relative sea level: down to -472 mm. Even in the medium-low emission scenario, coastal areas will need to be prepared for measures to deal with sea level rise.

Map 7-3: Projected change in sea level rise 2018-2100 compared to 1986-2005



Coastal regions, even within one region, differ substantially in their geomorphological characteristics, interfaces with the sea, ecosystem conditions, risk for loss of biodiversity ,and exposure to extreme events. Therefore, coastal regions require both narrow- and wide-scale reflections and actions, for example in prevention measures for hazardous events or ecosystem management approaches.

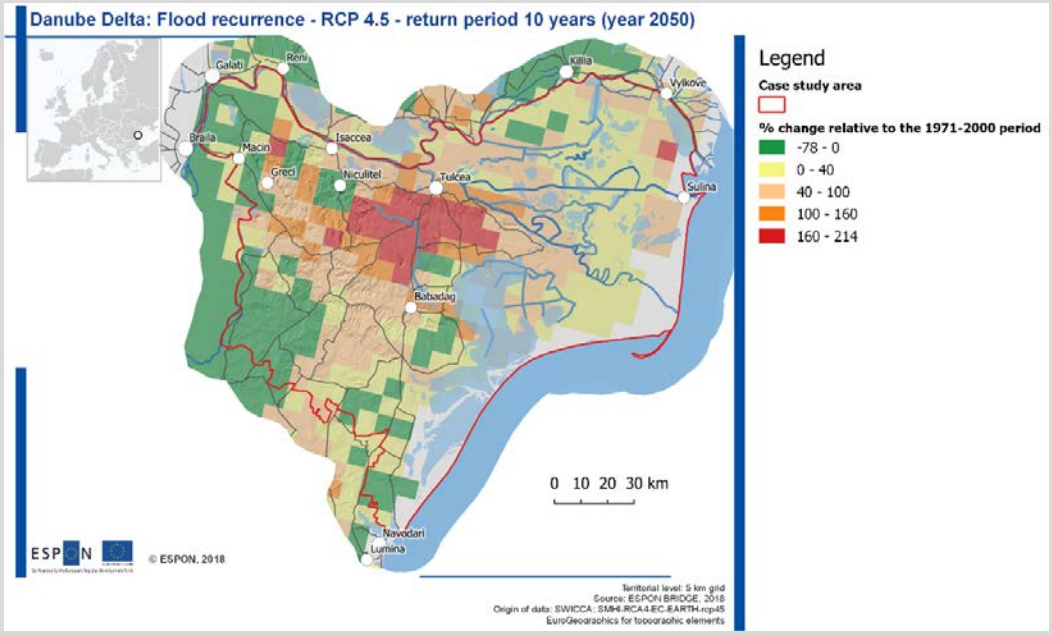
Text Box 7-3: Climate Change Adaptation Strategy for the Danube Delta (RO)

For the Romanian part of the Danube Delta, a Climate Change Adaptation Strategy was adopted in 2012. The case study area encompasses the whole of Tulcea County and a small part of Constanta County (lower right region), in order to properly include the entire Danube Delta Biosphere Natural Reserve as well as other natural and touristic attractions. The case study area varies from West to East. The Western part comprises a plateau in the southern part and the Hercynian Măcin Mountains. The Eastern part, the Danube Delta, is much younger, formed from river and marine deposits, brought in by the Danube River and Black Sea. The area has several types of natural protected areas that, together, create a specific attractiveness in terms of tourism and at the same time require certain levels of protection in

order to ensure long-term sustainability. The most important protected area covered here is the Danube Delta, designated by UNESCO as a Biosphere Reserve and a World Heritage Site (UNESCO World Heritage Centre, n.d.).

Sea level rise is one of the main threats for this coastal area. Land less than a metre above sea level has a high chance of being flooded in the next 100 years, and the total area at risk from flooding will increase by 50% (Giosan et al., 2014). Adaptation strategies and plans have been developed on all levels, and are part of transnational strategies, from the Danube Region Strategy to local and regional strategies. However, local strategies generally give little attention to climate change adaptation measures, as this would divert fund from economic development objectives with more short-term effects, that could have positive effects on wellbeing and also influence politicians' chances of re-election.

Map 7-4: Danube Delta: Flood recurrence



The Integrated Strategy for Sustainable Development for the Danube Delta, developed by the ITI Danube Delta (Ministerul Dezvoltării Regionale și Administrației Publice, 2016) specifically considers climate change adaptation in this coastal context. Specifically, one of the projects considers developing a financial support mechanism for climate change adaptation aimed at low-income families and SMEs. The strategy also includes specific measures aimed at reducing the effects of natural disasters, such as flooding. As much of the delta is at risk of flooding due to both rain and coastal erosion, the strategy aims to develop specific disaster plans and intervention infrastructures, as well as interventions aimed at reducing flood effects. Similarly, the management plan for the Danube Delta Biosphere Reserve (Administrația Rezervației Biosferei Delta Dunării, 2015) specifically takes climate change into consideration, in terms of risk management.

Due to the substantial number of stakeholders in the Danube Delta case study area, and the different timeframes between election period and climate change effects, coordination and cooperation across institutions and planning and strategic documents is key. In order for local administrations to be able to prevent risks, e.g. from flooding events, local scenarios need to be included in forecasts.

7.6.2 Innovation in coastal economies – growth strategies and renewable energy

Coastal economies undergo substantial changes depending on shifting land-sea interactions and changes in the global economic structure. Small local communities often depend on a small number of key industries in a region. Smart specialisation can provide a backbone for long-term strategies to tackle economic transitions.

Economic development opportunities differ in coastal regions, depending on the accessibility and distance to more urbanized areas, the attractiveness of the location, the physical circumstances, and the existing facilities. At the same time, coastal development is situated in fragile ecosystems, as noted above. Therefore, sustainable socio-economic development needs to be underpinned by multifaceted approach, taking account of the specific assets of the region, while safeguarding the natural heritage. While technological innovations have yielded rich rewards in the past, the intensified use of coastal areas, in terms of both urbanisation and industrialisation, have changed the social environment and coastal livelihoods. Paradoxically, innovation is essential to escape the predicament created by past practices. Future business and technological innovation needs to be underpinned by transformational social, economic and governance innovation to secure sustainable futures for coastal communities (Glavovic, 2013).

The Norfolk-Suffolk case study (UK) shows that regional dedication to transforming the coastline, supported by a long-term strategy, a dedicated governance structure, and collaboration with the windfarm industry can lead to considerable changes in less than a decade (see Text Box 7-4). Experience from Cyprus (see Text Box 7-5) indicates that long-term strategies need to take account of the opportunities for technological changes that may offer future solutions.

The case studies show that renewable energy sources offer, most importantly, the opportunity to drive an economic transition and allowi regions to provide energy security and contribute to the overall goal of a more sustainable development.

Text Box 7-4: Renewable Energy in Norfolk/Suffolk (UK)
and the impacts on labour markets and smart specialisation

The UKs counties of Norfolk and Suffolk set the goal to become the East Anglian Energy coast and a leading promoter of renewable energy. These rural counties are located at a relative distance from the UK's economic hotspots, and coastal regions have in particular suffered from a declining tourism and fishing industry.

Against the background of the EU's 2009 Renewable Energy Directive and the UK target to source 15% of all energy and 10% of transport fuels from renewables, the region aimed to make use of the favourable geographical characteristics of the North Sea. Shallow water facilitates the construction and maintenance of windfarms. In 2017, the East of England had three operational wind farms, three under construction, and five being planned.

The construction of large windfarms brings jobs to Norfolk-Suffolk and Essex during the construction phase. The operation and maintenance will bring long-term jobs. The construction of the Galloper wind farm, 26 kilometers off the Suffolk coast, for example, is expected to create around 600 jobs during construction, and around 90 long-term jobs.

The region envisions a holistic approach by putting energy at the heart of its growth strategy. Marketing approaches, such as the label Energy Coast, and the development of a Local Enterprise Partnership designating the area as a national Centre for Offshore Engineering, helped the region to reposition its role. Today, it is home to companies across the supply chain and an incubation centre at Ness Point in Lowestoft. The region further expands these developments into other sectors, for example by supporting tourists to learn about the energy coast and targeting conference tourism.

Text Box 7-5: Cyprus – Temporality of Policy decisions –
New chances for renewable energy

For islands such as Cyprus or Malta, energy security, production, and delivery is a considerable challenge. Most islands are not connected to the overall European grids, and need energy supplies. Their coastlines can offer opportunities to contribute substantially to overall energy production, for example, through the development of renewable energy sources like offshore wind energy, wave and tidal devices or hydropower.

The Cyprus National Action Plan for Renewable Energies aims at an installed capacity of 300 MW of wind power by 2020, mainly from onshore installations. The continental shelf is steep and consists of unstable ground. In comparison to other European seas, such as the North Sea, it reaches greater depth only a few miles from the coast. The use of huge offshore wind farms has so far been considered not possible or financially rewarding.

The use of offshore wind energy is exemplary because of new opportunities due to new and advanced technology, such as floating devices. This example shows that long-term

renewable energy strategies would profit from leaving room for technological advances and from identifying future potential areas of offshore energy in Maritime Spatial Planning.

Energy security and interconnectivity also play important roles. Cyprus is the last EU Member State completely isolated from energy interconnections with the European network. The new project of common interest is the EuroAsia Interconnector. This aims to connect Israel, Cyprus and Greece with a 2000 MV HVDC undersea cable. The first call for tenders for the construction Stage 1 was published in the Official Journal of the EU in April 2018. The project construction is estimated to take 12-24 months. The project is supposed to provide significant socio-economic benefits worth 10 billion euros to the partner countries, from the decrease of electricity costs by using more efficient methods in power generation, i.e. renewable energy sources, and because old power plants will not need to be replaced.

Sources : EuroAsia interconnector (2018), interview with Phaedon Enotiades (Cyprus Department of Town Planning and Housing)

7.6.3 Innovation in coastal economies – growth strategies, sustainable tourism and local markets

As noted above, coastal spaces are contested areas, with many different faces. Their territorial structures still reflect the complex historical, cultural, political and historical processes that shaped them, while some coastal areas undergo rapid developments and transformations. Tourism development has shown very different dynamics in Europe, with mass tourism developing particularly along Southern European coasts. Other areas, such as Norfolk-Suffolk (UK), have experienced the rise and fall of tourism. In order to cope with these trends, coastal regions make use of number of strategies, including the development of dedicated long-term tourism strategies and agendas, and the use of planning instruments and funds. The case studies show that, in addition to the management of tourism, growth strategies reflect changes in local markets, the provision of PSOs, and responses for dealing with second homes.

Text Box 7-6: Managing mass tourism in Southern Europe – the case of Algarve (PT)

The Algarve region is exemplary for a number of European case studies. This region is located in the south of Portugal; growth is concentrated in coastal areas in small and medium-sized cities. The largest cities are Faro and Portimão. In contrast to the coastal regions, there is a low population density inland.

The Algarve cost has traditionally been a centre for fisheries, in particular sardine fishing, and the shipping industry. Today tourism, recreation and retail are the largest economic sectors. In terms of the composition of GVA, the most important activities have a strong link with the regional specialization in tourism, highlighting "wholesale and retail trade; repair of motor vehicles and motorcycles and transport and storage", "accommodation and catering activities" and "real estate activities". The Algarve is not just a major tourism attraction for short-term tourists. There is a high level of residential tourism, as shown by the high

proportion of seasonally-occupied dwellings. In the last 30 years, most owners have been Portuguese; foreign ownership of this type of housing is more recent (Carvalho, 2015).

Development strategies in the region must take account of mass tourism and its negative effects. The Regional Coordination and Development Commission of the Algarve aims to control urban expansion and regulate the location of tourism and economic activities.

The Algarve approach is based on two pillars. First, the regional spatial planning strategy (PROT) controls the residential sprawl, promoting the organized development of residential and tourism occupation. The second pillar is the Regional Innovation Strategy, launched in 2015. The following priority specialisation areas have been selected: tourism; sea-related economic activities; agro-food and forestry; green economy; health and life sciences; ICT; and creative industries. As part of these strategies, the operational programme for the Algarve region emphasizes economic activities linked to promoting endogenous resources away from coastal areas, such as the inland area of Baixo Guadiana, and promoting village tourism based on the historical-archaeological cultural heritage.

Land-sea interactions and local economies in nearly all parts of Europe are at least partly based on tourism. Another important area of activity for nearly all coastal regions is fishing. The EU has supported small-scale projects through the Community-Led Local Development (CLLD) initiatives and Fisheries Local Action Groups (FLAGs). FLAGs have been developed all over Europe, allowing local stakeholders to access EMFF, EFARD, ERDF and ESF funds. CLLD allows local economies to test new approaches and initiate the transformation of local economies. (see Text Box 7-7)

Text Box 7-7: Examples of Community-Led Local Development (CLLD) and Fisheries Local Action Groups (FLAGs) in Europe for coastal community development

Community-Led Local Development (CLLD) initiatives and Fisheries Local Action Groups (FLAGs) offer opportunities for coastal communities to develop small-scale projects around fisheries which support the preservation of coastal communities and traditional fishing practices.

FLAGs are partnerships to fund local projects that represent a response to local development needs and opportunities. CLLDs can make use of a diversity of funds, aligning the theme depending on the focus of the implemented project. These may include funds from the EMFF or other ESIFs (ESF, ERDF or EARDF). The European Fisheries Areas Network (FARNET), brings together the community of stakeholders that implement CLLD under the EMFF, including the FLAGs, managing authorities, citizens and experts. The Directorate-General for Maritime Affairs and Fisheries (DG MARE) has set up a support unit for FARNET.

An example for a coastal CLLD is the Portuguese Project “Cabaz do mar”, which can be translated as the “basket of the sea”. Its idea is to support a short-chain marketing scheme between a local development company, an association of inhabitants, and the local

fishermen of Azenha do Mar. More than 60 fishermen contribute to the initiative. The idea is to sell baskets of fish at a fixed price. Depending on the daily catch the basket may include different fish. The project thereby contributed to an increasing awareness of less known fish species. The FLAG Além Tejo financed the project to allow the generation of additional income for fishermen from local economic developments. This example shows that local growth strategies often need localised collaborations with small-scale projects, where CLLD can provide a framework to develop cooperation.

Source: Fisheries Areas Network (2018)

7.7 Key challenge for coastal areas: Improved and extended soft governance as a method to enhance the resilience and prosperity

While coastal areas share some topographic and geophysical features, they are particularly diverse. Coastalness is accompanied by geophysical particularities, specific ecosystems, and often spatial development oriented towards the sea, which also provides a limit for development. A number of EU policies address marine and coastal spaces specifically. The ICZM and the MSP directives require Member States to provide information on the management of the seawards pressures and planning of these areas. However, coastal areas are not subject to a specific EU policy targeting development that indicates ways to address coastal-specific challenges or endogenous development opportunities, such as the distinctive fragile ecosystems created where land and water meet.

Today's rapid urbanisation and an increasing use of coasts for recreational or dwelling purposes form part of a narrative that people have forgotten how to live with the sea. Nearly forty percent of the global population lives in coastal communities. In Europe, coastal areas are generally grow more than their respective inland, with the vast majority growing in absolute terms, as shown by the maps of changes in population potentials (as shown in the fiche on 'critical mass'). The primary reason for living on coasts is that the attractiveness of being near, or facing, the sea. Historic settlements in coasts developed due to economic uses of the sea and proximity to ports. Coastal areas also represent the most important tourist destinations for European summer tourism, and primary destinations for second homes or retirement migration. This leads to substantial seasonality in the use of the sea. Coastal areas are subject to numerous different uses including leisure activities, sport activities, fishing, logistics, and environmental protection which result from the coastal interface to the sea and inland terrestrial areas. In times of increasing pressures – of competing uses of narrow coastal strips, expansion of coastal cities landwards, densification of coastal areas, vulnerability to impacts of climate change and a changing global economy – coastal areas are undergoing substantial transformations. These need to be accompanied by a diverse set of policy measures to allow coastal communities to respond to these challenges. These policy responses need to allow coastal communities to take account of their diverse set of characteristics and geophysical

factors while allowing local and regional authorities to support transformation processes of local economies and respond to socio-demographic challenges.

While coasts offer specific development opportunities through, for example, smart specialisation, use of renewable energy, or sustainable tourism, they are subject to specific vulnerabilities. Some of these are magnified by the impacts of climate change. Coastal planning and ICZM increasingly face uncertainty over these impacts as well as the impacts of human activities on biodiversity and ecosystems. Changes that initially happen in the biophysical dimension immediately change the conditions for land-sea interactions. For example, rising sea temperatures will change living conditions for aquaculture, which may have detrimental effects on fish species. These, in turn will also change conditions for aquaculture and local economies. Another example is that disturbed sediment transport, due to shoreline changes, erosion or accumulation of sediment, can lead to disturbed ecosystems and, for example, change conditions for local fisheries or shellfish stocks or to saline intrusion, which disturbs local ecosystems. The loss of beaches and dunes may impact the attractiveness of regions for recreational use. Often, measures for conservation of ecosystems do not lie within local and regional remits. The interdependence between terrestrial and marine developments and land- and sea-based activities for ecological safeguarding, as well as human well-being and socio-economic activities, poses both challenges and opportunities for this geographic specificity. The case studies and the modules show that coordination needs to make use of both multi-level governance and **cross-sectoral interrelationships to initiate sustainable development.**

Coastal areas form part of **sustainable development narratives** in their domestic contexts. Norfolk-Suffolk (UK) is an example of a region that could both contribute to the national renewable energy strategy and reposition its role in the national and regional economy by developing towards being an offshore-energy leader. Integrated management allows support for specialisation and the linkage of these developments to existing economic sectors, for example by developing touristic attractions around this new economic strand. Other smart specialisation strategies build on existing socio-economic patterns, e.g. building on fishing. The case studies illustrate how climate change adaptation strategies, ecosystem management, sustainable tourism strategies, the promotion of renewable energy sources, and EU policies can change local fishing communities and support **the transformation of local developments and their labour markets**. This can allow regions to respond to declining tourism or the negative consequences of mass tourism.

Investments to support local transformation: In most of the case studies, dedicated governance approaches and strategic policy and financial frameworks provided the background to implement projects. For example, in Norfolk-Suffolk (UK), a dedicated coastal fund from the government supported regeneration measures, such as the consolidation of the shoreline.

Building on the differentiation of the diverse set of characteristics introduced above, and the results of the module reports and case studies, **policy responses** need to go **beyond themes**.

While contemporary development strategies in Europe's regions reflect the diversity needed to take account of the place-based characteristics and challenges in order to unlock innovation potentials, European policies can be better design to support multi-sectoral endeavours.

Multisectoral coordination: Development constraints are multifaceted and reciprocal as, for example, shown by the relationship between tourism and natural beauty. In addition, coastal diversity often shows a fine granular mosaic with numerous individual strips is. Managing and governing coasts requires a different set of measures depending on the location in Europe, the concrete local challenges, and the size of coastal areas that is affected, both towards land and towards the sea. Potential responses for growth therefore need to be based on collaboration across sectors and scales.

Supporting Soft Governance: Diverging spatial claims in coastal regions make coordination and soft governance arrangements even more necessary. To this end, marine governance requires arrangements that are significantly different from terrestrial governance (Kraan et al., 2014), and coastal governance needs a framework to build on both, incorporating the views of all involved authorities and relevant stakeholders. There is a need to provide platforms to develop soft governance arrangements that allow for regional rethinking. ICZM and MSP can offer starting points to support new specialisation strategies while involving sea- and land-focussed stakeholder groups. Soft governance processes can further facilitate the land-to-land interface of coastal regions, as exemplified by the Normandy Region's initiative to intensify cooperation across the English Channel to jointly prepare for Brexit (Région Normandie, 2017).

Focusing on the support of soft governance processes, providing links between different governance processes, developing multi-sectoral coordination and support measures for local transformation can lead to the better integration of policies, which may not only enhance socio-economic developments, but also contribute to safeguarding the environment and coastal landscape.

8 Policy perspectives

8.1 Key findings from thematic modules

Findings from the thematic modules are presented in Annex 1. This section describes key policy perspectives emerging from their reviews of case study outcomes, policy documents, scientific literature, applied reports and sources and other sources.

Innovation

The 'Innovation' module has identified potentials of TGS that may be untapped unless their economic actors are enabled to connect to the appropriate R&D milieus, share good experiences, and overcome obstacles to transformation in regional and local governance structures. Given the wide disparities in levels of innovativeness and entrepreneurship across TGSs, European-level policies have great potential added value. Exchanges of experience, combined with European-level support to the idea that TGS have untapped potentials, can therefore help to challenge established ideas on the potentials of TGS.

Sustainable tourism

The specific attractiveness of TGS for tourists is described in the 'Sustainable Tourism' module: mountains, islands, coasts and, to a lesser extent, SPAs concentrate most of Europe's non-urban tourism hotspots. Yet TGS are characterised by specific vulnerabilities. Tourism may generate excessive pressures on their natural environment, their resources (e.g. water in islands) and local communities (e.g. prices of real estate). These specific pressures and vulnerabilities could be better taken into account when monitoring the sustainability of tourism practices. European authorities can contribute to promoting cross-sectoral coordination in the design and implementation of tourism development strategies, in order to (a) take better account of the sector's positive and negative externalities, (b) ensure that a long-term development perspective prevails over short-term gains, and (c) encourage more sustainable forms of tourism with respect to energy and resource consumption and impacts of local communities. The 'Biodiversity conservation' module in this respect notes that recognition of the importance of protecting natural resources for longe- term sustainable development is often insufficient among actors in the tourism sector.

Public Service Obligations in the Transport Sector

PSO contracts in the transport sector are of critical importance for a number of TGS, as they are often characterised by an insufficient critical mass, insularity (disconnection) and challenging meteorological conditions for the operation of transport services. With regard to arrangements to compensate for market failures in the provision of transport services, an integrated territorial perspective seldom prevails. PSOs tend to be handled by national or regional transport sector authorities. There are also issues regarding multimodal connections, the diversity of needs of different user groups (e.g. tourists, locals) and, more generally, the intervention logics associated to PSO contracts. It is difficult to associate the concrete

provisions of individual PSO contracts with social and economic objectives pursued by public authorities. Instead, the focus is on ensuring coherence to European competition rules. This *inter alia* implies that PSO contracts are surrounded by extensive secrecy. A European discourse on the relevance of PSOs for regional development and territorial cohesion would be particularly relevant for TGS.

Social Innovation in the provision of services of general interest

The module on Social Innovation in the provision of services of general interest (SGIs) reflected on the triggering factors of social innovation practices, the actors involved, and the challenges to be addressed. A key difficulty is to transform innovative initiatives (e.g. developed as part of projects with ESIF support) into long-lasting solutions. It is also important to ensure that proponents of innovative practices are encouraged, particularly to overcome obstacles linked to bureaucratic procedures, regulatory constraints, and social control. These issues are particularly relevant for TGS exposed to a lack of critical mass and insularity. The review of case studies revealed a wide range of social innovation practices. This makes it all the more relevant to provide frameworks and guidance that would enable each local community in TGS to position its own initiatives in a wider context, identify and address potential pitfalls at an early stage, and draw on other experiences regarding the funding, governance, and promotion of innovative practices. ESPON BRIDGES has developed a matrix for this purpose.

Labour Market Transitions

ESPON BRIDGES chose to approach TGS economies from the perspective of Labour Market Transitions for different reasons. While the workforce is increasingly mobile, many TGS have long-standing traditions of seasonal migration, multi-activity and in, some cases, many decades of demographic decline. Flows of workers and other inhabitants are an important component of their social and economic situation. A flow of particular concern is the increasing proportion of young people pursuing higher education, as this usually implies moving out of the TGS, with variable levels of return migration after graduation. There are therefore structurally imbalanced demographic flows associated with the development of a knowledge society in TGS. Pursuing the objective of territorial cohesion presupposes the funding and implementation of compensatory public policy measures. The ‘Labour Market Transitions’ module describes policies that have been successful in attracting new talents and promoting return migration. It shows that, by adopting a more flow-oriented approach, European policies and funds, such as ESF and the future ESF+, could implement more long-lasting solutions to development challenges in TGS characterised by brain drain and demographic decline. This would include measures focusing on the self-perception of TGS communities, and on their external branding as attractive living environments.

Residential economy

The starting point of the ‘Residential economy’ module is an observed paradox in regional development policies. While most attention is dedicated to competitiveness and the promotion of export-oriented business, most of the income flows that constitute the basis for the economic

development of individual regions corresponds to different types of income redistribution, e.g. revenue from out-commuters; pensions; social benefits; remittances; consumption of leisure services by second-home owners, tourists and other visitors; and consumption of services of general interest (co)funded by national authorities. This 'residential' component of the regional economic 'basis' can be particularly important in TGS that offer an attractive living environment. The Algarve coast (PT), for example, seeks to attract pensioners from across Europe. In the case of Vågan municipality in Nordland (NO), while export-oriented industries correspond to 9% of the basis for the local economy, the rest is the residential basis (47%), the public basis (27%) and the social basis (17%). From such examples, one can question the relevance of the focus of ESIF-funded programmes on external competitiveness and the development of export-oriented businesses. However, negative effects of an excessive reliance on 'residential economy' types of income may also be identified. For example, they tend to primarily generate low-paid employment opportunities; and inflows of economically inactive residents may make real estate too costly for other TGS inhabitants. The notion of balanced residential-productive systems could therefore guide the design and implementation of TGS development strategies.

Biodiversity conservation

The drivers for biodiversity conservation issues differ across Europe, but there are commonalities within TGS categories. For mountains, these include the compression of climatic zones over short distances, diverse topography, relatively low levels of anthropogenic modification and, in many cases, isolation from similar environments. Isolation from other islands and the mainland is the main reason why many islands are 'hotspots'. Both islands and mountains –particularly mountainous islands – tend to have particularly high proportions of endemic species. Coastal areas also tend to have high levels of biodiversity because they are the interface between land and sea, with a high number of land- and water-based habitats. Although the biodiversity of SPAs is generally not particularly high, they include much of Europe's wilderness. The 'Biodiversity conservation' module concludes that CAP could play a significant role, e.g. promoting High Nature Value (HNV) farming in TGS. Conservation measures associated with labels for local agricultural products and designations of origin could also play a significant role. Bringing together the broad range of existing biodiversity measures could help to identify the most effective policies and approaches and then explore these through targeted actions. The notion of ecosystem services provides important opportunities, but its implementation remains limited. Stronger cross-sectoral involvement of stakeholders in its further development is required. While the framing of conservation is predominantly 'people and nature', there is still a long way to go in reconciling what are often regarded as contradictory goals, especially in cases of conflict. European exchanges of experience can help to share experience and knowledge on these issues in structured ways.

Energy production and provision

The different TGS categories concentrate a significant proportion of Europe's renewable energy production potential: mountains (hydroelectricity), SPAs (biomass), coastal areas (offshore

wind, ocean energy) and islands (solar, wind). The exploitation of these resources may be strengthened as restrictions on the use of fossil fuel are imposed, and could be an important driver of development in TGS. However, impacts on employment and income at the local level depend on a number of factors. A more systematic review of arrangements to ensure that local communities benefit from the development of such energies in different European countries is called for. The Energy production and provision module concludes by distinguishing between three types of TGS: (1) TGS with a substantial renewable energy potential, where the key objective is to ensure that the development of renewable energies contributes to the decarbonisation of the EU, but also that it leads to social and economic development; (2) TGS with limited renewable energy potential, where the focus can be on optimising decentralised energy production; (3) disconnected islands, that face important challenges of energy security, where renewable energy can help to ensure a stable and sustainable energy supply with limited emissions of greenhouse gases.

Climate change

Climate change-related challenges are particularly important in TGS. Along coasts and on islands, the combination of sea level rise and a warmer and more extreme climate is already leading to many impacts – including coastal erosion, storm surges and intrusion of saltwater into groundwater. Temperature rises in mountains have been greater than the European average and, in the arctic, where many SPAs are situated, greater than the global average. Winter tourism in middle mountains is particularly threatened. The 'Climate Change' module identifies five sets of challenges. (1) Adaptation can be viewed as challenging, involving tough decisions for policy-makers, with expensive preventive and adaptive measures to avoid or reduce highly costly climate-related events (flooding, drought etc.). High-level political commitment is therefore needed. (2) The alignment of national, transnational and regional climate change adaptation strategies (CCASs) would help to address the specific issues of TGS. Examples of good practice have been identified. (3) The capacity in regional and local administrations is often insufficient. There is therefore a need for capacity-building in the field of CCASs and for pooling of resources. (4) Suitable information is not always easily accessible through portals such as Climate ADAPT, especially for those who are not proficient in English. (5) There is a lack of not only human, but financial, resources for both planning and action, especially at lower levels of governance. The module concludes that, while 'climate change' is the terminology used by the European Commission (and more widely), a wider approach may be suggested: on resilience to climate change, or 'climate resilience'. This concept recognises that, despite measures to mitigate climate change and to adapt to its impacts, there are "climate change–driven conditions for which people (individuals, communities, states, and even countries) remain unprepared, leaving them open to potentially harmful impacts" (Union of Concerned Scientists, 2016: 1).

8.2 Cohesion policy in TGS in the current and forthcoming programming periods

The European Commission has produced a report on TGS in the current programming period (Carbone, 2018). This report confirms some of the findings of ESPON BRIDGES and previous ESPON studies dealing with geographic specificity, noting that TGS cannot be treated as a whole, as each category is diverse, differences can be encountered within each category, and different geographical specificities often coexist in the same area. At the same time, common challenges and needs in relation to territories with geographical specificities are identified e.g. concerning remoteness and problems in connectivity, environment preservation and protection, better access to public services. The report observes that some Member States concerned by geographic specificity use the dedicated sections of partnership agreements and operational programmes to address TGS issues. While this is not the case for all Member States, most address the needs of TGS in some way or another. However, while mention is made of the needs and challenges of TGS at strategic high level, the programming process at the local operational level is less focused on tackling specific TGS issues on the ground. This point resonates with the findings of the analysis of the two previous programming periods (2007-2013 and 2000-2006) (ADE, 2012). This is a key point to be addressed in the new Cohesion Policy programming process.

Managing Authorities report a low take up of the possibilities offered by the 2014-2020 ESIF Regulations, particularly derogation to thematic concentration and adjustments to co-financing rate. Furthermore, as has also been noted in other contexts, very few CLLDs and ITIs target TGS. These observations suggest a need for the European Commission to give greater encouragement to Managing Authorities and national authorities coordinating Cohesion Policy implementation to develop tailored interventions to tackling TGS issues.

Similarly, few financial instruments (FIs) were reported to have been used to address the needs of territories with geographical specificities. Member States established more FIs related to islands and sparsely populated challenges and fewer for mountains (e.g. a national FI was set up for Bornholm island in Denmark; a FI managed by Almi Invest in Sweden). One may hypothesise a lack of capacity at the local and regional levels in TGS to effectively use FIs. There is clearly a need for new approaches to tackling the problems in TGS, so building capacity at the local and regional levels is a priority for the next programming period. Insufficient access to capital is increasingly identified as a key development bottleneck, as exemplified by the November 2018 study funded by the Danish Ministry of Foreign Affairs Denmark and Arctic Economic Council on *Business Financing in the Arctic* (Oxford Research et al., 2018).

The Carbone (2018) report's findings on the difficulty of defining the precise financial allocations reserved to TGS echoes with the findings of the present project. The challenges and opportunities of TGS can seldom be addressed by singling out these territories. Whether one considers Innovation, PSOs in the transport sector or labour market transitions, keys to a more balanced and prosperous development in TGS can be found by targeting their interactions with

other regions. This implies that it is not meaningful to 'earmark' funds for TGS. Assessments of the extent to which TGS issues are addressed can primarily be made on a qualitative basis.

In order to guide reflections on how cohesion policy in the forthcoming programming period could address geographic specificities, project findings associated to each of the specific objectives in the current European Commission proposal for Common Provisions Regulation have been synthesised (Table 7-1)):

- For Policy Objective (PO) 1 ('a smarter Europe'), the key development is improved connections between TGS and other territories. TGS need to overcome their insufficient critical mass, and establish mechanisms that make it possible to mobilise external resources whenever needed.
- PO 2 ('a greener Europe'): renewable energy production potentials are concentrated in TGS, and islands face specific challenges in their transition to clean and sustainable energy provision. All TGS also have specific vulnerabilities to climate change. Mountains are Europe's water towers, while islands are particularly exposed to water shortage. The remoteness and disconnection of many TGS also makes it appropriate to explore the notion of 'circular economy'. Reflections on 'residential economy', as presented by BRIDGES, can help to focus on economic flows associated to circular economy, and its potential contribution to economically and socially more sustainable development in TGS.
- With respects to PO 3 ('A more connected Europe'), the key issues for TGS are to improve connections between secondary transport networks and TEN-T core networks, and to make it possible for TGS actors to effectively take advantage of the possibilities offered by ICTs. Current cohesion policy proposals focus on multimodal mobility in urban areas. However, ESPON BRIDGES has shown that there are numerous challenges in the design, implementation and monitoring of PSOs in TGS. European measures to promote exchanges of experience and good governance in this field could be of added value.
- The need for alternative approaches adapted to the situation of TGS is particularly obvious for PO 4 ('A more social Europe'). Measures to promote more balanced demographic flows, especially among persons with capacities and competencies that have been identified as priorities, are a necessary component of a policy to improve the economic and social development 'fundamentals' in many TGS. This includes incentives for 'return migration' after graduation, as well as efforts to brand TGS as attractive living environments for newcomers. The importance of seasonal employment in TGS should also be considered.
- The importance of geographic specificities in the territorial identities of EU citizens can become a lever in the pursuit of PO 5 ('Europe closer to citizens'). Actors from different horizons can be federated around a geographic specificity. At the same time, it is important to acknowledge the conflicts between different types of activities and pressures in TGS, e.g. with respects to affordable housing and protected areas.

Table 7-1: Links between TGS and proposed Cohesion Policy Specific Objectives for 2021-2027

Specific Objectives	Links TGS
1. A smarter Europe - innovative and smart economic transformation	
- **enhancing research and innovation capacities and the uptake of advanced technologies;**	- TGS have a **limited capacity to develop own R&D milieus**. The issue for them is to connect to appropriate external milieus (e.g. Lapland region, the mobilization of external knowledge was an essential part of the Arctic Smartness Portfolio project, which aims to develop domains based on the five selected clusters/cluster initiatives across the region). - **There are different barriers to innovation**: **territorial**, e.g. remoteness, peripherality, ecological vulnerability; **non-territorial**: e.g. limited diversification of the local economy, social control, lack of critical mass of relevant innovation assets (few or no universities), historical heritage generating specific path dependency patterns. - Remote, inaccessible or geographically peripheral territories can be **relatively less attractive to private sector investment**. Large distances can lead to **higher transaction costs and can hamper connections between key stakeholders of the innovation process**.
- **reaping the benefits of digitisation for citizens, companies and governments;**	- **Connectivity is an issue** in certain TGS. **Digital infrastructure is often not as well-developed** in TGS compared to other territories. The r**elatively lower broadband coverage** is linked to small markets and **relatively higher costs of provision**. - The **potential benefits of digitization** are particularly important in TGS. There are opportunities for TGS products to **reach larger markets, via e-commerce and ICT**. There is a role for the **digital economy to help deliver public services in TGS regions** e.g. e-health, e-government. Social innovation actively involving target communities is key to ensure that such innovations generate positive impacts.
- **enhancing growth and competitiveness of SMEs;**	- Relatively **lower density of firms, universities, colleges and people** compared to other territories. - Relatively **lower numbers of middle-range innovative firms** and a dependence on **large commodity firms** in certain TGS territories. - When considering potentials for the development of the 'residential economy', one would focus on the efficiency of SMEs in the provision of consumer services, rather than on capacity to compete in external markets. - **Potential to develop 'niche sectors'** linked to the endogenous potential of the TGS regions linked to their geographical, environmental and/or climate characteristics. Whilst it can be difficult for SMEs in TGS to compete on price, they can compete on e.g. specific qualities of products and branding.
- **developing skills for smart specialisation, industrial transition and entrepreneurship**	- **Lack of critical mass of companies and innovation stakeholders** is a challenge. A key need is to **encourage local universities in TGS to act as key brokers and "hubs"**. - Need to **develop innovation strategies that are "place-based" and exploit local territorial assets** e.g small islands, such as Bornholm, can act as a **catalyst to develop strategic partnerships and/or test-beds to foster regional innovation potentials**. - The **focus on skills and knowledge often implies that youth (and others) from TGS are encouraged to move to locations with higher education and training opportunities**. Such efforts therefore need to be accompanied by measures to address imbalances in demographic flows.

Specific Objectives	Links TGS
2. A greener, low-carbon Europe	
- **promoting energy efficiency measures;**	- There is no **one-size-fits-all solution for TGS in the field of energy efficiency and promoting renewable energy** across Europe. The key is to optimise the strategies for developing and deploying energy efficiency measures to the different territories according to their assets, needs and priorities, national frameworks and stakeholders.
- **promoting renewable energy;**	- Considerable **potential for renewable energy production (e.g. solar, geothermic, wind and biomass energy) in TGS regions** to **offset the negative carbon footprint of big urban centres** and **contribute to economic growth and development**. - **Mountains (hydroelectricity), SPAs (biomass), coastal areas (offshore wind, ocean energy) and islands (solar, wind)** (e.g. Clean Energy for EU Islands initiative) play specific roles in the development of renewable energy across the EU. - **Certain factors can act as barriers for the development of renewable energy in TGS**. For example, land constraints and high prices are particularly challenging in islands with a large tourism-based industry. - **Some TGS are disconnected from main European electricity grids** and still struggling to design and implement renewable-based energy solutions that are cheaper than importing fuel. Thus, imperatives linked to climate change mitigation, or medium to long-term resilience in the face of fluctuating prices of fuel on world markets have **not led to investments that would make their energy production system significantly more autonomous or sustainable**. - The **challenge for disconnected TGSs is to identify renewable energy sources that can be exploited in an economically viable way.** Investment needs, however, differ in different TGS depending on the current status and trajectory of the development and deployment of the concrete renewable energy technology.
- **developing smart energy systems, grids and storage at local level;**	- **Developing decentralised energy production solutions in TGS can improve economic, social and environmental resilience**. This can also deliver other benefits such as incomes and new employment opportunities in the operation and maintenance of installations. - **Some TGS are already current 'hot spots' and 'flagships' of the development of renewable energy sources and provide a significant proportion of European energy production**. In these cases, it is crucial to ensure a good connection to the European grid for securing the supply of electricity at national, regional and European levels. - Some **TGS have modest or limited renewable energy potential due to their natural resources and geographical location**. In these areas, the key objective is to maximise the development of decentralised energy production solutions that could improve their economic, social and environmental resilience. - The **numerous advantages of decentralised energy production in TGS** include reduced costs for transmission and distribution systems, reduced grid power losses; more efficient data management systems when developed with smart grids; a larger share of zero-carbon technologies; increasing local security of energy supply; shorter transport distances and reduced energy transmission losses; and fostering of community development and cohesion by providing income sources and creating jobs locally.

Specific Objectives	Links TGS
- **promoting climate change adaptation, risk prevention and disaster resilience;**	- **Climate change in TGS is multi-sectoral, affecting all economic sectors, and cannot be addressed on its own**; it is one of many driving forces that need to be considered in the context of sustainable development. It must also be recognised that whilst **investments in adaptation are needed, many actions taken to mitigate climate change also have consequences for adaptation and resilience.** - **The impacts of climate change in TGS include the increasing risk and frequency of natural hazards affecting transport infrastructure and settlements as well as the security of tourists.** This is a key concern not only in mountainous TGS but also to the lowlands connected by transport infrastructure passing through these areas. However, **climate change might also bring opportunities for mountain tourism** as the cooler climate compared to coastal areas will increase the attractiveness of mountain areas. - Along coasts and on islands, **the combination of sea level rise and a warmer and more extreme climate is already leading to many impacts** – including **coastal erosion, storm surges and intrusion of saltwater into groundwater** – which are likely to become more severe and **affect not only people in coastal areas but more widely, for instance if flooding or storms affect transportation or energy infrastructure**. - **Coastal tourism is putting pressure on the carrying capacity of coastal ecosystems.** Moreover, many mass tourism destinations are located along Europe's coasts. The strong seasonality of coastal tourism and the fact that tourism activities are often concentrated in densely populated areas puts **additional pressure on already strained ecosystem services and natural resources, increasing the risks from long-term climate change.** - The **combination of climate change driving forces is of relevance at the European scale**: to the tens of millions of people who live on or near coasts, close to sea level; the tens of millions of tourists who visit these TGS; and all individuals and businesses relying on transport infrastructure situated along coasts, including ports. **Changes in sea temperatures are also of relevance for fisheries and aquaculture, influencing which species can live and reproduce; and new species are moving into European waters from warmer seas**. - In terms of climate change, to date, EU programmes, and generally those of Member States and institutions at lower levels of governance, have **invested far more resources in mitigation than in adaptation.** - **Policies and actions in TGS should be based on the best evidence possible regarding climate change**, **especially at the regional (sub-national) or local scales**, at which most adaptation actions need to be planned and implemented. - While climate models can provide indications of directions of change (trends), **the extent and magnitude of changes are uncertain.** This is particularly true for precipitation (including relative proportions of rain vs. snow, a key issue for mountain areas and northern SPAs) and extreme events, which may be episodic and short-term, but have long-term consequences. - **Such uncertainties are particularly large for mountain and coastal areas and islands because of the complexity of their climates**. In addition, given that the impacts derive from the complex interactions of the climate system with the linked components of social, economic and environmental systems, there are even greater uncertainties about probable impacts for which societies need to plan. - There is a **need for effective multi-level governance**, with coordination across both sectors and governance levels, in developing and implementing strategies and plans **for climate change adaptation in TGS.** However, the extent to which **strategies to foster adaptation have been developed**

Specific Objectives	Links TGS
	and/or implemented varies greatly at every scale. Small TGS communities often do not have the capacity to design and implement adaptation strategies. **Support mechanisms are needed address this issue in TGS**. - The **lack of sufficient capacity in regional and local administrations, and the need for capacity-building, in TGS is notable**. One reason for the lack of both coordination and action, especially at these lower levels of governance, is **lack of understanding of not only the likely changes in climate and possible resulting impacts**, but also **what opportunities may exist for adaptation and to increase resilience**.
- **promoting sustainable water management;**	- Islands, and particularly, **small islands are environmentally more vulnerable to the growth of Municipal Solid Waste (MSW)** generated by tourism. As for coastal areas, tourism creates significant pressures on water resources. This is especially true in Mediterranean islands, such as Malta, where the increase in water demand as a result of the seasonal peak in tourism coincides with the driest months of the year; on the Greek island of Patmos, it increases sevenfold. - **Coastal areas have increased water demand, particularly during peak tourist season**, when the risk of water deficit increases especially in the case of droughts. - **Mountains play a significant role as "Europe's watertowers",** impacting access to water in large parts of Europe.
- **promoting the transition to a circular economy;**	- **The concept of the circular economy has considerable relevance for TGS**. Notable, these territories often suffer from a set circumstances, such as remoteness, peripherality etc which combine to constrain socio-economic development. Becoming more self-sufficient in developing circular economy dynamics in several sectors would enhance economic development in TGS and reduced dependence on larger, urban centres. - The notion of **'residential economy'** can help to focus on economic flows associated to circular economy, rather than on physical flows as is traditionally the case. This also helps to describe how a more circular economy may improve perspectives for economically and socially sustainable development. - **Providing training, advice and capacity to local administrations on strategies to develop the circular economy in TGS is very important**.
- **enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution;**	- **Protecting and enhancing biodiversity is a key issue in TGS.** This needs proper investment and strategy implementation at various levels of governance to ensure that biodiversity is not lost but rather an asset for future generations. - **Many TGS are 'hot spots' of biodiversity** – i.e. they have a particularly high variability of species and/or habitats – for a variety of reasons. For mountains, these include the compression of climatic zones over short distances, diverse topography, relatively low levels of anthropogenic modification and, in many cases, isolation from similar environments. - **Isolation from other islands and the mainland is the main reason why many islands are 'hotspots'**; and both islands and mountains – and particularly mountainous islands – tend to have particularly high proportions of endemic species. - **Coastal areas also tend to have high levels of biodiversity because they are the interface between land and sea**, with a high number of land- and water-based habitats. Although the biodiversity of SPAs is generally not particularly high, they include much of Europe's wilderness. This is a complex concept which incorporates four qualities: a) naturalness, b) undisturbedness, c) laggardness and d) scale.

Specific Objectives	Links TGS
	- **Biodiversity conservation in TGS has important social and cultural dimensions**. Biodiversity in many landscapes is underpinned by historical and contemporary cultural practices which are an important part of the identity of communities and regions. - **The dominant response to concerns over the need to preserve ecosystems and biodiversity in Europe has been through the implementation of protected areas**. **The value of 'natural capital' is often not sufficiently reflected in decision making or monitoring systems or integrated with systems of economic accounting**. Challenges include access to robust and reliable data, general gaps in knowledge regarding ecosystems, effective management of the Natura 2000 network, assessment of ecosystem services and availability of finance. - Many biosphere reserves are located in TGS, and the **ESPON BRIDGES case study synthesis showed that they play important roles in delivering biodiversity conservation alongside local community development**.
3. A more connected Europe - mobility and regional ICT connectivity	
- **enhancing digital connectivity;**	- **The high cost of infrastructure deployment in TGS in some cases leads to weak demand for ICT services**, which further increases the cost of infrastructure and discourages rural businesses to use ICT. - Relative access to infrastructure and services is more difficult, and distances between companies, potential customers, research institutes and appropriate fund providers are often large. - A key issue is whether public policies should focus on promoting ICT competence and usage or on offering subsidised broadband access. In the former case, the assumption is that measures will generate additional demand, which could trigger market actors to offer improved ICT access. In the latter case, enhanced access to broadband is expected to trigger new types of uses.
- **developing a sustainable, climate resilient, intelligent, secure and intermodal TEN-T;**	- Main TEN-T axes often do not serve TGS. The **quality of secondary axes** and of their **connections to TENT-T** is therefore a critical issue for TGS. - **TGS are exposed to specific types of accessibility and transport-related issues**. Adequate and targeted support is vital in these territories. - **TGS are dependent on a limited number of transport modes or connections** which, given climatic constraints and other technical and human factors, **creates vulnerability to transport disruptions**. - **Exposure to climatic constraints**: TGS may also be exposed to climatic constraints. Adverse weather conditions have direct effects on the reliability, frequency and duration of transport services such as ferry, flight, rail and even road services, and make the provision of transport services more vulnerable and uncertain. - **During the winter or unfavourable weather, ships or planes may not depart** or buses may take longer to reach their destinations; roads may be blocked by avalanches. As such transport connections often represent the only service connecting the islands to the mainland, or the high-mountain range to the lowland, **service disruptions disconnect TGS from the rest of the world**. In the absence of alternative modes and/or transport services, such disconnections may occur for longer periods. **Secondary networks and resilience of transportation systems in the face of extreme weather are the key issue for TGS. These issues are hardly addressed by TEN-T policies**.

Specific Objectives	Links TGS
- **developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility;**	- **TGS are dependent on a specific gateway(s) for connections to other destinations**: many sub-areas of TGS are connected to other parts of the same TGS and to the rest of the world via just one gateway. Depending on the type of TGS region, gateways may be (ferry) ports, airports, railway stations, or simply a central town. Without the services offered in the gateways, the TGS would be disconnected. - **TGS are often disconnected from neighbouring territories**: relief and topographic conditions hamper easy access to centres from valleys or disconnected islands, for instance. - **Transport needs of TGS may be specific to local or regional contexts**, e.g. in relation to ageing, to prevailing economic activities or to mobility patterns. This situation may evolve over time. - **Environmental vulnerabilities in TGS**: Environmental externalities can be particularly important to consider in TGS. Negative environmental impacts of transit traffic in mountain areas, e.g. Alpine valleys, on air quality and biodiversity have been highlighted. - **Dependence on individual car transport exposes some TGS to the impact of policies to decarbonise transport**. In the absence of local adaptations, such policies may discourage individual car mobility and further limit access to these territories and thus local economic attractiveness.
- **promoting sustainable multimodal urban mobility;**	- **In TGS as in urban areas**, public policies are required to organise sustainable multimodal mobility. Market actors do not spontaneously offer services that are sufficiently affordable, frequent and have an appropriate geographic coverage. - There are **major issues in the organisation of public transportation in TGS**, linked for example to the implementation of Public Service Obligations (PSOs). **By improving local accessibility, PSO requirements may contribute to reduce the negative consequences of TGS territorial specificities,** such as distance from regional centres/hubs; low population density/scattered settlements; dependence on a single means of transport; lack of coordination between services already provided; vulnerability to adverse climatic conditions. - **PSOs may reduce geographical isolation as they provide a minimum standard transport services and regulate these through a contract** (act of entrustment). This act may include a large variety of obligations: size and comfort of carriage, punctuality, information to passengers, etc. - **PSOs may improve territorial accessibility** as they can mitigate the negative effects of territorial, economic, social and institutional specificities. For example, for many TGS, such as islands and peripheral regions, flights are the only mode of transport. When there is low demand, flights are subject to PSO regulations. PSO flight routes can ensure between different parts of TGSs, and between TGSs and other regions.
4. A more social Europe - implementing the European Pillar of Social Rights	
- **enhancing the effectiveness of labour markets and access to quality employment through developing social**	- The TGS need to get support to **generate 'asset-based' development strategies that could contribute to diversification of the economy**, delivering more robust labour markets in TGS. - **For TGS, labour market mobilities and transitions are a key issue**, with dynamics that are locally, regionally and even nationally specific according to the socio-economic trajectories of respective territories. A 'flow perspective' on competences and skills may contribute to establish more resilient labour markets.

Specific Objectives	Links TGS
innovation and infrastructure;	- **TGS include different types of labour mobilities** (e.g. seasonal, weekly and fly-in/fly-out (FIFO) commuting patterns). Uneven labour mobility due to demand for jobs during particular periods of the year might represent a challenge but also an opportunity for TGS. - **The opportunity to encourage 'return migration" is a theme for which TGS** can usefully exchange good practice to share how economic and non-economic levers have been used to bring workers back to their regions of origin. - **Social innovation needs to be supported in TGS as a concrete way** to tackle labour market and other socio-economic problems at the local level. For example, **in TGS the sharing economy is creating new opportunities and challenges for sustainable tourism**. It can work positively in bringing new tourism opportunities to regions and improving accessibility. It responds to the challenges of seasonality in e.g. island regions where traditional accommodation services may be at saturation point or to offer affordable and interesting accommodation opportunities during low-season. On the other hand, negative impacts may arise from online sharing platforms that can avoid compliance with local tax regimes, or environmental protection fees, and can hinder attempts to regulate the number of visitors to a region.
- **improving access to inclusive and quality services in education, training and life-long learning through developing infrastructure;**	- **TGS tend to have smaller labour markets, which are often disconnected from higher education and training institutions**. Consequently, TGS tend to suffer more from the outmigration of young adults as opportunities for further or higher education are limited. - **TGS need to focus on developing training and life-long learning opportunities linked to their specific local economic needs**. For example, hospitality in tourism areas; agriculture up-skilling in certain TGS. As the training and education needs of respective TGS differ and are context-specific, **policy interventions need to be sensitive to such nuances.** - **In many TGS, it is not always realistic to develop educational or training infrastructure**. Often, costs to build and run such facilities are higher or there is lack of sufficient demand. Therefore, **educational innovations such as distance learning are needed in TGS to try to meet deficits in provision in TGS.** - **Pooling resources within particular geographical areas to make best use of the education and training infrastructure** is another policy option for TGS regions. The example of the Italian "inner areas" strategy is a good example of how to tackle low number of primary school aged children in certain communes.
- **increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services;**	- **The relatively small size of labour markets in TGS means that often both employment and educational opportunities are limited**. Consequently, **in-flows of labour are needed to reduce the impact** of the outflows of young people and to ensure the continuity of local labour markets in some localities. - **Many TGS face challenges when it comes to attracting and retaining newcomers**, e.g. limited range of services, disconnection and insularity and limited accessibility. However, many TGS also have specific assets, e.g. proximity to nature, amenities such as ski areas, beaches or attractive landscapes and a strong brand associated with their attractiveness for tourists. - **TGS need to effectively market such assets with the aim of attracting in-migrants.** Such marketing needs to be tailored to specific TGS contexts in order to attract migrants that complement "gaps" in the local labour markets e.g. domestic help for elderly people in remote mountainous or sparsely populated regions; skilled workers to work in mining activities in some Nordic SPAs etc.

Specific Objectives	Links TGS
	- **There are opportunities for TGS with population decline to host in-migrants.** There are examples of good practice in Nordic SPAs. **Coherent policy interventions are required to match immigrant 'hot-spots' with TGS communities** in need of labour and have adequate housing and amenities to host such 'new' communities. **Cooperation and coordination is required to minimise the challenges of integration** for both the immigrants and host communities.
- **ensuring equal access to health care through developing infrastructure, including primary care;**	- **'Equal access' is not a meaningful objective in the case of TGS.** There is a need for innovation in the provision of SGIs to help improve primary health care in many TGS. - **Providing adequate basic provision to healthcare is challenging in TGS.** The combination of remoteness, long distances, relatively lower levels of public transport, extreme weather etc., mean that healthcare provision is costlier than in urban and more densely populated areas. **Recognition of such differences is crucial in providing tailored policy initiatives that are sensitive to such territorial challenges in health care provision.** - **Challenging situations in TGS for emergency patient transport**: services such as air ambulance and rescue services are some of the most crucial. Due to their sparse road networks, long distances and difficult topographic conditions, air ambulances are the only mean of rescue services in many TGS (mountains, islands, peripheral areas). Therefore, it is of prime interest for TGS to organize efficient and reliable air ambulance services.
5. Europe closer to citizens – sustainable and integrated development of urban, rural and coastal areas through local initiatives	
- **fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas;**	- **To develop effective policy interventions in TGS, stakeholders at local, regional and national levels need to understand the dynamics of the mobilities and flows of workers in particular contexts in order to implement policies to enhance the robustness of labour markets**. These are often quite different from such flows in urban areas due to reliance on surrounding areas. - **Building up the knowledge base and capacity of local stakeholders in TGS** to identify imbalances is crucial for them to act to minimise instabilities in local labour markets. - The **residential economy plays a crucial role in insulating local economic development in TGS**, based on the cultural and natural assets of territories, making them attractive places to live in or visit. **The cultural and natural assets of the TGS make them unique. However, these assets can be quite vulnerable** (e.g. loss of craftmanship techniques if there is no knowledge transfer; lack of snow in ski resorts due to climate change) and can hardly be reconstructed if damaged or lost. - **Local residential contexts in TGS differ and need to be taken into account.** Some TGS suffer from population decline or out-migration, and the residential economy needs to be nurtured in an appropriate way. **Conversely, economically buoyant and attractive TGSs (e.g. selected islands and winter sports resorts) are characterised by a lack of affordable housing** which, to some extent, limits inflows of residents and increases commuting distances. Also, the **limited amount of social housing and the price of available housing units can be a challenge in TGS**, especially for the local labour force working in the service sector. - **Self-perception and branding** are important parts of strategies to promote more balanced demographic flows, as to better address labour market transitions.

Specific Objectives	Links TGS
- **fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.**	- **A general negative perception of TGS and insufficient external branding of the quality of life and opportunities in these territories is a significant obstacle to economic and social development**. Targeted measures could be designed to address these issues. - **This objective only mentions 'coastal areas', with reference to the necessity to mobilise multiple actors around ICZM, MSP and other policies related to the interface between land and sea.** The focus could be placed on all TGS categories, for clarity and consistency across the EU. - A common challenge throughout TGS is **ensuring that effective multi-level governance mechanisms consider geographical specificities**. The key point is that **administrative boundaries at NUT2 level, used for EU Cohesion Policy, are rarely coterminous with geographical specificities**, which are often at NUTS3 level or below. - **Integrated territorial development strategies need to be developed specifically to focus upon TGS** in order to tackle the range of socio-economic challenges facing them. - **Capacity building for local stakeholders in TGS is a key challenge,** and adequate support needs to be provided in this regard. - In terms of opportunities in TGS, it is vital that **policy interventions focus upon encouraging full use of respective local assets to strengthen local economies** (e.g. natural assets, human capital, quality of life, local savoir-faire/knowledge). This, in turn, can contribute to improving socio-economic trajectories, maintain demographic equilibrium and even attract new inhabitants, including tourists. - **Sustainable tourism brings development potential in a number of regions harnessing their respective natural and cultural assets**. A conscious and responsible approach to tourism in TGS, developed in line with ecological capacities and in cooperation with local communities can bring increased opportunities in terms of socio-economic development and improved well-being for respective populations in regions which in some cases are far for urban and economic centres. - **The ESPON BRIDGES case studies illustrate that tourism is significant and increasing in several TGS**, and an important driver of economic development. - **Without effective planning, tourism can have a negative impact on biodiversity on which many aspects of tourism arguably depend**. One example relevant to all TGS is the development of transportation, energy, tourism and other infrastructure that causes habitat loss and fragments habitats and species populations. Consequently, **integration between biodiversity and sustainable tourism strategies is required at local, regional, and national levels**. - **Another opportunity relates to the residential economy concept**, which finds its legitimacy in the fact that people residing in a region generate local economic activities and demand for the provision of services. **The share of the residential basis of the economy in the TGS is closely linked to the cultural and natural assets of the TGS** (e.g. quality of life, landscape quality, housing quality, etc) and the existence of services on its territory are enjoyed by the local population. - The uniqueness of TGS makes them attractive places to live, move to and visit, so **policy interventions should focus upon maximising investments to enhance the development of a 'circular residential' economy**.

8.3 Perspectives for an improved European multi-level governance of TGS

The analysis of mountainous, insular, sparsely populated and coastal areas has revealed two types of pitfalls when trying to formulate policy perspectives for TGS:

(1) 'Rationalising' the specificity of TGS on the basis of the occurrence of objective factors of constraint (i.e. lack of critical mass, remoteness, low potential accessibility, insularity, vulnerability and low resilience) can help to formulate a line of reasoning on how policies could address their issues and challenges. However, the risk is that TGS categories are lost sight of in the process. For example, a policy for sustainable tourism in mountain areas may deal with remoteness and a lack of critical mass (limited tourist flows). However, there are also mountain areas close to metropolitan regions, and some mountain areas are characterised by mass tourism. A sustainable tourism policy for mountain areas therefore needs to incorporate their internal diversity, taking into account the fact that some may be exposed to objective factors of constraint and others not. Exceptions in this regard are SPAs and islands, which by definition are respectively exposed to a lack of critical mass and insularity.

(2) Adopting a more 'functional' approach to territorial policies is generally a favourable option, as measures may be more effective and efficient if they adapt to the geography of the social, economic and ecological processes they target. However, TGS areas such as mountain massifs, coastal areas, islands and SPAs are not necessarily meaningful functional areas. An island may be a component of a wider labour market including the mainland; a mountain massif may be overlap with numerous functional economic regions connecting mountains to their respective 'piedmont' area. Critical assessments on links between TGS areas and functional areas are therefore needed.

Policies targeting TGS are primarily motivated by the following arguments:

- The reference to TGS categories (mountains, islands, sparsely populated areas, coastal areas) and units (e.g. a specific mountain massif, an island) can effectively mobilise a wide range of actors. The possibility of setting up well-integrated and stable cross-sectoral coalitions of actors can be a strong vector of effective territorial policies.
- TGS are organised around natural features and are often characterised by shared environmental assets and vulnerabilities. For this reason, they are particularly adapted for the elaboration of territorial strategies addressing the interface between human activities and their natural environment, e.g. tourism taking into account ecological vulnerabilities, exploitation of natural resources contributing to the social and economic sustainability of local communities, establishing robust biodiversity conservation measures with extensive support from local and regional stakeholders.
- ESPON BRIDGES has shown that TGS tend to be particularly exposed to complex and challenging issues that require integrated territorial policies. Examples are adaptation to climate change in mountain areas, the promotion of more sustainable forms of tourism in islands, increasing the resilience of labour markets in sparsely populated

areas, and setting up integrated coastal zone management. At the same time, geographically specific territories tend to have more limited capacities and resources to develop such policies. Multilevel territorial governance frameworks could empower these territories by making it possible to share experiences, pool resources and provide greater visibility to TGS issues.

Current and proposed provisions for the design and implementation of cohesion policy include mechanisms that can help to address TGS issues. However, their uptake is limited. Only very few examples of CLLDs and it is targeting geographic specificity-related issues and TGS areas could be identified. European Commission proposals for 2021-2027 foresee the possibility of establishing 'territorial strategies' (Proposal for Common Provisions Regulation, COM(2018) 375 final, Art. 23). It is then foreseen that "relevant […] territorial authorities or bodies" would be involved in the selection of operations. Additionally, regulations foresee that programmes may finance operations outside of the programme area without restrictions (Proposal for Common Provisions Regulation, COM(2018) 375 final, Art. 57(4)). This opens promising possibilities for policies for policies addressing TGS, which tend to be located across the borders or at the edges of NUTS 2 regions. However, the uptake of these possibilities may be low unless new frameworks are set up. There are different reasons for this. First, the capacity of Member States and Managing Authorities is limited, and they are already confronted with a significant administrative burden in the design and implementation of ESIF programmes. Optional solutions such as ITIs, CLLDs and territorial strategies may therefore not be a priority. Second, as described above, TGS territories often have limited capacities when it comes to the development and implementation of integrated territorial policies.

A more proactive European approach to TGS could be achieved by reframing ITIs, CLLDs and territorial strategies as component of a 'mountain strategy', 'island strategy', 'SPA strategy' and 'coastal strategy'[24]. The 'strategies' could be light structures bringing together TGS stakeholders from each category, making it possible to jointly reflect on the policy relevance of the geographic specificity, providing inspiration and visibility to initiatives and monitoring progress. They would provide incentives and support to the design of measures targeting TGS within the framework of ESIF programmes, targeted concerned local and regional authorities, managing authorities, and Member States. They would also make it possible to present cohesion policy solutions in a less technical and abstract way, emphasizing their potential applications to territories that EU citizens can recognise spontaneously. As such, TGS categories could help to bring cohesion policy closer to EU citizens.

Overall, TGS areas appear as potential soft territorial cooperation areas. 'Soft territorial cooperation' is in this respect understood as described in the ESPON ACTAREA project:

[24] As shown in the present report, it may be relevant to focus such initiatives on subcategories of TGS, e.g. small islands, considering 'Northern SPA' and 'other SPA' separately.

- a sectoral scope and geographical generally defined in an ‘open’ or ‘fuzzy’ way;
- a medium- to long-term integrative perspective (i.e. not limited to the implementation of a single project);
- an ambition to enhance the capacities of involved players, making them actors of their own development;
- a determination to renew relations between institutional levels, sectors of activity and types of actors (e.g. NGOs, private companies, local and regional authorities, agencies…).

TGS are relevant frameworks for soft territorial cooperation because they federate actors, and because they are relevant for specific types of complex issues that require integrated territorial approaches. They complement ‘hard structures’ such as administrative regions. Their objective is to address identified issues in a result-oriented way on the basis of renewed cooperation between relevant actors. TGS would therefore be invoked in a pragmatic way when this is useful for stakeholders. This is to some extent already the case at the transnational level, with the ‘coastal’ macro-regional strategy for the Baltic Sea and Adriatic-Ionian regions and the ‘mountain’ macro-regional strategy for the Alpine Region.

8.4 Further research needs on TGS

The ESPON BRIDGES project has addressed a wide range of themes and issues in all four types of TGS, cross-analysing them with objective factors of constraint. All modules have demonstrated the need for more in-depth analyses, e.g.:

- What are the best approaches to tackle brain-drain and attract staff with the necessary skills to develop and implement innovation strategies in TGS? What examples of good practice can be capitalised on?
- How can planning tools be designed to take better account of ecological and social limits to tourism development, and to help local and regional actors develop more sustainable forms of tourism?
- A European comparative study of PSO contracts for transport services in TGS with connectivity and accessibility challenges would help to produce guidelines for the elaboration, implementation and monitoring of such contracts.
- Further enquiries on how to better capitalise on social innovation projects, in view of establishing perennial solutions for the provision of services of general interest.
- The study of labour market transitions has been limited by the lack of data on different types of movements of workers. Changes of activity, geographic relocations and changes of status (e.g. between employment, training, care for family members, prolonged sickness leave) affect a significant proportion of workers every year, and have specific impacts in the small and remote labour markets of many TGS. Seasonal work and multiactivity are also established practices in many of these areas. A more in-depth study based on data on these movements would provide important insights. The outcomes would to help design policies for more resilient labour markets that are better adapted to evolving lifestyles and professional aspirations.
- The study of 'residential economy' has been limited by the lack of data on the circulation of income between European regions. The compilation of such data would be relevant for territorial development policies across Europe, and could be used to substantially impact prevailing approaches. Such enquiries would be specifically important for TGS insofar as they would help to establish an evidence base for the design and implementation of more diverse regional development strategies, widening the scope of 'smart specialisation'.
- The study has identified the positive contributions of **regional product labels associated with parks and biosphere reserves** in terms of biodiversity conservation in TGS (e.g. 'mountain product' as a optional quality term'). More systematic enquiries would help identify further examples of best practice and used to design labels that effectively help to maintain biological and cultural diversity, while also contributing to the economic sustainability of communities where such products are produced and processed.

- The study has observed that benefits to local communities from the construction and operation of renewable energy production sites vary significantly depending on the legal and regulatory framework in the respective country. This significantly affects perspectives for the development of renewable energies. More systematic enquiries into the diversity of provisions across Europe, and their respective impact on renewable energy production, could help to identify and disseminate good practices.
- With regard to climate change, the study has noted the need for further research to increase understanding of likely future trends, especially relating to extreme events. However, given that the climatic system is very dynamic, governments and businesses at all levels need to be able to formulate and implement policies in order to increase climate resilience. A particular need for further research therefore relates to identification and compilation of experiences of effective multi-level governance across TGS.

These thematic and sectoral enquiries can inform development strategies in TGS. However, integrated territorial development requires transdisciplinary approaches, and research that will support local communities and regions in their design and implementation of planning policies. Capitalisation and dialogue between territories are of key importance in this respect. Given the significant number of Interreg and LEADER projects that have focused on TGS, a 'capitalisation' project to undertake a critical analysis of successes, failures and lessons learned could be of benefit. Possible models for this could be projects such as (McGuinn et al., 2014) on Interreg projects relating to climate change, and the C3-Alps capitalisation project (2012-2014), which brought together the results of previous Alpine Space projects on climate change adaptation, made recommendations on enhancing implementation of climate change adaptation strategies and developing regional and local action plans, and established a Climate Adaptation Platform for the Alps[25].

[25] https://climate-adapt.eea.europa.eu/

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ESPON 2020 – More information

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