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ESPON BRIDGES

Balanced Regional Development in areas with Geographic Specificities

Applied Research

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Annex 1 - Module Reports

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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	include Central Europe Eco-Tourism: tools for nature protection
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 Areas
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
ESI	Local Action Group
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 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 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	Greenhous Gases
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 Investments
IUCN	the International Union for the Conservation of Nature
LAG	Local Action Groups
LCA	Local civic association
LENA	Local Economy and Nature Conservation in the Danube Region
LIFE	Programme for the Environment and Climate Action
labour marketA	Labour Market Area
labour marketT	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 Strategies and Action Plans
NEEAP	National Energy Efficiency Action Plans
NGO	Non-Governmental Organisation
NREAP	National Renewable Energy Action Plan
NSPA	Northern Sparsely Populated Areas
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
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 Areas
SPED	Strategic Plan for Environment and Development
SPF	Small Project Fund
SSPA	Southern Sparsely Populated Areas
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
Tlabour market	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

1 Introduction

The ESPON BRIDGES project addresses a broad range of regional development issues in Territories with Geographic Specificities (TGS), namely

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

The issues that are focused on are structured in 9 modules, as described in Table 1-1 below. The project has explored these issues on the basis of 60 case studies in 20 different areas across Europe.

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 **PSO-USO**: identification and implementation of PSOs in TGS
	M2.2 **Social-inno**: social innovation in the provision of SGIs in TGS
3. Social development	M3.1 **Transitional labour market:** Contribution to the understanding of social and economic patterns in TGS
	M3.2 **Residential**: Residential economy as a 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**: Energy provision and production in TGS
	M4.3 **Climate**: Climate change in TGS

This interim report is composed of three separate deliveries:

- policy-oriented syntheses on the different modules;
- syntheses of case studies;
- case studies (as an Annex).

The project process is organised so as to be issue-driven, rather than data-driven. This implies that we have first explored more theoretically how each module theme may relate to geographic specificity. On this basis, a framework for case studies has been elaborated. These case

studies have included the production of statistical analyses and maps, and also extensive document reviews and exchanges local and regional actors. Through syntheses of case studies, combined with analyses of policy processes surrounding the issues to which TGS are confronted, general analytical perspectives and potential inputs to policy processes at all levels, from the local to the European, are identified. This also includes perspectives for the elaboration of quantitative indicators and maps.

Implementing 9 parallel modules, focusing on 4 geographic specificities and undertaking 60 case studies has proved particularly complex, generating both coordination challenges and difficulties in combining different analytical perspectives. These can be sectoral or geographic, focusing on physical geography, the economy, or social aspects. Furthermore, the modules relate to a particularly wide range of policy fields.

2 Module 1.1: Innovation – specificity of innovation processes in TGS

The focus of the module "**Specificity of innovation processes in TGS**" is to present the opportunities in TGS and to identify the areas which require actions at policy level to ensure structural transformation of TGS by building upon their assets.

TGS can present specific drivers and barriers of innovation (e.g. specific resources, ecological vulnerability, problems related to the limited diversification of the economy, historical heritage generating specific path dependency patterns). In this report, we assess to what extent the innovation policy framework in the TGS areas is adequately using / responding to these drivers and barriers and how it could be further improved by better taking them into account in specific contexts.

We distinguish between geographic specificity – including characteristics such as mountainousness, insularity, demographic sparsity and proximity to coasts – and objective factors of territorial disadvantage such as peripherality, remoteness, accessibility, vulnerability, attractiveness, and lack of critical mass. The focus of the module is on how geographic specific factors are taken into account in innovation policy decision-making; objective factors of disadvantage are discussed and analysed only as secondary evidence to establish a holistic view of factors constraining TGS to achieve sustainable development. Geographic specificities can intervene at a number of different stages in innovation process, and a few examples are listed below:

- the **innovation need**, e.g. finding technical and organisational solutions to overcome a limitation resulting from geographic specificity,
- the **emergence** of innovative ideas or proposals,
- the **selection** of innovative ideas or proposals to be supported or pursued, i.e. the capacity to embed innovation policy in a development strategy,
- the **acceptance** of innovative ideas or proposals,
- the innovation **process**, i.e. the capacity to transform innovative ideas or proposals into new working methods, products, services, and organisational arrangements,
- the social and economic **benefits** drawn from innovation, i.e. the capacity of TGS actors to reap full social, economic and environmental benefits from innovation,
- the **capacity** to maintain an innovative, entrepreneurial spirit over time.

In the context of EU policy to achieve new path development for economic diversification, the **smart specialisation** ex-ante conditionality was introduced into the European Structural and Investment Funds (ESIFs) Operational Programmes 2014-2020 as an attempt to focus investment on selected priority areas and boost economic growth. According to (Milberg and Houston, 2005), it is a strategic approach to an industrial policy for national and regional economic development to pursue sustainable innovation-based competition, as an alternative to the downward spiral of cost competition, which dominates in most Southern and Eastern European regions.

When referring to innovation in this module, especially when analysing territories with sectorial particularities and geographical specificities, we have kept a broad definition of innovation. Following the definition adopted by (Lorenz and Lundvall, 2006), we refer to innovation as both R&D-based (science and technology push) and experience-based activities (the so-called DUI model, i.e. doing, using, interacting). We go beyond the simplistic dichotomy that there is either codified knowledge or tacit knowledge; while all types of economic activity can be innovative, the modes of innovation differ, transcending the high-tech/low-tech dichotomy (Asheim, 2007).

This report relies on the evidence emerging from the main findings of the literature review and ongoing policy debates related to innovation in Europe. Table 2-1presents an overview of the main relevant policies to which the current Module report refers.

Table 2-1: Overview of relevant policies

	Policies
High level strategies	Research and innovation strategies for smart specialisation (RIS3), made compulsory as part of Cohesion Policy Common Provisions Regulation (Regulation EU 1303/2013) Blue Growth Strategy[1]
EU Initiatives and schemes	Targeted marketing techniques for TGS products that promote and enhance the production of 'local unique products' to global publics (e.g. Protected Designation of Origin products (PDO)) Cross-regional thematic platforms to foster collaboration (e.g. Vanguard Initiative[2]) Interregional cooperation and initiatives of bottom-up efforts for TGS areas (e.g. Smart Islands Initiative[3])
European Funds and programmes	European Territorial Cooperation (ETC) - P2P and small projects as a tool in cross-border cooperation programmes, fostering the convergence of bordering regions and initiating grassroots contact among people - Opinion (EU) 2017/C 342/06[4] Micro level interventions at LAU2 level, such as Small Project Fund (SPF) to support people-2-people (P2P) and small-scale projects[5]
Regulations – directives – legal instruments	Protected Designation of Origin products (PDO) – Regulation (EC) No 510/2006[6] LEADER method implemented in the framework of integrated and place-based policy support to local development such as

[1] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Blue Growth opportunities for marine and maritime sustainable growth, COM/2012/0494 final.

[2] You may find more information at Vanguard Initiative webpage

[3] You may find more information at Smart Islands Initiative webpage

[4] Opinion of the European Committee of the Regions — People-to-people and small-scale projects in cross-border cooperation programmes (2017/C 342/06)

[5] Proposal for a Regulation of the European Parliament and of the Council on specific provisions for the European territorial cooperation goal (Interreg) supported by the European Regional Development Fund and external financing instruments - COM/2018/374 final

[6] Council Regulation (EC) No 510/2006 of 20 March 2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs

	Community Led Local Development (CLLD) – Articles 32-35 of Common Provisions Regulation (EU) No 1303/2013[7]
Financial incentives and associated governance arrangements	Corporate Tax fiscal advantages (e.g. Canary Special Zone)

to the analysis is based on both a review of policy initiatives and the results of the case studies conducted in seven TGS: Apuseni Mountains, Bornholm, Malta, Middle Dalmatian Archipelago, North Aegean, Tenerife and Western Lapland. These case study regions cover all four categories of TGS: mountain areas; islands; Sparsely Populated Areas (SPAs); and coastal areas. Table 4-2 presents an overview of the main issues and themes extracted from the case studies that have been integrated in this chapter.

Table 2-2: Case study overview

	Issue / Theme 1	**Issue / Theme 2**	**Issue / Theme 3**	**Issue / Theme 4**
Apuseni Mountains (RO)	Potential niche sector in agricultural local products			
Bornholm (DK)	Cohesion and trust within the island community	Governance model of the food sector	LAG Bornholm involvement in European networks	
Malta	RIS3 and the blue growth	eGovernment test bed	Virtual Knowledge Centre	
Middle Dalmatian Archipelago (HR)	Aktiva entrepreneurship hub	Islands department at national level	Croatian Island Product	
North Aegean (EL)	Modern and innovative processing in agro-food sector	Interreg - Islands on Innovation projects		
Tenerife (ES)	R&I potential in maritime-marine sciences	CIDE network	Mentor day initiative	Canary Islands fiscal advantages
Western Lapland (SE)	Centre of Rural Medicine	Interreg projects		

[7] Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006

This chapter is structured in the following sections:

- General context of Innovation support in EU regions (Section 2.1)
- TGS specific opportunities for innovation (Section 2.2)
- Main geographic specificity-related challenges (Section 2.3)
- Success factors / good practices to foster innovation in TGS (Section 2.4)
- Conclusions and recommendations (Section 2.5)

2.1 General context of innovation support in EU regions

2.1.1 The RIS3 rationale

Research and innovation strategies for smart specialisation (RIS3) approaches have been introduced as part of the cohesion policy framework in order to link knowledge generation and capitalisation with the specific socio-economic and territorial conditions in the regions (McCann and Ortega-Argilés, 2015). The 2014-2020 regulatory framework introduced a specific ex-ante conditionality for national and regional governments to develop RIS3 strategies, as a basis for receiving R&D investments under ERDF (Regulation (EU) No 1303/2013). According to this regulation, the strategies need to set priorities that target the building of regional competitive advantages of regions "by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner."

It is recommended that RIS3 strategies should be developed in a participatory manner based on evidence collected on regional strengths and weaknesses and a process of "entrepreneurial discovery" (where local and regional actors identify common development priorities for the region). The outcome of the process should take into account the regional assets, prioritising the strategic areas of interventions and building critical mass for innovation around such local niches. Such a process is considered to be place-based, taking an approach that uses local knowledge and engages local actors in a learning process (European Commission, 2017h).

2.1.2 Shifting towards more integrated and place-based policy support to local development

Along with the stronger thematic prioritisation on supporting research and innovation policy, there have been calls for cohesion policy to take a more integrated place-based approach (Barca, 2009). Such interventions "rely on local knowledge, capital and control over resources, and locally developed strategies to facilitate endogenous growth" (Zwet et al., 2017). The 2014-2020 cohesion policy framework introduced specific instruments to facilitate the take-up of place-based interventions through the ESIFs, namely through allowing the Member States to develop Integrated Territorial Investments (ITIs), funding targeted strategies for sustainable

urban development (SUD) or territorial strategies, and the Community Led Local Development (CLLD) that is a follow-up instrument of previous LEADER programme.

During the 2014-2020 programming period, the EC has sought to broaden the use of CLLD instrument, which may target not only rural-urban, rural or sub-regional areas, but also urban areas and territories with specific geographical features. According to the findings of the 2017 evaluation of the use of integrated approaches in cohesion policy, an estimated EUR 14.5 billion has been allocated to territorial and SUD strategies, 85% of which were funded under ERDF, and around 12% through ESF, and the remainder through the cohesion fund in 2014-2020 (Zwet et al., 2017). CLLD has been less used in urban areas in the EU15, but continued to be absorbed in rural areas there, while more varied types of Local Action Groups, outside urban areas from the EU13 Member States, have proactively used CLLD, including as part of integrated urban strategies (Servillo, 2017).

Overall, the take up of integrated place-based approaches to local and regional development has been enhanced in the 2014-2020 period through the availability of such types of instruments. In addition, while there are indications that CLLDs can be a valuable tool for integrated local development and supporting bottom-up initiatives in both rural and urban areas (Servillo, 2017), there seems to be low take-up of CLLDs in urban areas (Zwet et al., 2017).

The majority of the ITIs in 2014-2020 have had a rural-urban scope (64%), while 11% have targeted regions with TGS (Zwet et al., 2017). In terms of the thematic concentration of the investment objectives of ITIs, only an average of 14% of them prioritise interventions for thematic objective 1 (strengthening RDI) and 20% for thematic objective 2 (supporting SMEs), and the most common priorities (in 80% of strategies) are the low carbon economy, resource efficiency and social inclusion (ibid). Therefore, it seems that place-based instruments have been less used with the purpose of supporting RDI, in spite of the often territorial nature of innovation processes. In many cases, thematic objectives might be pre-set at national level, not matching local development requirements.

Recommendations for future cohesion policy include the necessity to simplify the cohesion framework and increase the flexibility by ensuring that the thematic concentration of the funding allocations for such integrated initiatives better takes local needs into account (Zwet et al., 2017).

2.1.3 The current policy debates on EU cohesion policy, RIS3 and innovation support

The RIS3 and cohesion policy rationale for investing in innovation is informed by the need to support deployment of knowledge and innovation in specific place-based context'. Addressing the implementation gap in RIS3 approaches is recommended, as further steps to be taken in cohesion policy when complementing EU R&I support, bearing in mind the following needs.

In terms of fostering science:

- The need to support locally relevant R&I endeavours and not create “islands / pockets of excellence”,
- The need to create synergies between R&I initiatives internally within territories,
- The need to connect local pockets of excellence with international science networks.

In terms of fostering industrial development:

- The need to foster the transition to industrial activities of higher added value and their connection to value chains,
- The need to improve local innovation ecosystems,
- The need to foster the networking within local economic actors.

In terms of tackling societal challenges:

- Mobilising demand-side instruments,
- Strengthening participation of civil society and user groups in the entrepreneurial discovery process.

In comparison, debates related to the shape of Horizon Europe, the 9th Framework Programme have been based on the rationale of supporting ‘excellence’, industry leadership or tackling societal challenges that has also underpinned the Horizon 2020 programme.

The RIS3 has been designed to tackle a range of weaknesses in regional innovation policies, including the mismatch between policy priorities and business needs for R&I, lack of information flows, weak governance frameworks at regional level, and mismatches between research strengths and business needs (European Commission, 2017h). The conditionality of developing a RIS3 has targeted the improvement of governance weaknesses in innovation systems in EU regions, which have been found as key factors that enhance the effectiveness of cohesion policy investments (Pienkowski and Berkowitz, 2015). Specific innovation system elements where RIS3 approaches prove to lead to positive changes include (see also DG Regio, 2017):

- Survey evidence from regional authorities implementing RIS3 provides indications that the existence of the RIS3 ex-ante conditionality supported the improvement of stakeholder involvement processes and innovation policy governance (e.g. better planning, impact-orientation) (Fraunhofer, 2013).
- Interactions and cooperation in the innovation ecosystem have reportedly been improved by RIS3 processes, and the role of universities in innovation ecosystems is shifting from not only education and RDI results providers, but is also catalysing interactions between public and private stakeholders in the ecosystem (DG Regio, 2017, based on the public consultation on RIS3)
- Interregional strategic cooperation has been enhanced, based on findings from RIS3 processes and focusing of commercial and RTDI cooperation based on RIS3 priorities and identified value chains of comparative advantage.

The overarching RIS3 approach has considered that regions can apply the RIS3 rationale irrespective of their development level, socio-economic characteristics, or geographical endowments (Foray, 2015). There is, however, little evidence that the RIS3 concept is applicable in the same way to all regions including TGS (Teras et al., 2015a)

While it is hard to generalise for all TGS, from the available studies, some critical issues identified in TGS areas pose challenges to the RIS3 process.

In particular, governance arrangements are immensely diverse in TGS territories, with administrative territorial boundaries in many cases not overlapping with TGS boundaries, or encompassing different types of geographical units. Moreover, systemic deficiencies in the EU-wide governance of R&I systems, including fragmentation of efforts from the diverse actors in the innovation ecosystems and difficulties of coordination at national and inter-regional level, add another layer of complexity (European Commission, 2017h). As a consequence, developing RIS3 specifically targeting TGS challenges can prove challenging from an administrative and governance point of view (see section 2.4.1 on governance).

Furthermore, lack of critical mass of companies and innovation stakeholders has been a challenge. This goes hand in hand with low numbers of middle-range innovative firms and dependence on large commodity firms; and a distributed nature of the networks for innovation support. In general, this makes entrepreneurial endeavours seem riskier, which discourages entrepreneurship and the emergence of new niches or domains. Nevertheless, potential RIS3 drivers identified in such territories can stem from turning around existing natural challenges into needs and sources of inspiration for developing novel approaches or domains: e.g. lack of connectivity might drive the development of novel new products to cater for such needs (Teras et al., 2015a). There is also a clear need for strengthened activities of regional universities or intermediaries, which can act as brokers in the innovation process in TGS territories (ibid).

The European Commission published the new proposal for a regulation on the new cohesion policy in May 2018, promoting a simpler, more streamlined framework for the upcoming programming period (DG REGIO, 2018). In particular, the new proposal foresees the majority of resources to be concentrated on the thematic objectives 1 – a smarter Europe, and 2 – a greener Europe, recognising their high impact potential. The place-based character and RIS3 approaches continue to be maintained in the Commission proposals for the future cohesion policy. However, there is no clear mentioning of TGS as territories or consideration of their specific needs in the upcoming framework.

2.1.4 Demand and Supply-driven innovation policies

Supply-driven innovation policies promote the production new ideas, technologies or solutions; their demand-driven counterpart focuses on the capacity of economic actors to identify possible improvements in production processes and organisational setups, and to respond to, nurture, and act on potential game-changing opportunities.

Both the supply and demand sides are tangible drivers of innovation, but they have rather different roles in affecting the types and the outcome of the innovation process. Technology push is supposed to encourage more radical innovation, whilst market pull fosters more incremental ones. Bringing together supply and the demand side policies as part of a more integrated approach is at the centre of public policy debates. Systemic approaches are attempts to combine different demand-side measures as well as the relevant framework conditions. The basic idea is that there are different needs and failures at play at the same time that need to be tackled by policy measures, taking into account needs for support in different phases of innovation and various needs of stakeholders (European Commission et al., 2015).

Conlé and Shim (2009) pointed out that a stronger focus on the demand side of innovation could lead to a change in the way resources are provided for the development of innovations, through more funding for public-private-partnership foresights, large-scale projects, and less support for traditional basic research. Combining demand and supply side driven policy may increase the likelihood of successful innovations. However, if public authorities remain the only customer, the innovation force of the private economy might be weakened in the long run and money is used inefficiently (Conlé and Shim, 2009).

Supply and demand side innovation policies can take the following forms:

- **Supply-side policies for innovation** in firms aim at increasing their incentives to invest in innovation by reducing costs. They include direct funding of firms' R&D, fiscal measures, debt and risk sharing schemes, and technology extension services. One of the main rationales for supply-side instruments is that investments in innovative activities might not be undertaken, as liquidity constrained caused by capital market imperfections can be substantial when it comes to innovation (*The Policy Innovation Platform*, 2018).
- **Demand side innovation policy** includes measures to stimulate private demand for innovation; public procurement policies; pre-commercial procurement; innovation inducement prizes, and regulatory framework (standards and regulations).

2.2 TGS-specific opportunities for innovation

2.2.1 TGS potential for sustainable development

Innovation has been considered for too long as a concept applicable for developing high-technology laboratories in large agglomerations. It has been also assumed that creative ideas can only emerge from a high concentration of people and businesses. However, TGS, whether they are sparsely populated, mountainous, coastal or an island, can also present a valuable innovation potential that can play its part in the drive for sustainable development. For example, humans are creative when they are confronted with challenges (such as geographic specificity-related challenges) and overall can turn challenges into opportunities through innovation that can take many different forms.

Mountain areas can prove to be vibrant innovative places. Examples of prosperous sectors where innovation takes place in mountain areas are varied and numerous. Mountain manufacturing industry is based on small and medium-sized but diversified enterprises. New mountain industries are developing around the food-processing industry (e.g. cheese, cured meats, preserves), winter sports (mountain equipment, sportswear, shoes, ski lifts), and innovative activities (from nuclear research in the Alps to the car testing industry in northern Sweden) (Nordregio, 2004).

According to (Euromontana, 2010), among the main examples of innovation activities identified in mountain areas are: creation of opportunities for financing, establishment of business incubators, clusters between businesses, universities, public authorities and funders, partnerships with cities situated in valleys or other regions to develop sales systems and remote distribution. For instance, an increasing number of mountain producers have explored the opportunities of using information and communication technologies (ICT) to access larger numbers of distant consumers, often in large cities.

Examples of public services innovation are also numerous throughout European mountainous areas. From the innovative use of the ICT to the organisation of ”multi-service stations” or “services buses”, mountainous areas have demonstrated that they can find clever and efficient solutions to constraints they encounter (Euromontana, 2010).

Islands have their advantages compared to mainlands; they have to be more self-reliant with stronger community involvement to tackle their territorial specific disadvantage linked to insularity. This can trigger innovations and provide a distinct, resourceful environment for experimental implementation of novel solutions. For example, the Smart Islands Initiative builds on years of collaboration between European islands and seeks to demonstrate that **islands can host pilot projects and produce knowledge on smart and efficient resource and infrastructure management.** Thismay be then transferred to mountainous, rural and generally geographically isolated areas but also scaled-up in large cities of continental Europe and beyond (Smart Islands Initiative, 2017).

Sparsely populated areas (SPAs) may be offered opportunities through the use of ICT to find partial solutions to the problems that this group of TGS is facing, such as remoteness, low population density or lack of adequate transport connections. SPAs are also of particular importance as they can offer potential for renewable energy production (e.g. solar, geothermic, wind and biomass energy), offsetting the negative footprint of large urban centres. Their natural and cultural assets can attract new economic activities, such as tourism. Furthermore, SPAs offer unique edible products that could benefit from EU geographical indication and traditional product recognition schemes (European Parliament, 2016b).

Coastal areas can benefit from the niche sector of Blue Growth potential. According to the European Commission report on the Blue Growth Strategy “*Towards more sustainable growth and jobs in the blue economy*” (European Commission, 2017g), this sector has a valuable potential for growth and job creation around five focus areas: Blue energy (Offshore wind

energy and Ocean energy); Aquaculture; Coastal and maritime tourism; blue biotechnology, and; Seabed mineral resources. The Blue Economy can be a driver for Europe's welfare and prosperity, as stated in the Blue Growth Strategy adopted by the Commission in 2012. Since then, the Commission has undertaken a series of steps to translate it into actions. It has launched initiatives in many policy areas related to Europe's oceans, seas and coasts, facilitating the cooperation between maritime business and public authorities across borders and sectors, and stakeholders to ensure the sustainability of the marine environment.

2.2.2 TGS innovation potential

The evidence collected via the desk research and case studies highlighted that the innovation potential of TGS has to be analysed on a case-by-case basis. In other words, not all territories, even with similar geographic characteristics, present the same innovation-related patterns. Socio-economic characteristics, cultural aspects, heritage, governance or demographic trends are also factors that influence the innovation processes taking place in TGS. We clustered the TGS innovation potentials into three main categories. This categorisation is not exhaustive, as the exercise is limited to the observed territories, nor it is exclusive, since one territory may be associated with several of these categories at the same time.

- **Niche sectors** emerging from the endogenous potential of the area linked to geographical, environmental and/or climate characteristics,
- **Small size** as a catalyst of strategic partnerships and test-beds to foster the regional innovation potential,
- Overcoming a **limitation resulting from geographic specificity** by finding technical and organisational solutions.

2.2.2.1 Niche sectors emerging from the endogenous potential of the region linked to geographical, environmental and/or climatic characteristics

The territorial endogenous potential may present specific characteristics that can boost innovation in TGS. This endogenous potential can pull innovation from either the demand or the supply side:

- **Demand-driven potential for innovation** - Innovation is viewed as a means of unravelling the locked potential of the area, building on its competitive advantages and thus developing them further.
- **Supply driven potential for innovation** - TGS possess an ideal innovation eco-system around a specific niche sector resulting from the territory’s endogenous characteristics, and acting as a catalyst of R&I.

We identified these patterns in several case studies y. The existing evidence shows that innovation does not derive exclusively from one or the other type of support; it can be boosted through both the supply and demand interventions.

Based on the case studies, the following examples show agro-food as a niche area emerging from the endogenous potential of the respective TGS.

Text box 2-1: Apuseni Mountains case study - potential niche sector in agricultural local products

In the Apuseni Mountains, there is a potential niche industry focusing on food products, supplements and in some cases cosmetics made from local products, including forest fruits, wild plants, mushrooms and animal products. These potential niches are mainly identified in the RIS3 and development strategies at the county level. They show that the territory has a capacity to specialise and take advantage of local resources to boost the agricultural potential (including also medicinal and aromatic plants). Since this area of economic activity is in an early stage of development, the Apuseni Mountains need to foster entrepreneurial and innovative activities in order to unlock the existing innovation potential.

Text box 2-2 : North Aegean case study - modern and innovative processing in agro-food sector

The North Aegean has a large number of the so-called Protected Designation of Origin products (PDO) with international recognition. Hence, agro-food processing plays an important role in the economy, and the development of innovation in this direction is necessary to unlock the full potential of the sector and satisfy existing demand for these products. For example, a current initiative “From the field to the shelf: Back to the future” deriving from the RIS focuses on products based on ‘back to the future’ idea. This means that the initiative aims to bring back products that seem to have been forgotten, and to process them through new, modern and innovative technological means and promote them as new products in the global market.

Territorial assets can be also found in resources of the sea which, for many islands and coastal areas, represent a niche market with strong potential for innovation and growth relative to the blue economy.

Text box 2-3: Malta case study - RIS3 and the blue growth

In Malta, the Research and Innovation strategy identifies Maritime Services and Aquaculture as specialisation areas. Apart from the areas identified by the National Research and Innovation Strategy, other growing R&I niche areas include, for instance, marine biotechnology, marine energy and resources. Marine Biotechnology mainly involves the exploitation of new biomaterials from indigenous species. Some developments in the industry include the testing of anti-fouling materials, water quality monitoring equipment and other oceanographic research activities. With respect to Marine Energy and Resources, the

greatest potential appears to be in multi-use of space in the offshore economy which forms part of the long-term Blue Growth strategy

Coastal and Maritime Tourism is also a significant sector in the Blue Economy, and potential niches for application of R&I are being explored. For instance, the cruise-and-stay niche market has strong potential for innovation and growth in Malta.

Text box 2-4: Tenerife case study - R&I potential in maritime-marine sciences

In Santa Cruz de Tenerife, the RIS3 of the Canary Islands points out that the territory has high R&I potential in maritime-marine sciences. It is a sector with a considerable and growing business critical mass, significant scientific and technological capacities and infrastructures, and excellent location and natural resources for the consolidation, development and valorisation of R&D activities in the form of innovation. The sector represents 6% of economic activity and employment of the Canary Islands. Research infrastructures already exist in the region, such as the Universities and the Canary Islands Laboratory of the Spanish Institute of Oceanography. Also, existing infrastructures and assets can enable the Marine sector to maximise the use of its opportunities and support the innovative impulse that the sector will experience in the coming years. Such infrastructure includes the Taliarte Science and Technology Park; the Spanish Seaweed Bank (BEA) and its associated Marine Technology Centre; the R&D Departments linked to the Faculties of Marine Sciences; the Department of Biotechnology of the Canary Islands Technological Institute with its infrastructure and equipment for the processing and industrial-commercial production of marine organisms; the Canary Islands Ports and their growing role in the sector of repairs and services to oil platforms; and a solid business network grouped around the Canary Islands Maritime Cluster (Government of Canarias, 2013 - RIS3).

2.2.2.2 Small size as catalyst of strategic partnerships and test-beds to foster the regional innovation potential

The case studies show that small size, in addition to cultural and social behaviours related to territorial specificities, can create links between key economic actors and trigger innovation in a particular sector (see examples below). This finding is confirmed by existing research on networks and partnerships. Innovation depends on the composition of the network, leadership commitments to innovation and collaboration, and the quality of relationships between innovation partners (Zach and Hill, 2017). Denicolai et al. (2010) found that the most dynamic and innovative firms within a destination are those that actively develop trusting relationships with other firms and leverage the knowledge available across their informal networks. However, just because linkages exist between two actors does not necessarily mean that specific types of knowledge will flow between them (Lin, 2002). As noted by (Hamel, 1991) and (Woolthuis et al., 2005) there must be some shared interest and some governance of opportunism. According to (Gulati and Nickerson, 2008) cohesion and trust between actors can play a significant role

in knowledge flow and reduce opportunistic behaviours of companies competing in the same areas.

Text box 2-5 Bornholm case study - cohesion and trust within the island community

Bornholm is a small island with a population of around 40,000 inhabitants. It covers 587 square kilometres and is in the southern part of the Baltic Sea, 145 km from Copenhagen. In Bornholm, the food sector has experienced a steady growth of food-related activities. As a small island community, people depend on each other and on maintaining good relationships; thisalso relates to the relative isolation and lack of neighbouring municipalities. In such environments, insularity is an advantage with regard to innovation, especially in terms of cohesion and trust within the island community that comprises only one municipality and a coordinated business support system. The trust and cohesion between actors translate to new ways of collaborating, for instance, it can involve the sharing of production facilities (e.g. a new firm wanted to start production of hemp oil, and instead of investing in their own equipment they made an agreement with a rapeseed oil producer to utilise their equipment).

Local stakeholders pointed out that Bornholm is ideal for being a food test island, as the path from thought to action is short. This ideal situation and the sector brand has also attracted food entrepreneurs to start up their businesses on Bornholm, bringing newcomers with higher education and new knowledge and ideas to the island.

The Bornholm “Food Strategy” is supported by a mix of demand-driven innovation public policy instruments. For example:

- a procurement process to contract new food suppliers in public institutions was introduced in order to increase the use of locally produced food and organic food (respecting EU procurement rules);
- the Municipality of Bornholm supported local food innovation by offering the use of public kitchens for testing food products.

Text box 2-6 Malta case study and desk research - eGovernment test bed

In Malta, the National Research and Innovation Strategy 2020 highlights that Malta’s small size can also be recognised as an opportunity for promoting Malta as a test-bed for new technologies prior to a roll out on a larger scale. Malta’s size also provides the country with a key advantage in terms of opportunities for cooperation, since it is logistically easier for researchers and innovators to work together. As an example, Malta is known as a centre of technological expertise, providing the perfect test-bed for building an excellent eGovernment infrastructure. Numerous ICT-driven businesses have sprung up as a result of the island’s commitment to ICT research. According to one of the consulted stakeholders, the size of the island makes it ideal to fine tune e-government initiatives on a smaller scale, allowing results to be obtained more quickly. As a result, the country scored high higher than the EU average

in the 2012-2013 Digital Agenda Scoreboard and transparent eGovernment (*Digital Single Market*, 2014).

2.2.2.3 Overcoming a limitation resulting from geographic specificity by finding technical and organisational solutions

Innovation can be driven by the need to find technical and/or organisational solutions that will help to overcome challenges associated with geographical specificities (see section 2.3.2.1).

The examples below illustrate:

- a case where local actors have developed a technical and organisational solution to overcome a territorial challenge to provide basic health care services to the local population.
- the creation of local entrepreneurship hubs to facilitate collaboration across regional actors, in order to foster the exchange of innovative ideas and solutions to the territorial challenges.

Text box 2-7 Western Lapland case study - Centre of Rural Medicine

In Western Lapland, the geographic specificity of being a sparsely populated area has long pushed actors in the health care service to innovate. The municipality of Storuman has been ahead in technical development due to initiatives from individual doctors at the Storuman hospital. In that regard, the development of the Centre of Rural Medicine (CRM) in 2010 sought to develop techniques and practices that combine high-quality health care provision and cost-efficiency with a development trajectory around technical and organisational innovations in local health care. As the process was driven by a local doctors, the process relates to narratives of intrapreneurship, i.e. where organisational change is driven from inside, leading to a change in the culture of local health care service.

At the beginning, County authorities, which are in charge of health care provision, did not show interest in the developments undertaken by the CRM. The fact that the CRM has developed 'at the margin' of the regional health-care system, both geographically and thematic-wise, has enabled the centre to incrementally test new ideas about how to organise health care provision in Storuman through small-scale experimentation, such as a Virtual Health Rooms initiative. Based on the success of these small-scale experimentations, the CRM has scaled-up (more personnel, larger involvement in research projects) and increasingly institutionalised these innovative practices into the organisation's routines.

Text box 2-8 Middle Dalmatian Archipelago case study - Aktiva entrepreneurship hub

In the Middle Dalmatian Archipelago, insularity results in several territorial constraints that hinder sustainable economic development (e.g. ageing of population, lack of critical mass, higher risk of failure). Innovative ideas are developed by local actors in order to counteract these territorial challenges. Collaboration across geographic locations, sectors and skillsets has enabled the archipelago´s inhabitants to develop and transfer knowledge on innovation needs, potentials and practices.

One example of this field of innovation initiated by the actions of private entrepreneurship is the establishment of the entrepreneurship hub Aktiva on the island of Brač, which, to a larger extent, elies on non-governmental associations and local action groups (LAG). Aktiva, the Centre for Local Development and Entrepreneurship Support, was established with the aim of gathering different institutions and local communities, counties or ministries in the projects that help Brač's development by offering support on the island. Activities are based on sharing information, hosting seminars, and publishing informative material on the issues connected with small and medium sized entrepreneurship. Family agricultural firms, local municipalities, tourist offices and individuals that have innovative ideas are the intended clients of this centre. Apart from working on local municipalities' development strategies and applications for EU funds, the centre has developed a few innovative projects for business support that are 'waiting' for investors.

2.3 Main geographic specificity-related challenges

2.3.1 Overview of territorial challenges per TGS category

While it is important to identify and exploit the existing potential of TGS, public policy responses must not ignore geographic specificity-related challenges that these territories face. Whether they hinder or boost innovation, public policy-making needs to take these aspects into consideration in order to direct TGS to sustainable economic development.

As in all TGS, the situation in **mountain areas** deserves to be nuanced, since some mountain ranges are remote (such as Scandinavia or Scotland), while others are close to metropolitan areas (such as the Alps). This diversity translates into distinct situations as to how mountain ranges, with their associated territorial challenges, can engage in entrepreneurial and innovative activities. For some mountain ranges conditions to develop innovative activities are more difficult. In such territories, as in other rural or remote areas, the density of businesses and population is lower than in cities, the number of higher education facilities is smaller, access to infrastructure and services is more difficult, and distances between companies, potential customers, research institutes and appropriate fund providers are often large. These factors result in challenges in establishing cooperation between actors and achieving a smooth and intense circulation of ideas (Euromontana, 2010).

The EU's **islands** are far from being a single homogenous category; having differing sizes, populations and levels of economic growth. Nevertheless, a number of common issues affect most islands to a considerable degree, and consequently influence their innovation potential. Islands may lack adequate transport links with the nearest mainland. Their ecosystems may be vulnerable, and natural resources scarce. Most islands do not possess vibrant urban settlements and therefore cannot benefit from urban financial spill-over, as mainland rural areas can. Due to their size, resources and the high cost of transport, some islands cannot develop economies of scale as mainland territories do. The limited use of new ICTs and low broadband coverage, due to lack of financial incentives for operators, also constitute important problems, especially for the islands of the Mediterranean. Islands may lack human capital and possess limited public resources in health, education, research and innovation. In most cases, islands are not self-sufficient in agricultural and industrial products or tertiary-sector services. They are usually reliant on imported fossil fuels and dependent on mainland energy networks. As most products and services have to be transported to islands, prices are considerably higher, adding to the cost of living in insular territories (European Parliament, 2016a).

Sparsely Populated Areas, although far from being homogeneous, have a number of challenges in common. The low population numbers of SPAs generates a number of challenges for their economies and social structures (DCRN, 2014). Younger members of society prefer to migrate to more economically vibrant regions and cities in search of better job prospects as, in most SPAs, professional opportunities remain limited and confined to specific fields (e.g. agriculture and tourism). As a result, the local economy stagnates due to the loss of active labour and the lack of new business ventures. The remaining population gradually gets older, as many of these regions suffer from a low birth rate and a lack of young people. The high proportion of elderly people creates additional needs in health and social provision that entail considerable costs. These needs are not easily met, owing to economic austerity measures and other structural reasons (e.g. lack of doctors and qualified personnel in these regions) (European Parliament, 2016b).

Coastal areas present a different kind of challenge regarding their territorial specificity and economic development. Coasts are the primary habitat for humanity; throughout history, coastal cities and towns have been crucible for innovation. However, business and technological innovations imperil coastal communities, because prevailing practices are unsustainable. Coasts are the frontline in humanity’s battle to learn to live sustainably on Earth. Past business and technological innovations have yielded rich rewards, but have generated social and environmental impacts that imperil coastal livelihoods. Paradoxically, innovation is essential to escape the predicament created by past ingenuity and prevailing practices. To secure a sustainable future for the world’s coastal communities, business and technological innovation needs to be reframed and underpinned by transformational social and governance innovation (Glavovic, 2013).

2.3.2 Specific TGS challenges and influence on innovation potential

The following subsection presents, on the basis of evidence gathered via desk research and case studies, a typology of geographical specificity-related challenges that may have a negative or positive effect on innovation processes in TGS.

2.3.2.1 Physical geography

Physical geography can hamper regional economic development and innovation processes. TGS can be remote, have low accessibility, be more vulnerable to climate change and have restricted availability of natural resources. Remote, inaccessible or geographically hostile territories can translate to a lack of attractiveness for companies and high-skilled staff, induce higher transaction costs and hamper connections between key stakeholders of the innovation process.

While physical typologies of TGS may constitute a barrier to innovation, it is important to mention that despite having similar geographical characteristics, exposure to challenges can vary considerably from one region to another in TGS. A recent study showed that rural entrepreneurs with rural–urban linkages are sensitive to core market demands and trends, value rural assets, and combine rural and urban sources of knowledge for innovation (Mayer et al., 2016). While some TGS can be truly remote, other benefit from proximity to some of the largest metropolitan areas, and can more easily benefit from innovation spill-overs from the urban areas. Also, while some islands may be isolated from the mainland, with few flight connections, others are well connected and can be touristic hotspots.

Physical geography in TGS can also be a driver to innovation, as illustrated below:

- Physical constraints can generate a “push to innovate” in some specific fields (see section 4.2.2.3;
- The relative disconnection of some TGS from other regions makes it possible to envisage them as test areas for some innovations, sometimes mobilising entire communities (see section 2.2.2.2)
- Amenities linked to physical geography (winter sports, sea, abundance of untouched nature) make it possible to attract highly qualified staff. ICT has fundamentally changed possibilities in this context, and will continue to produce effects in coming decades.

2.3.2.2 Demographic trends

Many TGS regions face constraints related to demographic characteristics as a consequence of their geographical specificities, and these represent obstacles to innovation. Such patterns seem to be found across the studied TGS, although they should not be generalised to all TGS. Most case studies have revealed demographic tendencies such as population thinning out, ageing of the population, emigration of young and skilled people, and consequently a lack of critical mass that would allow a proper ecosystem to foster innovation.

For Alkoy and Basso (2015) macroeconomic studies show theoretically and empirically that changing the population age affects the innovation potential. The share of young workers impacts the innovation process positively; conversely, a change in the demographic profile towards an ageing population leads to a decline in innovation activity (Aksoy and Basso, 2015).

According to a study by Haga (2015a) on "Innovation and entrepreneurship in ageing societies", based on evidence from a case study in the mountainous region of Kamikatsu in Japan, ageing societies are usually interpreted as problem cases, and the impacts of demographic change emerge first in specific regions like mountainous areas. They face often shrinking and ageing populations, on the one hand, and lack a linkage to economic dynamics and innovation on the other. The **declining economy, depopulation, and ageing population influence each other**. Population shrinkage through ageing is usually interpreted as a determinant for economic decline. However, for Haga, the case study from Japan suggests that old age *per se* is not a handicap to creating innovation. Rural communities can create wealth- and employment-creating innovation with low technology. A mere increase of the workforce, capital, and infrastructure without entrepreneurial innovative activities cannot create development, increase the standard of living, or ameliorate the negative impact of demographic ageing (Haga, 2015b). A "new combination" of the available resources remains an essential condition for the creation of new value. By combining innovative entrepreneurship and the decentralised mobilisation of local knowledge, an ageing community could find and develop its own unique way, which does not require radical innovation or technical progress (Haga, 2015b).

According to this vision, studies show that, even if demographic trends such as population ageing influence negatively the economy and innovation potential, this should not necessarily be a handicap to innovate. New "creative" combinations using available resources should lead to new paths of sustainable economic development.

2.3.2.3 Lack of infrastructure

Whether a TGS is characterised by its remoteness, insularity, inaccessibility, low density or sparse population, a common feature, though not to be generalised across all TGS, is the lack of basic infrastructure in comparison to non-TGS regions. Infrastructure is one of the tools for territorial development, which can affect, directly or indirectly, social-economic activities and other regional capacity, as well as factors of production. Infrastructure policy is a condition of

the regional development policy: it does not guarantee regional competitiveness, but creates the necessary conditions for achieving development objectives (Nijkamp, 1986a). Infrastructure is one of the indicators of the competitive conditions in the region, referring to the physical infrastructure (consisting of road transport infrastructure, telecommunications, newly built property, external accessibility of the region by land, air and water) (Snieska and Bruneckiene, 2009). Martinkus and Lukaševičius (2008) state that infrastructure services and physical infrastructure are factors that affect the investment climate at the local level and increase the attractiveness of the region. It is therefore important to identify, in each region, to what extent the lack of infrastructure is really the key limiting factor to innovation and growth (Palei, 2015).

Looking at **mountain regions** for example, countries such as Austria, France, Slovenia, Switzerland have "proactive" development strategies for mountain areas, aiming to build a new mountain economy organised around the tourism industry, quality agricultural products and agro-tourism, transport infrastructure and, in some cases, high-tech industries as well as certain activities in the service sector (e.g. health care, thermal cures). For such sectors, **infrastructure related to the accessibility of the territory** is a sine qua non for such developments (Nordregio, 2004).

The case study findings particularly point to the importance of developing basic infrastructures to ensure the transfer of knowledge and connections between local stakeholders and guarantee innovation processes. The role of ICT infrastructures is crucial to develop the innovation potential of TGS, especially those that have the disadvantages of being remote and peripheral. ICT infrastructures can: 1) reduce costs associated with physical distances; 2) facilitate access to information; 3) allow scale economies without proximity; and 4) improve quality of life and services through telework, e-education, health services, etc. SPAs and peripheral areas have more difficulty to access to information technology (OECD, 2007). The high cost of infrastructure deployment leads to weak demand for ICT services, which further increases the cost of infrastructure and discourages rural businesses, leading again to lower and declining population. Nonetheless, while low cost and reliable ICT infrastructure is essential, it is not sufficient, other conditions are necessary such as (ibid):

- intelligent use of technology by government (e-government, etc.)
- an institutional framework that encourages inter-firm and public-private cooperation;
- a business structure that promotes entrepreneurship;
- a dynamic tertiary sector providing business services and technology transfer;
- a minimum level of R&D capacities;
- financial instruments conducive to innovation.

Regional development policies traditionally rely too much on the belief that infrastructure investments are the key to enhanced innovation and growth. However, there have been many cases in modern regional support programmes that have proven this wrong; for example, the

famous “ghost” airports in several European regions that sought to increase accessibility of remote regions (*euobserver*, 2014). Regional policies should promote the more efficient use of the assets of SPAs more proactively so as to grasp new development opportunities, for instance through reinforced territorial cooperation and expanded business networks, instead of focusing excessively on 'overcoming' their permanent locational disadvantages by means of 'hard' infrastructure (Dubois and Roto, 2012).

2.3.2.4 Lack of skilled and entrepreneurial actors

A common pattern across the studied TGS regions is the lack of actors with technical skills to engage in R&I activities. Whether this results from brain drain, the lack of attractiveness of the territory for high-skilled people or both, 5 out 7 case study regions have specifically noted this aspect. Some case studies, such as Tenerife, North Aegean and Apuseni Mountains, have shown that not only there is a lack of qualified personnel, but there is overall a lack of entrepreneurial and innovation-oriented culture among the local population (Case studies synthesis report). The literature shows that the factors that engender lack of skilled entrepreneurs in TGS are different from one region to another, and that in some cases, TGS conditionality can be a factor that both repels and attracts skilled entrepreneurs.

One of the most significant demographic trends in the Alps is the out-migration of young people. Nevertheless, in certain areas, young people are deciding to return to their valley of origin after completing their higher education. Job opportunities, quality of life, and sense of belonging were identified as key factors that justify the choices to stay, return to, or leave the region (Ferrario and Price, 2014a). The study focused on the region of Comelico (mixing quantitative and qualitative tools through questionnaires and interviews to collect information), and the results showed that:

- The **availability of professional opportunities** is the fundamental basis of decisions to stay in, return to, or leave the region. For non-returning graduates, 74% stated that the region does not offer adequate professional opportunities corresponding to their levels of education. The results also show that the availability of jobs in surrounding regions is fundamental to stay in the region as long as commuting possibilities exist. Surprisingly, “demotivating environment” and “uninformed pessimism” are also factors that push young graduates to leave the region. This leads young entrepreneurs to not even look for a job in the mountainous region.
- **Quality of life** is the second important influence on life choices. Key factors include: the marginality of the region; the geographical and ICT access; the natural environment; the quality of schools; availability of public transport; cultural activities and; health and social services.

- **The affective dimension** is also an important decisive factor to maintain local population. Family links and the feeling of belonging to a community can help skilled entrepreneurs to stay in the region.

In terms of policy measures, it is fundamental to attract skilled entrepreneurs with specific interventions, both reducing brain drain and attracting skilled immigration. TGS affected by this phenomenon can develop integrated strategies to face these issues, adapted to the local context of the TGS. Territories may have factors that could enhance entrepreneurship in the area. Integrated strategies to attract talents and to foster entrepreneurship can rely on these factors in order to "brand" the region (e.g. cheap real estate, quality of living environment, proximity to urban centres).

2.4 Success factors / Good practices to foster innovation in TGS

This section presents an overview of the main findings regarding success factors and good practices in TGS that foster innovation, as well as the extent to which innovation practices are specific to TGS. The focus is on the contextual factors (institutional frameworks, governance dynamic, forums for dialogue and exchange, trust between actors, external networking, education levels, culture of entrepreneurship and risk-taking, openness to change, and access to capital) that made observed good practices possible.

The main sources are the literature review and the case studies.

2.4.1 Inclusive governance frameworks in proximity to local context

To understand how regions address issues related to innovation support in TGS, it is important to understand how the governance approach of the innovation system is set up. In this context, we use a broader definition of governance, defined as "*the shared, collective effort of government, private business, civic organisations, communities, political parties, universities, the media and the general public*" (Jentoft and Chuenpagdee, 2009). We define an innovation system as "*an open network of organisations both interacting with each other and operating within framework conditions that regulate their activities and interactions. These three components of the innovation system: networks; innovation activities; and framework conditions, collectively function to produce and diffuse innovations that have, in aggregate, economic, social and/or environmental value"* (Edquist, 2011).

As far as TGS are concerned, it is important to analyse and understand the extent to which innovation systems are embedded in the TGS, or built on networks bridging TGS and other territories. As discussed above, TGS typologies are very diverse, which has consequences on how the innovation system is structured in the territory. For example, a mountain range close to a big metropolitan area, such as the Alps, may have an innovation system that integrates the mountain region with the research centres, universities, and private stakeholders of the neighbouring metropolitan areas. When a TGS is spread across several administrative units (regions or countries), the TGS innovation system may be fragmented into several systems,

although the territory may have similar potentials and challenges that would deserve to be integrated in a cross-regional innovation system. This situation limits considerably the public policy manoeuvre to respond to and address TGS related issues. In Island states, the TGS represents the whole national territory (e.g. Malta). In these cases, the innovation system is integrated at the national level, and coordinated public policy actions or private initiatives can more easily be implemented to tackle systemic problems.

'Activities' in innovation systems are the determinants of the development and diffusion of innovations (examples include R&D, provision of organisations and institutions, financing of innovations, incubation, etc.). These activities performed by both private and public organisations; the latter constitute innovation policy. As a basis for innovation policy, the problems in the systems must be identified. Once these 'systemic problems' or 'policy problems' are identified, the different stakeholders constituting the system may react accordingly (Edquist, 2011).

The case studies have shown that there is a high diversity in innovation-related issues from one TGS to another. This suggests there is no one-size-fits-all and that particular issues are basically unique and **governance solutions cannot therefore be standardised**. Whether it is more of a top-down approach addressed by governmental bodies, or a bottom-up approach driven by non-governmental stakeholders, the case studies have shown distinct particularities and mechanisms that seek to trigger the necessary collective efforts to support innovation.

The case studies showed that local knowledge of the TGS context is essential in order to address the innovation related systemic issues. This implies that **governance must be exercised in proximity to the local context**, **by involving ''the local actors"**. Hence, a devolvement of governing functions and systems would be more suitable to respond to local demands than centralised initiatives from far away.

It is important to value how the innovation system involves the participation of a plurality of relevant actors and how these are connected and integrated to the governing process: whether their involvement is triggered by public authorities or results from a spontaneous initiative of non-governmental actors.

The case study of Bornholm shows how a proper governance model of the innovation system of the food industry, placed at the local level and involving relevant industry stakeholders, can be key in supporting the region to overcome its TGS-related challenges and allowing it to foster innovation and take full advantage of its regional potentialities.

Text box 2-9 Bornholm case study - Governance model of the food sector

The development of the Food Strategy for Bornholm was developed in a partnership formed by Bornholm's Regional Municipality; Bornholm's Agriculture and Food (industry association); and Gourmet Bornholm (association for food producers and restaurateurs). **Involving organisations that represent the food industry and reaching common ground with the industry has been a success factor**. Through coordination and dialogue,

the parties were able to agree on four overall objectives as well as a division of responsibilities/action plans to implement the strategy. Since there is an apparent need to facilitate stronger and new value chain collaborations on the island in order to raise the use of locally produced food, the governance of the innovation process is placed appropriately at the local level and involves the right actors. However, it is important to note that the success of this governing model can also be partly explained by the already well-structured private actors and the atmosphere of cohesion and trust in the community.

2.4.2 Innovation policies and relevance for the TGS context

There are several policies, initiatives and mechanisms, at European, national, regional and local level ,that are targeted at boosting directly or indirectly innovation activities. This section seeks to present an overview of the main success stories / best practices regarding the effectiveness of the measures and their relevance in respect to the specific needs of TGS.

2.4.2.1 European level

EU mechanisms to support **integrated and place-based policy support to local development** to territories help to unlock regional potentials and foster the development of innovation initiatives. Case study findings particularly pointed out the usefulness of CLLD-**LEADER initiatives to support local action groups (LAGs).** LEADER is a local development method which has been used for 20 years to engage local actors in the design and delivery of strategies, decision-making and resource allocation for the development of their rural areas (co-funded by the European Agricultural Fund for Rural Development, EAFRD). It is implemented by around **2,600 LAGs**, bringing together public, private and civil-society stakeholders in a particular area. The LAGs are a response to the lack of capacity to implement projects that lack of human and financial resources. Their activities are guided by local development strategies and implement projects in a bottom-up approach, in a closer context to address the specific needs of TGS.

In the 2014-2020 programming period, the LEADER method has been extended under the broader term Community-Led Local Development (CLLD) to cohesion policy (including three additional EU Funds, EMFF, ERDF and ESF). Although LEADER is obligatory only under the EAFRD, a single action can now be supported under two or more of the four EU Funds at the same time, through the concept of multi-funded CLLD. Where this is applied, it enables LAGs to comprehensively integrate local needs and solutions and helps to reinforce the links between rural, urban and fisheries areas (*European Network for Rural Development*, 2018).

Programmes that address the **development of clusters; knowledge, data and information exchange; and cooperation enhancement** are particularly relevant in the TGS context, since most regions have a fragmented innovation system is fragmented, so that better access to

knowledge and key stakeholders is needed in order to boost innovation. A few examples from the case studies include:

In Bornholm, ESIF co-funding through the “Bornholm food cluster initiative” has been essential in terms of developing the food strategy, implementing advisory services for food producers at Bornholm’s Agriculture and Food, and establishing the House of Regional Food Culture as a meeting place for the food industry. Another example is the Virtual Knowledge Centre in Malta, as presented in Text box 2-10.

Text box 2-10 Malta case study - Virtual Knowledge Centre

In Malta, the “Virtual Knowledge Centre” (an initiative with close collaboration of the European Commission, European Investment Bank and International Maritime Organisation) was launched in 2014. It aims at providing a centralised platform for marine and maritime information and improving synergies across different initiatives and projects in the Mediterranean region. It allows the consolidation and sharing of all the relevant and available technical and sectoral information in the Mediterranean region. This facilitates cooperation to promote investments and innovation, as well as supporting blue entrepreneurship at sea basin level.

EU programmes that foster **interregional collaboration (e.g. Interreg) or the creation of European platforms of knowledge exchange** provide an essential framework to achieve new partnerships and exchange of experiences that foster innovation in regions that need mechanisms to enhance their cooperation with other regions. For TGS, particularly in regions that are remote and less connected to main urban areas, the creation and development of interregional collaborations, networks and initiatives is fundamental to opening up to other regions, actors and facilitating the exchange of best practices. Two main types of interregional collaboration can particularly be beneficial to TGS.

Primarily, TGS facing similar challenges can foster mutual exchanges in a policy environment, which can create a space to pull knowledge and resources together in order to find solutions to specific TGS-related challenges (specific to islands, mountains, SPAs or coastal areas). The North Aegean case study shows how Interreg projects can be platform for mutual learning and for exploring TGS potential for innovation.

Text box 2-11 North Aegean case study - Islands on Innovation projects

In the North Aegean, the focus of the Interreg “Islands on Innovation Projects”, which started in January 2017, is to improve public policy measures to turn the islands into innovation test beds: islands as and innovation-promoting and experimental "probing and learning" environment which can keep and attract young, innovative and entrepreneurial people and activities to the islands. This will be done through policy improvement, learning sessions, action plan development, good practice identification, and sharing and active work with

involvement of regional stakeholder groups. The project will collect and disseminate the knowledge gained in a good practice directory and innovation guide for island regions.

Secondly, TGS can be involved in interregional collaboration on strategic sectoral areas. What matters most in this context is that territories may benefit from each others' knowledge, networks and practices regarding specific sectoral issues. In this logic, developing Vanguard Initiative look-a-like Pilots in sectors where TGS have competitive advantages can be beneficial (e.g. blue growth). In the Vanguard Initiative, new growth through smart specialisation is driven by a political commitment by regions to use their smart specialisation strategy to boost growth through bottom-up entrepreneurial innovation and industrial renewal in European priority areas (*Vanguard Initiative*, 2018).

The case studies of Bornholm and Western Lapland presented below show how specific sectors can benefit from interregional cooperation and networks to foster innovation and entrepreneurial activities.

Text box 2-12 Bornholm case study - LAG Bornholm involvement in European networks

In Bornholm, the association Gourmet Bornholm became a member of the European Culinary Heritage Network in 2001. This has been significant in terms of gaining knowledge and inspiration from elsewhere and for establishing networks. Specifically, Bornholm has developed strong links with Sweden, e.g. with the Eldrimner School, where they have found the inspiration to establish a national competence centre for food on Bornholm.

The Bornholm LAG, as a member of the European network, is able to locate food producers elsewhere in cases where start-up firms are looking for knowledge related to the production of a particular product.

Text box 2-13 Western Lapland case study - Interreg projects

In Western Lapland, Interreg projects have been a key strategy for the Centre for Rural Medicine (CRM) in order to establish its competence within international networks, and to make up for the lack of investment of regional authorities in addressing the specific needs of remote communities with respect to health care provision. By working within international networks, both European (especially Northern Periphery) and globally, doctors and researchers in health care in Western Lapland have been able to mobilise external knowledge that is essential to the innovation process and improve their ability to undertake innovative solutions in their region. EU funding via Interreg programmes has been instrumental in enabling the purchase and development of the technical material necessary for pilot testing and also for the coordination and organisation of the initiatives developed by the CRM.

Interregional cooperation and initiatives can also be the result of bottom-up efforts, such as the **Smart Islands Initiative** (*Smart Islands Initiative*, 2018). This is an effective way to creating a space to collaborate and network (Smart Islands Forum and Smart Islands Conference) as well as to catalyse collaboration between the public, private and academia sectors for the deployment of Pilot Innovative projects on Island (Smart Islands Platform). The Initiative helps to convey the needs of European islands at European level and allows the identification of transferable lessons for different geographies (e.g. Mountains, Coastal areas and sparsely populated areas) that face similar challenges and needs.

Small Project Fund (SPF) or similar instruments (micro-projects, disposition funds, or framework projects to support small projects/initiatives) that support **people-2-people (P2P) and small-scale projects** can bring many benefits for TGS regions. As noted in the Opinion of the Committee of the Regions (Opinion (EU) 2017/C 342/06)[8], P2P and small projects have been a successful tool in cross-border cooperation programmes, fostering the convergence of bordering regions and initiating grassroots contacts among people. For TGS, further consideration of micro interventions at LAU2 level in cohesion funds can have real impacts on local entrepreneurs. Among others, these initiatives can provide room for experimentation, testing innovative ideas and tools, and serving as "incubators for bigger projects". Some TGS-related challenges can be solved via cooperation at local level; P2P can help in sharing experiences, best practices and implementing a common vision.

TGS areas may be in larger non-homogeneous regions that include mainland areas or urban conurbations. In such cases, it is possible that, according to GDP indicators, the region is classified as a *transition region* or *more developed region*. In these cases, a majority of TGS within such a region might have the needs of a *'less developed region'*, and thus lose out on considerable EU funding aimed at, for instance, improving basic infrastructure. **Increasing EU funding for TGS** in that situation would have only a small impact on the total EU budget, but this minimal increase of funding would provide a significant boost to TGS.

2.4.2.2 National level

At national level, the evidence collected via the case studies showed that National Research and Innovation Strategies tend to foster excellence in research and innovation at the national level. Innovation needs are addressed horizontally, and do not take into consideration the territorial specificities of TGS areas. In order to resolve the existing gaps between national level innovation objectives and the needs of TGS, countries can **establish specific TGS units at the national innovation policy planning departments**, as illustrated in the example below.

Text box 2-14 Middle Dalmatian Archipelago - Islands department at national level

[8] Opinion of the European Committee of the Regions — People-to-people and small-scale projects in cross-border cooperation programmes (2017/C 342/06)

Croatia established an **Islands Department within the Ministry of Regional Development and EU funds** in 2017. Within this, both the development of islands and recognising innovations as an engine for development in rural areas are stressed as strategic activities, to reduce the distance between innovation and islands needs in policy documents at the national level. Establishing the Department at the national level is considered as a good measure as it brings together all the sectors that deal with islands. It is now the first place-of-contact when facing development challenges on the islands or having an innovative development idea. Such department can be very useful for policy-making and consideration of TGS issues. Since it was established, the department has been working on the preparation of a **new Island Act**, to outline the sustainable development of the Croatian islands in accordance with the concept of "smart islands" as guided by the definitions provided by the European Parliament Resolution on the special situation of Islands. The documents to be developed for the application of the new Island Act are expected to address innovation processes on the islands directly. It is also planned that the Islands Department will coordinate ESI funds for the period 2021-2028. Consequently, it is predicted that **operational programmes better tailored to the needs and capacities of the islands will be developed.**

In order to give international recognition and value the potential of TGS products, **specific TGS products labels** can be implemented. Similar to the EU level protected Designation of Origin, national level recognition labelling can enhance innovation to develop traditional products stemming from a specific territory, and encourage their processing using new, modern and innovative technological means. North Aegean, via the "Business Plan 'North Aegean products basket'" and Croatia, via the Croatian Island Products label, are implementing this type of labelling.

Text box 2-15 Middle Dalmatian Archipelago - Croatian Island Product

The main objective of the "Croatian Island Product" is to identify and distribute quality island products which will be recognised as such both in Croatia and abroad. These products result from island tradition, research and development, innovation and invention with a quantifiable level of quality. They come from restricted island localities and are produced in small batches. With this recognition, self-employed island producers are encouraged to create products of outstanding quality and to remain on the islands, and in turn, the consumers are able to try out and taste new products and assure themselves of their excellence (*VisitDubrovnik*, 2018).

Another example of national measures that can trigger innovation and entrepreneurship is to implement **fiscal support schemes** for TGS, as shown in the example of the Canary Islands presented below.

Text box 2-16 Canary Islands fiscal advantages

The Canary Islands benefit from regional advantages that can support innovation and entrepreneurship. Due to their insular situation and geographical remoteness from Europe, as well as the scarcity of natural resources, they have enjoyed a unique treatment in administrative, economic and fiscal terms since the 16th century.

The current corporate tax for companies is 4% of the revenues, the lowest in Europe. To give some perspective, the corporate tax in mainland Spain is 25% and in Belgium, the highest in Europe, 34%. This regime is called Canary Special Zone ("Zona Especial Canaria" or ZEC). The title of the regime is somehow misleading, because the tax status is not restricted to any particular geographical location, but to all companies established in the Canary Islands. In other words, the Canary Special Zone is equivalent to the Canary Islands.

2.4.2.3 Regional level

The **Regional Smart Specialisation Strategies (RIS3)** are the main guiding documents that help to identify regional potentialities and the key stakeholders involved in these sectors. From a point of view of usefulness of RIS3 for TGS, the main advantages found in the case study regions are:

- The RIS3 support regional development and policy making, by guiding the specific key actions that need to be implemented in order to boost innovation and achieve sustainable economic development in the regions.
- The process development of a RIS3 or regional sectoral strategies - if conducted in an inclusive and participatory approach - is rewarding for policy making in TGS. The different parties (public, private, NGO, industry representatives, clusters, etc.) are given the opportunity to challenge each other and to gain a better understanding of each other's perspectives.
- The RIS3 process supports the identification of key areas (niche sectors) within the regions which can be used for identifying cooperation opportunities with other regions.

However, although RIS3 strategies can be useful to some TGS, a few aspects need to be taken into account to understand their constraints:

- In the Apuseni Mountains case study, as these strategies can have overarching positions, their objectives and priorities can also be vague or general. In regions with large urban agglomerations, the domains of action in terms of innovation are generally established by prioritising urban over rural economic trends and TGS-like conditions and contexts can be ignored. Therefore, for TGS that are mainly comprised of rural areas, RIS3 strategies may not be as useful as they seem to be.
- In the Tenerife case study, several interviewees pointed out that the RIS3 document was drafted in 2013. As the strategy is now six years old, the initiatives

and plans may no longer be relevant. The RIS3 could benefit from a mid-term evaluation, and if necessary, adapt specific upcoming calls to the needs and challenges that the region is facing at present.

- In the North Aegean region, the strategy itself can be a useful tool for policy making. However, regional authorities need to have the political will, capacity or governance model to pick-up the actions that are foreseen in the strategy, otherwise the region cannot fully benefit from the RIS3.

As the case study of the CIDE network in Tenerife shows, there are relevant initiatives to foster the development of **regional networks of innovation** with the aim of encouraging regional actors to get together, exchange, and engage more actively in innovation activities (*Redcide*, 2018).

Text box 2-17 Tenerife case study – CIDE network

The "Red CIDE" (CIDE network) is a Network of Innovation and Business Development Centres in the Canary Islands. Its goal is to bring innovation closer to the Canarian society, especially companies and institutions, and to increase innovation activities in the region. The centres are spread throughout the territory, providing training and conferences on innovation and information about the different grants and financial schemes to support innovation.

2.4.2.4 Local level

Some TGS areas lack an entrepreneurial culture, whether this is the cause or consequence of ageing population, depopulation, or the high profitability of some sectors acting as an obstacle to economic diversification. The following case study in Tenerife shows the importance of **building a local entrepreneurial tradition/culture** based on knowledge and technological transfers through educational programmes focused on entrepreneurship and business development.

Text box 2-18 Tenerife case study - Mentor day initiative

Local entrepreneurs from the Province of Tenerife launched an initiative called "Mentor day" It is a one-week intensive programme which aims to support entrepreneurs in accelerating the creation process and launching their companies. During the training, the entrepreneurs present their projects and ideas to other entrepreneurs, investors, mentors and attendees. The programmes allows participants to receive support from mentors in developing their business idea. The programme started two years ago and over 60 start-ups have received support.

As presented in section 2.3.2.4, some TGS can be particularly affected by the lack of skilled entrepreneurs as a result of diverse factors such as: geographical remoteness, lack of qualified

jobs, low life quality, the absence of adequate professional opportunities, etc. The factors are diverse and differ from one TGS to another. For policy-makers, one of the priorities to foster innovation in the TGS is to retain skilled entrepreneurs who can lead innovative initiatives.

It is crucial to **attract skilled entrepreneurs with public measures tailored to the local context, in order to reduce brain-drain and attract skilled immigration** (e.g. ensure better and more efficient transport and ICT infrastructures, increase awareness on job opportunities, increase marketing of the good life quality of the region).

2.5 Conclusions and policy recommendations

TGS can be vibrant innovative areas, with specific potential that can lead these territories to sustainable development. Innovation is strongly defined by the location where it takes place, and it can occur in many forms, transcending from R&D-based (Science, Technology and Innovation) to experience-based (doing, using, interacting (DUI)). Different geography-related specificities and aspects – such as endogenous characteristics, accessibility, infrastructure or demographic trends – bring variations in the innovation potential of a territory and on the type of innovation (technology innovation, process innovation, business model innovation, service innovation, product innovation, etc.). This chapter has attempted to define some of the distinctive features related to innovation in the TGS, emphasising the potentials, challenges and key policy directions to support innovation in mountain, islands, SPAs and coastal areas.

- TGS, whether they are sparsely populated, mountainous, coastal or an island, present valuable innovation potential that can play a part in the drive for sustainable development. The characteristics and innovation needs of TGS are very diverse, and deserve tailored demand- and/or supply-driven innovation policies in order to unlock the innovation potential. In that sense, the development of innovation policies should be linked with a prior place-based assessment of the systemic issues of the TGS innovation system.

- Policy responses are addressed at different policy levels. It is important that all governance levels recognise the TGS potential and conditionalities (challenges and drivers to innovation). The observed tendency is that the main innovation-driven strategies (national innovation strategies, RIS3 and to some extent local development strategies) do not adequately address the specific issues of the TGS conditionality. What adds difficulty to this exercise, is the spatial delimitation of TGS. From one territory to another, a TGS may represent a small area of an administrative region, may be spread across several regions or countries, or may constitute an entire administrative territory (such as the case of Island states). In these distinct scenarios, the way policy actors reflect and take into account TGS conditionality in the strategies differs significantly. Overall, in future national or regional innovation strategies, it would be advantageous for these regions that the Member States and regions develop integrated strategies according to the geographical specificities.

- Territories which combine a long-term vision through a broad consultation with the relevant stakeholders and ensure the necessary commitment/support over-time at different stages in innovation processes – e.g. innovation need, emergence of innovative ideas; selection of innovative ideas; the acceptance of innovations; maintenance of innovative spirit – are more likely to trigger changes leading to sustainable development than territories adopting a single policy response overly focusing on a specific stage of innovation process.

- Territories that fall within the same categories of TGS may share common challenges and potentials. Therefore, TGS can benefit from interregional cooperation and networks. Exemplar initiatives exist in this context, such as the Smart Islands Initiative, and similar initiatives and further cooperation via interregional cooperation programmes can bring a proper platform for knowledge and experience exchange between TGS.

Below we present a series of recommendations based on the findings from the desk research and case studies that point out relevant policy directions for the TGS context. While the recommendations are presented by policy level, the ideas and concepts behind each recommendation should not necessarily be exclusively linked to a single policy level:

European level

1. Better linking EU mechanisms that support **integrated and place-based policy support to local development** to TGS, to help to unlock regional potentials and fostering the development of innovation initiatives by:
    - promoting CLLD as an EU instrument that also specifically addresses “mountain / island / SPA / coast” needs in TGS.
    - Increasing the capacity of local action groups (LAGs) to use CLLD to enhance innovation in the TGS.

2. Using cohesion policy to **foster the development of clusters; knowledge, data and information exchange**; **and interregional collaboration programmes addressed to TGS**. Additional emphasis can be made in calls that would encourage exchanges between TGS that may face similar challenges or building cross-regional thematic platforms to foster collaboration (e.g. Vanguard initiative Pilots).

3. Encouraging the development of interregional cooperation and initiatives of bottom-up efforts for TGS areas, such as the **Smart Islands Initiative**. These bodies could carry the development of transnational policy strategies for TGS with common features.

4. Considering micro level interventions at LAU level, such as **Small Project Fund (SPF) or similar instruments** (micro-projects, disposition fund, or framework projects) to support **people-2-people (P2P) and small-scale projects** in TGS regions.

5. **'TGS conditionality'** – setting of special provisions on how EU programmes and policies are developed for TGS – in order to financially take into account the special needs of TGS areas, even when they are part of regions that are classified as 'more developed'.

National level:

6. Creating **bridging TGS structures, units** or **forums of exchange** to link national regional innovation policy with the specific needs and potentials of TGS and to facilitate the adoption of a more structured and integrated approach to the TGS niche sectors.

7. Reflecting on how **targeted marketing techniques**, such as Protected Designations of Origin (PDOs) for TGS products, could be further developed to promote and enhance the production of 'local unique products' to global publics.

Regional level:

8. Fostering **TGS networks of innovation**, to enhance regional and local actors to get together, exchange and engage more actively in innovation activities. As a TGS can be wider or smaller than a specific region, it is important to foster the creation of networks around the TGS and beyond national borders.

9. Conducting **mid-term evaluation of the RIS3 strategies** to adapt specific upcoming calls to the present needs and challenges of the region.

Local level:

10. Accompanying basic infrastructure development (e.g. improve accessibility, ICT and public services delivery) with the development of an **entrepreneurial and innovation culture within the local population**.

11. Designing tailored measures to **tackle brain-drain and attract skilled entrepreneurs** in the TGS. Each region has specific factors that can both attract and repel skilled people. Understanding the concrete factors that could influence the decision to leave or stay and developing an integrated strategy to face these issues can be crucial for the TGS. This aspect is further explored in Module 3.1 "Transitional Labour Markets".

3 Module 1.2: Sustainable tourism – perspectives and strategies in TGS

This chapter aims to define sustainable tourism in relation to different TGS. It also explores different territorial assets related to types of TGS and their relationships with sustainable tourism, and provides an overview of the challenges faced by the different TGS in their transition to sustainable tourism, as well as the pressures they experience or might experience due to the intensification of tourism.

The chapter also discusses EU policies and policy debates and the degree of usefulness of TGS categories to inform these, providing an overview of successful policies for sustainable tourism for different types of TGS and analysing the extent to which active EU financial mechanisms support the shift to sustainable tourism. The chapter concludes with an analysis of the way ahead towards sustainable tourism in TGS.

3.1 Defining sustainable tourism

As tourism is a place- and time-specific activity, the territorial characteristics of tourism activities are highly relevant when discussing sustainable tourism. The tourism sector has unique territorial aspects and represents an "environmental paradox" as, on one hand, it relies on the preservation of natural (as well as social and cultural) capital for its survival, but, on the other, touristic infrastructure is the dominant contributor to land take for many regions in Europe (ESPON GREECO, 2014). Impacts from tourism activities cannot be fully avoided, and it is therefore necessary to plan and manage tourism assets in order to minimise the negative impacts and maximise the positive economic and social return of tourism. A new tourist attraction potentially reduces the quality of the environment and may impact the socio-cultural life of the local community (Junaid and d'Hauteserre, 2017). Defining sustainable tourism is thus a delicate and complex matter. Sustainable tourism can be defined, as by UNWTO, as "t*ourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities*" (UNWTO, 2005). The concept refers to a type of tourism that integrates the environmental, economic, and socio-cultural aspects of tourism development. Moreover, sustainable tourism development entails the informed participation and involvement of all relevant stakeholders, in addition to strong political leadership to ensure wide participation and consensus building. Rather than being a set objective to achieve, sustainable tourism should be seen as a process that is continuously integrated into other development actions and closely interacts with other sectoral processes. There are plenty of discussions in the context of sustainable tourism and different concepts are circulating – including eco-tourism, green tourism, agro-tourism, rural tourism – reflecting the fact that environmentally and socially conscious tourism is increasingly seen as an opportunity and not only a threat to the traditional tourism industry. (Moscardo and Murphy, 2014) critically review the concept of sustainable tourism, and argue that there are

currently limitations in its definition and that a more ethical and stakeholder sensitive approach might be better served by the concept of *responsible* tourism or by taking an approach of *well-being* or *quality of life* approach. Such an approach would, according to the authors, better reflect the notion that sustainability should be about "increasing all forms of capital, not just financial or built capital, recognizing that natural capital is especially important because it cannot be substituted with other forms".

The time-specific aspect of tourism is illustrated through its seasonality, which causes fluctuations in visitor numbers, resource consumption and pressures on ecosystems, thus complicating the sustainability of tourism activities. Seasonality is very prominent in terms of coastal tourism, as it is very weather- and sun-dependent, or in mountain ski tourism where the availability of snow is a defining factor. Seasonality can also be expressed in terms of fluctuations in "trends" of destinations. Tourism, as any other product, is sensitive to the latest fashion trends: a destination can suddenly go in or out of fashion for certain tourists. Measures in place for reducing seasonality include providing off-season attractions, using financial means like pricing and taxation, trying to lengthen the existing seasons, and diversifying markets to encourage domestic tourism in off-seasons.

Tourism is a cross-sectorial activity and is related to many other socio-economic sectors. Tourists use services by different businesses, and it can sometimes be challenging to idenfify the specific impacts that tourists have on the economy. In short, the tourism sector covers a broad array of hospitality and recreational activities, and key elements include:

- Food and beverage services;
- Transportation and warehousing;
- Tour operators and destination managers;
- Retail trade;
- Finance, insurance, real estate & leasing;
- Various other service industries where there is a large or small tourist-related element (i.e. visit to museums, zoos, gardens, ski hills, golf courses, and other similar venues and related activities are included in the tourism sector).

Initiatives for greening the above sectors will lead to positive effects in improving the sustainability of tourism sector. A case in point is improving the sustainability of transport – particularly for aviation (e.g. if short flights are converted to rail/coach), cars, and cruise ships. Similarly, many of the issues of greening new and existing buildings to higher environmental performance are applicable to overnight facilities for tourists, and related enterprises (e.g. travel agencies) (ESPON GREECO, 2014).

3.2 Sustainable tourism and Territories with Geographical Specificities (TGS)

The tourism sector depends on the spatial distribution of the natural environment, coastal areas, lakes and rivers, forest, and not least, particular climatic conditions. Tourism development is

also dependent on the cultural and socio-economic features of the receiving environment. The Committee of the Regions states that “tourism is a global phenomenon that is shaped locally”, and tourism is primarily a responsibility for local and regional stakeholders and actors (Committee of the Regions, 2006). When defining sustainable tourism, it is necessary to take into account the territorial specificities of where the tourism activity is taking place, as its effects will, to a large extent, be felt locally. For example, the depletion of fresh water resources or imbalances in local communities may be sustainability issues at the level of TGS.

Traditionally, strategies promoting sustainable tourism focus foremost on reducing local environmental pressures. For instance, the EU tourism strategy from 2010 fails to take account of the unsustainable development of transport to tourism destinations, which is increasingly reliant on less environmentally efficient modes of travel such as cars and planes, which represent one of the most significant impacts of tourism activities. In this context, it is important to acknowledge that tourism is not only limited in terms of space but is also making an important contribution to global environmental challenges, such as the CO_2 emissions from transport linked to tourism. On a global level, GHG emissions related to tourism currently represent about 4.9 % of global emissions, a number that is predicted to double within 25 years (DG Internal Policies, 2016). It is therefore crucial to also consider the wider, long-term, cumulative effects of tourism. It may be important in this respect to differentiate between the sustainability of the tourism practice at the level of the TGS from the wider practice. Air transport to bring tourists to Mediterranean islands may not, as such, raise local sustainability issues for the islands; however, excessive use of air transport is a sustainability issue at the European and global levels. Against this background, it is therefore relevant to look closer at the specific relationships between sustainable tourism and TGS.

Table 3-1 Overview of relevant policies

	Policies
High-level strategies	Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe /* COM/2010/0352 final */ Communication Agenda for a sustainable and competitive European tourism (COM(2007) 621 final) Communication concerning the European Union Strategy for the Baltic Sea Region - 23.03.2012 - COM(2012) 128 final Communication from the Commission to the European Parliament, the Council and the Economic and Social Committee of the Regions A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism /* COM/2014/086 final */ Joint Communication to the European Parliament and the Council An integrated European Union policy for the Arctic. 27.4.2016 JOIN(2016) 21 final

	Commission Staff Working Document 'Report on the Blue Growth Strategy Towards more sustainable growth and jobs in the blue economy' Brussels, 31.3.2017 SWD(2017) 128 final Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'
Regulations – directives – legal instruments	Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) Regulation (EU) No 1315/2013 of the European Parliament and the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel
Legal instruments for governance	Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions Modern Budget for a Union that Protects, Empowers and Defends The Multiannual Financial Framework for 2021-2027 COM/2018/321 final
Financial incentives and associated governance arrangements	Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006 Regulation (EU) No 1287/2013 of the European Parliament and of the Council of 11 December 2013 establishing a Programme for the Competitiveness of Enterprises and small and medium-sized enterprises (COSME) (2014 - 2020) Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) Regulation (EU) No 1293/2013 of the European Parliament and of the Council of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE) Regulation of the European Parliament and the Council on specific provisions for the European territorial cooperation goal (Interreg) supported by the European Regional Strasbourg, 29.5.2018 COM(2018) 374 final 2018/0199 (COD)
EU Initiative	European Destinations of Excellence "EDEN"

3.3 Characterising Territories with Geographical Specificities

The TGS discussed in this report include all non-metropolitan tourism hotspots in Europe, and their geographic specificity is generally the key component of the attractiveness of these hotspots. However, to various degrees, they are also fragile environments – ecologically, socially and economically. The TGS discussed here face different pressures and opportunities due to their geographical characteristics. Article 174 of the Treaty on the Functioning of the European Union recognises the unique territorial specificities of various regions in Europe, such as islands, mountain regions and SPAs, and underlines that particular attention should be paid to these regions to reduce disparities between the levels of development of the various regions and between EU Member States.

There are geographical variations within the TGS categories, depending for instance on their location in Europe. Coastal areas have different opportunities for tourism and seasonal tourism in the south of Europe than in northern Europe, as tourists often seek sunnier weather. Consequently, both current levels of, and the future potential for, tourism vary considerably within the different TGS. For example, there are some mountain or coastal areas that do not have any tourism activities at all, which illustrates that the same TGS has very different faces in different parts of Europe and that this variation needs to be taken into account when discussing TGS in relation to tourism. The differences are also present in terms of demography, e.g. the urban/rural relationship as well as the characterisation of a region, e.g. if it is a transition region or a pre-transition region. The following section attempts to present a structured description of how tourism is related to key fragilities in each TGS.

Table 3-2 Case studies referred to in the text

Case study	Issue
Norfolk-Suffolk, UK	Policies for tourism development in coastal areas
Mediterranean region and Tenerife	Regional initiatives for sustainable tourism in the Mediterranean region

3.4 Coastal tourism

3.4.1 Assets and pressures due to geographical specificities

Coastal and maritime tourism is the largest tourism sector in Europe and the largest economic sector in coastal areas in Europe, employing 2.3 million people and generating €183 billion in gross value added. Half of the European coastal tourism's jobs and value added are located in Mediterranean region, but the Atlantic, Baltic and Black Sea regions also have significant shares (European Commission, 2014). Coastal tourism is a rapidly growing sector: a 2013 EU study predicts a growth rate of 2-3 % by 2020 (European Parliamentary Research Service, 2017).

TGS specific pressures

Coastal tourism puts pressure on coastal ecosystems, sometimes beyond their carrying capacity. Moreover, destinations of mass tourism are often located along Europe's coasts. The strong seasonality of coastal tourism and the frequent concentration of tourism activities in densely populated areas put additional pressure on the already strained ecosystem services and natural resources. Specific pressures of coastal tourism on the environment include:

- A strong link to construction of infrastructure and buildings, such as hotels, second residences, apartments, leisure and commercial infrastructure, leading to an expansion of built up artificial areas. Environmental impacts of the sprawl of man-made surfaces add to pressures on local systems (e.g. energy, water provision, waste-water, waste management) and also include the fragmentation of ecosystems and habitats.
- Contribution to increased transportation density, creating additional pressures in most coastal areas. This is especially the case when a single road along the coast attracts most of the traffic.
- Increased water demand, which is particularly high during the peak season when the risk of water deficit increases, especially when droughts occur.
- Recreational activities in marine areas (snorkelling, sport fishing, scuba diving, yachting, cruising) directly threaten fragile ecosystems (European Parliamentary Research Service, 2017). Marinas impact natural currents, degrade surrounding water, and are large land consumers and also sources of pollution. Related boating and cruising activities result in pollution and disturbance of wildlife.
- Golf courses also have major impacts on the environment. They simplify natural ecosystems and consume large amounts of water and pesticides (European Environment Agency, 2006; European Parliamentary Research Service, 2017).

Challenges

Coastal areas are attractive not only for tourism but for a range of economic activities and generally concentrate many other functions. This competition generates specific challenges and can, for instance, lead to conflicts over land use or water resources.

Coastal areas are often very exposed to impacts of climate conditions, and these may be exacerbated by climate change, including rising sea levels and droughts. Tourism infrastructure is also at risk of extreme weather events, increased number of floods etc. The impact of climate change may differ considerably among coastal areas in different parts of Europe, according to their individual physical conditions, location, and exposure. However, the effects of climate change on coastal tourism are subject to great uncertainty. According to the EEA report on 'Climate change, impacts and vulnerability in Europe' (European Environment Agency, 2017b), rising temperatures could, overall, have positive effects on the conditions for beach tourism

across Europe, as the season would be extended. However, the competition between beach destinations will increase, as the climates of the Atlantic and northern European coasts become more favourable while temperatures in Southern regions risk becoming too high for tourists in the key summer monthsinception report. A 2015 EU study suggests that, under current economic conditions, the 2100 climate could lower tourism revenues by up to 0.45 % of GDP per year in the southern EU Mediterranean regions, while northern European regions would gain up to 0.32 % of GDP. There is, however, great uncertainty as to how tourists will adapt to the effects of changing climate by changing travel period, destination, or holiday type (European Parliamentary Research Service, 2017) .

3.4.2 Sustainable tourism in coastal areas

As stressed by the European Commission's communication, one of the key challenges for coastal and maritime tourism is to strengthening sustainability (European Commission, 2014). Coastal tourism is a key economic activity in coastal areas and coastal management is therefore critical. Coastal tourism can be enhanced by Integrated Coastal Zone Management (ICZM)[9], which can deal with the conflicts between 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. Diversification is crucial in coastal areas, but has environmental challenges and implies needs for new, upgraded tourism management and increased knowledge of the impacts of tourism on the environment.

3.5 Island tourism

3.5.1 Assets, pressures and challenges due to geographical specificities

There are 319 island territories occupying 4% of the ESPON space and hosting 2.6% of the inhabitants[10] (ESPON and University of Geneva, 2012). Islands are generally small in size (in terms of area, population, economy) and distant from large industrial, financial, political and population centres. Many islands depend economically on tourism, as it is one of the main economic activities that provides job opportunities, improves livelihoods, and creates growth, such as for the Spanish islands of Tenerife and Mallorca. Islands include both densely populated areas and less and sparsely populated regions. The common geographic features of islands lead to specific challenges and make them vulnerable to economic, environmental, and social threats. Most islands have limited surface areas and natural resources (including

[9] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

[10] The European Parliament (European Parliament Intergroup: Seas, Rivers, Islands and Coastal Areas, 2016) defines islands as territories with a minimum surface area of 1km^2, a minimum distance between the island and the mainland of 1km, a resident population of more than 50 inhabitants and no fixed link between the island and the mainland.

arable land, freshwater, mineral resources, conventional energy sources). The additional handicap of insularity generally creates challenges in terms of accessibility and makes islands dependent largely on boat services or air transport. This poses problems of transport costs, seasonality and connectivity with the mainland and/or surrounding locations, which affects attractiveness for visitors and tourism workers (European Commission, 2014). Environmental pressures that are particularly challenging for islands include:

TGS-Specific Pressures

- Limited land availability and concentration of large hotels, which may lead to habitat fragmentation of loss and a reduction of biodiversity. This is particularly an issue for islands that also are destinations of mass tourism (e.g. Tenerife).
- Islands, particularly small islands, are environmentally more vulnerable to Municipal Solid Waste (MSW) growth generated by tourism. The daily average of MSW generated by tourists is considerably higher than that from local residents. Common problems include a low number of facilities for waste treatment or disposal; significant seasonal variations in waste quantity and composition; high population density; limited land availability to locate landfills and other waste treatment infrastructure; and difficulties in achieving economies of scale.
- As for coastal areas, tourism creates significant pressure on water resources. For instance, Malta's water demand doubles during the tourist season, while on the Greek island of Patmos it increases sevenfold. Natural water resources on many islands are insufficient to meet the water demand of the local population due to high population densities, such as in Malta where the natural water supply is augmented through the use of sea water desalination.

Challenges

A key policy area is the impact of climate change on European islands. Key climate trends relevant for European islands can have possible negative repercussions on several areas including tourism. Rising sea levels may, for instance, have severe effects on islands.

3.5.2 Sustainable tourism in island areas

As tourism is such as important economic activity on many islands, making island tourism more sustainable is crucial for the livelihood of island communities in the long run. This would ideally halt or reduce the degradation of the natural environment – which is often what attracts tourists in the first place. Besides coastal management through ICZM (described above), islands should pay particular attention to optimising their waste management and drastically increase their level of recycling and the implementation of circular economy business models, as waste management is often a challenge based on the insular character and low availability of land on

islands. Increasing the uptake of EU policy instruments such as the EU Eco-label[11] and Eco-management and Audit Scheme (EMAS)[12] is a possible way ahead for improving resource efficiency practices.

The sharing economy is creating new opportunities and challenges for sustainable tourism. It can work positively in bringing new tourism opportunities to regions and in improving accessibility. It responds to the challenges of seasonality, for example in island regions where traditional accommodation services may be at saturation point, or to offer affordable and interesting accommodation opportunities during the low season. However, negative impacts may arise from online sharing platforms that can avoid compliance standards through e.g. taxes, municipal tourism fees or various environmental protection fees, and can hinder attempts to regulate the number of visitors to a region.

[11] Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel

[12] Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)

3.6 Mountain tourism

3.6.1 Assets, pressures and challenges due to geographical specificities

36% of Europe's area is defined as mountainous, including 29% of the EU-27. Of the total area designated as Natura 2000 sites, 43 % is in mountain areas, compared to 29% for the EU as a whole. These sites cover 14% of the mountain area of the EU (EEA, 2010). Most mountain regions are “deep rural', with low economic density and accessibility. While mountain areas are in general sparsely populated, some contain densely-settled areas in certain valleys. Here, the population densities are often very high – and these places are where many tourists stay (and then often go on day trips to more rural areas). Tourism is a major economic sector for mountain areas which are attractive because of their cool and fresh air, scenic beauty, possibilities for active leisure such as hiking, climbing, skiing, and cultural landscapes. Mountain regions are usually dominated by more traditional economic activities, such as agriculture and forestry. This economic structure has, however, started to change, and land abandonment, with inhabitants moving closer to urban centres, is changing the demographic structure. Increasing recognition is being given to the importance of economic restructuring and local development and of keeping an active population in mountain areas where tourism is gaining increasing importance, in addition to support for agriculture, provision of services and infrastructure. In such contexts, policy programmes of the Structural Funds[13], such as LEADER or LIFE[14], support specific projects(Gløersen et al., 2016).

In EU Member States, mountains account for a greater proportion of a country's natural and environmental assets than non-mountainous areas. In terms of wilderness, the greatest proportion and area in Europe is found in the Nordic mountains. Elsewhere, only Spain has more than 10,000 km^2 of mountain wilderness. Most European biodiversity hotspots are found in mountain areas. Their ecosystem services provide opportunities for Europe and contribute significantly to social, economic and environmental capital at the European scale. These services are highly multifunctional and relate particularly to water regulation, protection against natural hazards, tourism, recreation, and forests. Because the benefits of these services accrue to both mountain and lowland populations, maximising highland-lowland complementarities is important for all mountain regions (EEA, 2010).

[13] Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006

[14] Regulation (EU) No 1293/2013 of the European Parliament and of the Council of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE)

TGS Specific Pressures

The negative impacts from mountain tourism can threaten the natural assets that the tourism itself depends on. Major pressures from tourism in mountain areas include:

- Increasing amounts of visitors disturbing natural habitats and wildlife and negatively affecting biodiversity;
- Deforestation, which can also cause erosion
- Littering in sensitive ecosystems, along hiking trails etc., e.g. in the Tatra National Park, Poland.
- Air pollution is a particular issue in certain mountain regions. For instance, the Alps attract 120 million visitors every year and 84% of the holiday travels are made by car. This leads to valleys being significantly affected by air and noise pollution caused by road transport. These impacts are significantly aggravated by the mountain topography. Smog is also caused by inefficient heating systems where low-quality fossil fuels are still used, e.g. in Tatra National Park and Podhale, Poland, as shown by the Tatra mountains case study.
- Alteration or destruction of local communities or cultures (European Parliamentary Research Service, 2017).

TGS Specific Challenges

Considerations are particularly advanced with regard to safeguarding natural resources and the environment as these are the backbone of mountain tourism. There is a focus on actions that are less detrimental to nature conservation and are more environmentally-friendly in terms of land use and tourism activities, as well as reducing negative effects of tourism-related mobility. Temperature rise, as a consequence of climate change, has been and is expected to be greater in mountain regions than the average for Europe, and warm winters have already affected Alpine winter tourism. As climate models forecast that the snow cover in Europe will decrease over the coming years, the deterioration of Alpine skiing conditions during winter is expected in most regions, and particularly in low-lying ski areas. The reductions of the snow cover also lead to increases in artificial snow production, which is water- and energy-intensive. For example, in the record warm winter of 2006/2007, some low-altitude ski areas in Austria were not able to offer a continuous skiing season from December to April, despite being equipped with artificial snow-making (EEA, 2017).

The effects of climate change also increase the risk and frequency of natural hazards affecting transport infrastructure and settlements as well as security of tourists: a key concern not only to mountain areas, but to the lowlands connected by transport infrastructure passing through the mountains. It may also lead to changes in water regimes and the attractiveness of the landscapes and biodiversity on which many aspects of tourism depend. Conversely, climate

change may also bring opportunities for mountain tourism, as the cooler climate compared to coastal areas will increase the attractiveness of mountain areas. A key need here is for tourist resorts to move towards year-round services: an opportunity for investments exists through the Structural Funds as well as national programmes. One issue in this context in mountain areas is the ongoing need for investments in transport infrastructure away from major transport corridors, such as those developed through the *Trans-European Transport* Networks (*TEN-T*)[15].

3.6.2 Sustainable tourism in mountain areas

Tourism can provide opportunities for mountain regions to maintain their diversity and even enhance the quality of life for mountain people. However, this requires sensitivity to local conditions and consistent and coherent planning:

- Diversifying the local economy through the integration of tourism with agriculture, livestock development and other types of small-scale enterprise, enabling other sources of income for local communities.
- With the increasing demand across Europe, identification and conservation of the most relevant species and landscape features is essential for promoting sustainable mountain ecotourism.
- Mountain tourism must be planned as part of integrated regional economic development, and tourism should encourage investments in other activities.
- As mountain communities are often limited in financial, technical and managerial resources, effective policies and control mechanisms are crucial to limit risks of exploitation by external actors. Adequate local control, regional institutions, and sound management capabilities are needed, and should be based on both modern and traditional knowledge.
- The diverse character of mountain regions, in terms of environment, culture, and economy, requires that tourism development is based on site-specific conditions and assets. This can help mountain destinations to achieve distinct strategic positions in global tourism markets, but also implies adopting a multi-level and multi-stakeholder approach including local communities, governments, political decision-makers, NGOs, and the tourism industry (adapted from Andonovski (2014) and (EEA, 2010)).

3.7 Sparsely Populated Areas (SPAs)

3.7.1 Assets, pressures and challenges due to geographical specificities

SPAs, like all other TGS, may have very different conditions for sustainable tourism as they differ in their geographical assets and thus their tourist potential. SPAs can be rural, insular or mountainous, with limited arable land producing unique local products that form part of their

[15] Based on the Treaty of the Functioning of the European Union

culture and identity. However, their ecosystems are also fragile, and depopulation can often lead to abandonment of agricultural land, leading to adverse environmental impacts in form of soil erosion or increased risk of forest fires (European Parliament Research Service, 2016). The isolated nature of SPAs, however, often means that they have unique and untouched natural environments that make them attractive to certain tourists, so that tourism – even if it is small in absolute numbers – can be an important source of income for the local population,. According to the European Commission, tourism is particularly significant in remote regions, (also including remote islands) which are far from the economic centres of their country, where tourism-related services are often a prominent factor in securing employment and are one of the main sources of income for the local population (DG Regio, 2014). Regions like northern Sweden have traditionally been dependent on external development actors (e.g. mining, hydro-power development), but tourism development in the region is mostly endogenous, which can have a positive impact on developing more sustainable communities (Brouder, 2014).

Text Box 3-1 Finding opportunities for tourism growth in Northern SPAs

Examples of diversifying the local economy and creating growth opportunities through tourism include the ice-hotel in the Swedish town of Jukkasjärvi and, the home of Santa Claus in Rovaniemi in Finnish Lapland. The ice-hotel is located in Jukkasjärvi in the north of Sweden, some 200 km north of the Arctic Circle. The hotel was founded in 1989 and now receives 50-60,000 visitors from across the world every year (Icehotel, n.d.) Moreover, the Finnish region of Lapland has successfully developed as a tourism destination and has been put on the map as the ”home of Santa Claus”. Winter tourism is prominent, but the destination is increasingly developing into an all-year destination with a strong summer seasons. The region has seen tourism numbers grow rapidly with an all-time high in 2016 (Good news Finland, Lapland breaks records tourism, 2017).

Challenges for developing sustainable tourism in SPAs are related to some of the characteristics of these regions. Although they are far from being a single homogeneous category, SPAs do present a series of commonalities. Remoteness and population density are two key issues facing SPAs and also pose challenges for sustainable tourism development. The often negative demographic processes (i.e. ageing and migration in search of better opportunities) and lack of liveable places the area create difficult conditions for agro-tourism or other forms of sustainable tourism.

SPAs are often found in peripheral locations, such as the north of the Nordic countries. Transport connections to the other regions or the continent as a whole are often lacking or limited, which poses a challenge for sustainable development. For instance, the European part of the Arctic has a sparse population spread over a vast area, with a general lack of transport links, such as road, rail or flight connections. Lack of accessibility and infrastructure can lead to higher prices due to longer and less efficient transportation networks. However, this greatly depends on the specific region. For example, while both Lapland and Northern Sweden are

well connected to the national transport networks in terms of air, roads and railways, in the Danube Delta accessibility and transport alternatives are key challenges for developing sustainable tourism (see Danube Delta case study).

3.7.2 Sustainable development in SPAs

Internationalisation of tourism destinations in remote areas or SPAs presents new environmental challenges and raises considerations as to whether tourism in general can be sustainable. This is because by travelling to remote regions, visitors may make a larger carbon footprint just getting there (e.g. to the north of Sweden) – and, at the same time, many of these visitors also demand sustainable practices from the tourist businesses they visit in the region, which may have a positive effect of the local environment. Sustainable tourism can be considered a viable resource for community development in SPAs. It is a way to diversify local communities and provide opportunities for jobs and income, if tourism is planned and integrated into the local conditions of the unique location. Tourism, then, can be an example of a sectoral shift from employment in the dominant traditional industry and public sector towards a more diversified economy, in which both tourism and the traditional sectors are represented. This has happened in some geographically peripheral mountain areas in northern Sweden, which have undergone employment change and subsequent restructuring through reduced public spending and the reduced importance of resource extraction and refining.

There are many opportunities for developing sustainable tourism in SPA, as tourism has potential to reach out to areas that other industries cannot reach. Promoting accessibility to these localities will be crucial for them to tap into the opportunities for sustainable tourism. Various studies suggest that broadband technologies, tourism and agriculture could provide new opportunities to boost the economic prosperity of SPAs, and that their natural and cultural assets can attract new economic activities, such as more tourism (European Parliamentary Research Service, 2017). However, SPAs are more sensitive to overdevelopment: their increased attractiveness as tourism destinations means that they may face the risk of diluting the local cultural identity, which might be further aggregated by the ongoing depopulation trends. For instance, SPAs are particularly sensitive to the influx of seasonal workers who do not contribute much to the local communities. The Laponia region of northern Sweden provides an example of how to move beyond the seasonality of winter tourism, which has been the dominant form of tourism, by promoting a growing segment of sustainable and slow food tourism. Food tourism embraces both the traditional culture of local people (e.g. Sami) as well as influences from “newcomers” and can play a significant role in contributing to regional sustainability goals and help secure and contribute to a growing greener tourism (Brouder, 2014)(. Cycle tourism is another area of potential for sustainable tourism in SPAs. In a 2012 report published by Nordregio, it is stated that regional development strategies for SPAs in Europe need to explore development models that can simultaneously pursue two objectives. First, alleviate the negative effects of locational disadvantages of SPAs. Second, mobilise the territorial potential and assets of these territories by playing on the 'soft factors' of development.

While this second aspect requires smaller financial investments, it may have important leverage effects on local and regional economies (Dubois and Roto, 201. In such developments, sustainable tourism could have a key role.

3.8 Ongoing EU level debates relevant to sustainable tourism

The 2010 strategy still represents the EU's main strategic vision of EU tourism. A new set of priorities have been announced by the EU Commissioner for internal markets, setting out to develop a "European Charter for Sustainable and Responsible Tourism". The public consultation on the charter was held in 2012. Its overall objective would be to provide a common point of reference to encourage sustainable and responsible tourism development across Europe.

The proposal for the new Multi-annual Financial Framework (MFF), 2021-2027[16], presented on the 29th of May 2018, will have an overarching impact on the development of sustainable tourism for all categories of TGS, as has been pointed out by interviewees for the case studies. The proposed post-2020 Cohesion Policy aims to achieve a more significant involvement of local and territorial authorities in the management of funds. The Commission proposed to provide stronger support to locally-led development strategies and stronger involvement of local, urban and territorial authorities, and increased co-financing rates will improve ownership of EU-funded projects in regions and cities (DG Regional Policy, n.d. Outermost regions (the Azores, the Canary Island, Guadeloupe, French Guiana, Madeira, Martinique, Mayotte, La Réunion and Saint Martin), will continue to benefit from special EU support which will be aligned with the new Strategy for the Outermost regions presented in October 2017 ((European Commission, 2017a). Likewise, the new CAP will also influence sustainable tourism, in particular for SPAs and mountain areas which often have agricultural sectors of importance. Smart specialisation as well as blue growth, relevant to coastal and island areas, has potential for the development of sustainable forms of tourism in TGS. Tourism in SPAs will be particularly impacted by smart specialisation strategies in relation to the sustainable use of natural resources and renewable energy and will influence the possibilities for sustainable tourism.

3.8.1 Strategic framework

The EU strategic framework for tourism is not particularly extensive or strong. According to the Treaty, the main responsibility in tourism lies with the Member States and the EU has the responsibility for coordination, support and complementing the actions of Member States (Article 6 of the Treaty on the Functioning the European Union) in this sector. The existing EU

[16] Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions Modern Budget for a Union that Protects, Empowers and Defends The Multiannual Financial Framework for 2021-2027 COM/2018/321 final

strategic framework primarily consists of two main documents. The 2007 Communication (COM(2007) 621 final) on the Agenda for a sustainable and competitive European tourism', points out that “creating the right balance between the welfare of tourists, the needs of the natural and cultural environment and the development and competitiveness of destinations and businesses requires an integrated and holistic policy approach” (European Commission, 2007). The 2010 Communication (COM(2010) 352 final) on 'Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe'[17] is intended to establish a coordinated approach for tourism initiatives and to define a new framework for action to support Europe's tourism's competitiveness and capacity for sustainable growth. Four priorities for action were identified: 1) the promotion of sustainable, responsible and high-quality tourism, 2) consolidation of the image of Europe as a collection of sustainable, high quality destinations 3) Consolidating the EU's image and visibility and 4) Maximising the potential of EU policies and funding for developing tourism. Moreover, the communication stated that tourism must capitalise on Europe’s territorial wealth and diversity. It also stresses that the sector's competitiveness is closely linked to its sustainability and that structural challenges, such as climate change and the pressures on the environment posed by tourism (mass tourism), as well as challenges for social and cultural aspects have to be fully integrated into tourism policy (European Commission, 2010d).

Tourism is a sector that cuts across a range of various economic sectors, as seen across the TGS where tourism must both compete and find synergies with other economic interests depending on the territorial characteristics. For instance, tourism is directly impacted by the Common Agricultural Policy (CAP)[18] and the interlinked rural development, environmental, climate change, transport, innovation, ICT, social and education policies, to name the most directly related policy areas. The “all government approach” was emphasized in the Riva del Garda Action Statement for Enhancing Competitiveness and Sustainability in Tourism at the High level meeting of OECD Tourism Committee in October 2008 (OECD Tourism Committee, 2008). A report by the European Parliament stresses that the absence of coherent tourism policy prevents an efficient approach to tackling tourism's main environmental challenges (climate change, energy consumption, water, waste/food, health, landscape/nature) and social challenges (seasonality, wages, crowding), which hinders the achievement of sustainable tourism goals. Lack of coherent policy framework leads to a fragmentation of decisions that in turn can lead to inconsistencies and opposing actions (DG Internal Policies, 2016).

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[17] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Europe, the world's No 1 tourist destination – a new political framework for tourism in Europe /* COM/2010/0352 final */

[18] Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD)

3.8.2 EU Financial support for sustainable tourism development

There is no dedicated common action programme or thematic objective for tourism, and the EU does not provide strong direct financial support for sustainable tourism development, as it constitutes a sector rather than an objective. In fact, a call by the Parliament for a specific programme for tourism, under the 2014-2020 MFF was rejected by the Council. However, the regulations foresee many possibilities for smart tourism investments.

The current **Cohesion Policy** gives no direct consideration to categories of TGS; the three regional typologies are instead defined through GDP; less-developed, transition and more developed regions. Northernmost SPAs have, however, a special additional allocation: the specific state-aid exceptions in line with the accession treaties for Sweden and Finland joining the EU and Norway's close ties via the EEA (Common provisions).

Through the ERDF, sustainable tourism investments in TGS can receive co-financing under various thematic objectives linked to research and innovation, access to and use of ICT, entrepreneurship, SME growth and competitiveness, energy efficiency and renewable energy use, adaptation to climate change, development of cultural and natural heritage or employment and labour mobility. Infrastructure investment is limited to small-scale cultural and sustainable tourism. Through the European Territorial Cooperation goal, ERDF funds can be used for the exchange of good practice, transnational networks and clustering, joint strategies for sustainable tourism, culture and cross-border trade. The thematic guidance for tourism investments published by the Commission in 2014 recommends that "the main area of support from the ERDF to tourism shall be investments in the development of endogenous potential through fixed investments in equipment and small-scale infrastructure, including small-scale cultural and sustainable tourism infrastructure. These investments shall have a regional and local dimension" (DG Regio, 2014). The cross-cutting nature of tourism applies to several funding sources. Various EU funds can also benefit sustainable tourism through multi-sectoral projects focusing on innovation, for example under rural development in the EARD or from the ESF, to support job creation, professional adaptation, training and capacity building in the tourism sector.

European Commission offers co-funding, through the COSME programme, to sustainable transnational tourism products. COSME[19] aims to strengthen transnational cooperation in sustainable tourism and to encourage greater involvement in sustainable tourism for small and micro enterprises, and local authorities. The COSME framework programme 2014-2020 aims to enhance SME competitiveness. Its main objectives for tourism are to: increase demand (particularly during the low season); diversify offer and products; enhance quality, sustainability, accessibility, skills and innovation; improve the socio-economic knowledge of the sector; and

[19] Regulation (EU) No 1287/2013 of the European Parliament and of the Council of 11 December 2013 establishing a Programme for the Competitiveness of Enterprises and small and medium-sized enterprises (COSME) (2014 - 2020)

promote Europe as a set of unique, sustainable and high-quality destinations. The LIFE programme, the EU's funding instrument for the environment and climate action, has scope to finance innovative projects affecting sustainable tourism. The Proposal for the 7th EU Environment Action Programme to 2020[20] and the EU climate change adaptation and mitigation objectives focus on infrastructure sectors such as energy and transport, but also on specific aspects linked to coastal and maritime tourism. In addition, the European Investment Bank provides SMEs with financing for investments in tourism and/or in convergence regions (European Commission, 2014).

Financial policies for supporting sustainable tourism in TGS

Options for direct financial contributions to sustainable tourism can be derived from entrance fees for protected areas and parks; grants with which tour operators and other tourism providers support conservation measures; and taxes which governments partly use for financing environmental protection. Recent examples in this regard include the sustainable tourism tax introduced by the Balearic Islands and the environmental contribution tax levied by Malta since June 2016 (European Parliamentary Research Service, 2017). Another example is the Iceland Tourist Site Protection Fund which provides capital to support tourist safety and protection of Iceland's natural environment. It also aims to spread tourism more equally over the territory to avoid crowding. Innovative projects led by local actors and landowners are targeted (OECD, 2018).

[20] Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'

3.9 Indicators

3.9.1 European Tourism Indicators System for sustainable destination management (ETIS)

ETIS was launched in 2013 by the European Commission as a set of indicators suitable for all tourist destinations, to support and inspire them to adopt a more intelligent approach to tourism planning. It is a tool that helps tourism actors and destinations to monitor and manage their performance in sustainable tourism. It is a voluntary system, with 43 core indicators based on self-assessment, that is useful for policy makers, tourism enterprises and other stakeholders (DG Growth, n.d.).

3.9.2 Eco-labels in tourism

Eco-labelling has been available to the tourism industry for over 30 years with the aim of promoting environmentally sustainable practices. However, as adoption has been fragmented and rates are still relatively low, it is difficult to assess the contribution to a more sustainable tourism development. Issues like biodiversity are often overlooked. As in other eco-certification schemes, it is often larger companies that have the possibility to make the investment necessary to receive labels. There are a number of eco-labels relevant to tourism, as presented below. It is, however, important to stress that many destination-centred sustainable tourism policies and governance ignore the difference in impact of transportation to the destination. While there is a process towards developing a European Tourism Label for Quality Systems, this label does currently not foresee any criteria on sustainability.

3.9.3 EU Eco-label

The EU Eco-label is a voluntary environmental performance certificate, awarded to products and services meeting specific criteria for reducing overall environmental impact. Criteria for tourism accommodation were developed in 2017 (European Commission, 2017b).

3.9.4 EMAS

Actors in the tourism industry can participate in the EU Eco-Management and Audit Scheme (EMAS) which is open to organisations operating in all economic sectors. A Reference Document on tourism (2013) and a detailed technical report on Best Environmental Management Practices ('best practice report') (2016) have been developed. An associated website (takeagreenstep.eu) provides interactive best practices, articles, tools and case studies. These documents provide Best Environmental Management Practices, Environmental Performance Indicators, and Benchmarks of Excellence to help and support all organisations that intend to improve their environmental performance (DG Environment, n.d.).

3.9.5 The Green Key and the Blue Flag Programme

The Foundation for Environmental Education (FEE) has developed two eco-certification schemes relevant to sustainable tourism. The Green Key award sets criteria for environmental responsibility and sustainable operation for tourism facilities and the hospitality industry. The Green Key provides a number of tools for e.g. calculating carbon and water footprint. The Blue

Flag programme is a certification scheme that applies a TGS approach but focuses on the marine sphere only (beaches, marinas or boating operators). The educational and awareness raising aspects are central to both programmes. The Green Key programme is represented in 56 countries, with more than 2,600 sites awarded; the Blue Flag programme currently has 60 member countries in Europe, Africa, Oceania, Asia, North and South America[21].

3.9.6 Regional and National eco-labels

There is a range of regional eco-certification schemes, such as the Nordic Eco-label. Examples of national initiatives targeting tourism include the Green Tourism of Finland GTF® eco-label and 'Fjord Norway', chosen as one of four pilot destinations by the Global Sustainable Tourism Council (GSTC) for its program "Early adopters of the GSTC new Criteria for Destinations (Jensen, 2016). An example of the application of local sustainable tourism label is Geilo, recognized as an official Sustainable Destination with a Norwegian label. This is the result of a standardized process to integrate sustainability in local economy and identity. As a result of the involvement of public and private stakeholders, sustainability has been integrated in all economic sectors of the community, from the food business to the organization of events. This sustainable label has helped Geilo to boost its touristic strategy and promote local identity and values (Euromontana, 2011; Jensen, 2016). Regional labelling can be an effective tool. The Tatra Brand (PL) is a project that awards a local brand to products that are characteristic of the local culture, such as grocery, craft, trade products or hospitality and gastronomy services, with the aim to raise the quality of products and services, and their prestige as well as to promote the image of the region (see Tatra mountains case study).

3.10 Initiatives

3.10.1 European Destinations of Excellence "EDEN"

EDEN is an award scheme launched in 2006 by the European Commission aiming to promote sustainable tourism development models across the EU. Awards to the selected destinations are based on their commitment to the social, cultural and environmental sustainability of tourism. The award winners and runners-up have established the EDEN network, a platform for exchanging good practice in sustainable tourism which seeks to encourage other destinations to adopt sustainable tourism development models. It currently has more than 350 members from 27 European countries (EDEN - European Destinations of Excellence, n.d.).

3.10.2 EUROPARC Federation

The EUROPARC Federation is a network for Europe's natural and cultural heritage which aims to improve the management of protected areas. Through international cooperation, exchange

[21] See www.blufalg.global and www.greenkey.glopal

of ideas and experiences, and by influencing policy development they strive towards meeting current challenges for nature protection. EUROPARC developed the European Charter for Sustainable Tourism in Protected Areas, a management tool supporting Protected Areas to develop tourism sustainably (Europarc Federation, n.d.).

3.11 How regions support sustainable tourism. Multi-level governance of sustainable tourism

3.11.1 Coastal areas

The governance regimes that influence the framework for local activities in coastal areas rely on international, European as well as local and regional governance. Notable is the interdependence between governance frameworks for both land-based and sea-based activities, which sometimes overlap, and are often contested. An example is the difference between Member States to incorporate the 12-nautical mile zone into maritime spatial plans or project them in their land-based spatial plans. There are substantial differences among the structures in individual Member States; only a few have dedicated governmental organisations for coastal issues.

Text Box 3-2: Examples of dedicated governmental organisations for coastal issues

The Baltic Sea Tourism Center is a flagship project under Interreg South Baltic (Baltic Sea Strategy). It represents tourist organisations, national/ regional authorities, and businesses from all Programme areas as well as external partners from neighbouring countries. The center aims to improve cross-border tourism communication and cooperation and to develop and implement active tourism products in the green and blue tourism market, in order to extend the tourist season and thus address seasonality challenge (EUSBSR, n.d.).

Another example of territorial cooperation for developing sustainable coastal areas is the MED Sustainable Tourism Community. It was created in November 2016 within the framework of the Interreg MED Programme that gathers 18 territorial cooperation projects co-funded by the ERDF, and almost 200 organisations (public authorities, private companies, universities, NGOs and international organisations) active in 12 European-Mediterranean coastal areas. The Community's members are leading the development of common tools to monitor the tourism industry, studying and testing new tourism models, and actively engaging policy makers and managers in a constant dialogue to make tourism a real driver for sustainable development.

3.11.2 Islands

A number of networks or initiatives for promoting sustainable tourism in island regions can be found across Europe.

Text Box 3-3: Initiatives for sustainable tourism in island regions

The Cyprus Sustainable Tourism Initiative was established in 2006 and provides a good example for the cooperation of different destination stakeholders with tourism industry partners

and scientists in the main source market, the UK. Financed by membership fees as well as project funding, it engages in issues concerning important sustainability issues for tourism on the island. Several actions have been implemented (e.g. plastic reduction, water saving, regional economic development). The focus lies on awareness raising, but initiatives with quantitative results (e.g. water saving projects for hotels) have also been realised (DG Internal Policies, 2016). The objective of the BLUEISLANDS project (ERDF Co-funding under the Interreg MED program) is to identify, address and mitigate the effect of the seasonal variation of waste generated on Mediterranean islands as a result of tourism. The project gathers 8 major and 55 smaller islands of the Mediterranean. Guidelines for amendments in existing legislation will be delivered to six National Authorities of Mediterranean countries (BLUEISLANDS project, n.d.).

3.11.3 Mountain areas

For mountain areas in general, there is a lack of connection between European and national/regional institutions and policy processes. The case study of the Tatra mountains, Poland, shows that while European level, ESIF-related investments (e.g. OP-funding) or European programmes (e.g. LIFE or INTERREG) provide means for the introduction of sustainable solutions, the local-level approach is not harmonized with such interventions and too few actors profit from them. So far, the overall framework provided by authorities has largely failed to address many fields relevant to sustainable tourism, hindering the possibilities of implementing sustainable solutions (see Tatra mountains case study). Macro-regional approaches – e.g., for the Alps, Danube Basin (including the Carpathians), and Adriatic-Ionian (especially the Balkans) – and their associated bodies may be important in this context, particularly because they emphasise interactions of mountain and adjacent lowland (and especially urban) areas. At the level of Member States, such important interactions are generally not well recognised in the relatively few national policies and strategies relating to mountain areas (Euromontana, 2011). There is therefore a need for more effective multi-level governance in mountain areas, linked particularly to the implementation of cohesion policy through the design and implementation of better integrated Operational Programmes (e.g., through better coordination of ERDF and ESF programmes), and also to other policies (e.g., CAP, competition) and how these can all work better together.

3.11.4 SPAs

As SPAs often extend over several administrative regions, counties or provinces, a certain degree of institutional fragmentation exists when it comes to development strategies targeting these territories. Both regional and national authorities are strongly engaged in advocating pursued support to the development of SPAs. In the Nordic countries, there are several key platforms for facilitating this dialogue. These platforms include the Nordic Council, where the development of SPAs has been a key issue uniting the Nordic nations with respect to their

cultural, economic and strategic importance for national development. The Northern Sparsely Populated Areas (NSPA) group is a voluntary cooperation between regional authorities of Nordic regions containing extensive sparsely populated areas. The grouping has a representation in Brussels and has emerged as a primary interlocutor for European institutions with respect to SPA territorial development issues. The Southern Sparsely Populated Areas network (SSPA) is uniting business development organizations from three sparsely populated territories of Central Spain (Teruel, Soria and Cuenca). With regard to EU territorial cooperation, the Northern Periphery and Arctic Interreg programme has enabled local and regional authorities and practitioners from SPAs in the Nordic countries, including Iceland, the Faeroe Islands and Greenland, as well as Scotland's Highlands and Islands to develop action-oriented collaborative activities.

Text Box 3-4: Local involvement in the development of sustainable tourism in SPAs

The Laponia World Heritage Site was listed in 1996. In 2009 a management structure was put in place in the Swedish Laponia region as a result of the Laponia Process, initiated to identify the key management issues and common values for Laponia and the future sustainable conservation management. The organisation is an example of local involvement in management and includes Sámi representatives, local municipalities, the county administration and the Swedish National Environmental Protection Agency. The structure deals with several issues including tourism development and include council, board and management levels (Brouder, 2014).

3.12 Successful policies and practices for developing sustainable tourism in different types of TGS

3.12.1 Policies by type of TGS

The current administrative regions in the EU policy framework do not correspond to the TGS identified for this study. For TGS, the relevant level will often be "the massif", "the archipelago", "the coastal zone": areas that generally do not correspond to administrative regions. The EU's macro-regional regional strategies are an example of this in that they cover the Alps, Danube Basin (i.e., Carpathians), Adriatic-Ionian (especially the Balkans) and the Baltic. While they are important in relation to regional development and go beyond the traditional policies of Member States, they have a much wider approach than TGS. These strategies promote a strong tourism economy and co-ordinate regional, EU and non-EU resources.

There has been an increasing emphasis on local and regional destinations in national tourism policies. This is increasingly seen as a way to support regional tourism potentials and involve local stakeholders. One example is Sweden, where five regions, each with different character and development needs, participated in the Sustainable Destination Development Initiative.

Each region received around 1 million EUR to lengthen the tourism season, enhance accessibility, develop new sustainable products and services, and improve the quality and skills for tourism. By clear communication, targeted activities and by raising the profile of the different regions, visitor numbers increased for both domestic and international tourism at the same time as they developed sustainable strategies and opportunities for tourism development. Hungary and Slovenia have also introduced region-based tourism planning. Moreover, Mexico has introduced a Zone for Sustainable Development based on destination plans implemented with local governments (OECD, 2018).

3.12.2 Coastal tourism

There is a recognition of the potential for specific strategic frameworks for coastal tourism, and coastal regions have been targeted directly and indirectly by many policies and regulations. The EU's 2010 Strategy for Tourism suggests developing a strategy for sustainable coastal and marine tourism. An important specificity of coastal areas and their development strategies is their dependence on both maritime as well as land-based policies. As part of EU's Blue Growth strategy[22], the coastal and maritime tourism sector has been identified as one of five focus areas with potential to foster a smart, sustainable and inclusive Europe. The tourism policy area is one of 13 policy areas tackling thematic fields of action in the EU Strategy for the Baltic Sea Region. It defines overall objectives, actions and sub-actions which contribute to developing the region as a tourism destination.

The European Strategy for more Growth and Jobs in Coastal and Maritime Tourism was launched in 2014[23]. The strategy identifies 14 actions that can help the sector grow sustainably and provide added impetus to Europe's coastal regions. The "Guide on EU funding for the tourism sector", focusing on coastal and maritime tourism-related projects, was included as an annex. The Strategy has increased the dialogue between, for example, ports and tourism and cruise operators (ESPON BRIDGES, n.d.).

As a national example, the Welsh Government has developed a Coastal Tourism Strategy (launched in 2008 and updated in 2012). This is overseen and coordinated by the 'All Wales Coastal Tourism Forum and steering group'. The strategy and action plan set out a common strategy for the development of coastal tourism, which realises and builds on the economic potential of the coastline of Wales, whilst respecting its environmental quality and recognising the importance of achieving community benefits (Welsh Government, 2012).

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[22] Commission Staff Working Document 'Report on the Blue Growth Strategy Towards more sustainable growth and jobs in the blue economy' Brussels, 31.3.2017 SWD(2017) 128 final

[23] Communication from the Commission to the European Parliament, the Council and the Economic and Social Committee of the Regions A European Strategy for more Growth and Jobs in Coastal and Maritime Tourism /* COM/2014/086 final */

Text Box 3-5: Policies for tourism development in coastal areas

An example of a successful policy response for supporting (declining) tourism development in coastal areas comes from the case study of Norfolk-Suffolk, UK. The recent positive development in the region is a result of an multi-level push towards economic growth in the tourism sector, initiated by the UK government, which led to the development of a number of tourism strategies at different administrative levels and on different themes e.g. county strategies for Norfolk and Suffolk and strategies for specific areas, such as East Suffolk's coastal areas or local communities such as Great Yarmouth. Further, the UK government has pushed for the establishment of Areas of Outstanding National Beauty (AONB) as environmental protection zones. In parallel, the development of new institutions, such as Destination Management Organizations (DMOs) and new funding opportunities (e.g. the Coastal Communities Fund) provide an important foundation for reviving tourism in this area. The region's "coastalness" remains the most important characteristic for Norfolk-Suffolk to remain a touristic attraction, as activities related to the coast itself remain the main reason for tourists to visit the region (see case Norfolk-Suffolk case study).

3.12.3 Island tourism

To a certain extent, islands overlap with EU strategies for coastal areas. Islands would, for instance, be covered by the Strategy for more Growth and Jobs in Coastal and Maritime Tourism. In terms of tourism, policies should give due consideration to island specificities. Policies should aim to mitigate any possible negative impacts stemming from tourism density and demographic challenges, such as strain on infrastructure and the threat to the sustainability of natural resources. For policy to be effective, it must be set out in a manner which identifies and addresses the unique characteristics, challenges as well as opportunities facing different island economies (ESPON BRIDGES, n.d.).

Text Box 3-6: Regional initiatives for sustainable tourism in the Mediterranean region

Regional efforts of promoting sustainable tourism in island and coastal regions include the Mediterranean Strategy for Sustainable Development 2016-2025, approved at the COP19 in Paris 2016. The first strategy 2005-2015 was adopted by all contracting parties of the Barcelona Convention. Promotion of sustainable tourism was one of seven priorities. The strategy was formulated as a response to increased concern regarding the sustainability of the Mediterranean and the growth of mass tourism.

A local example is Tenerife. Although there is no sustainable tourism policy for the region, it has introduced effective policy measures and the active participation of stakeholders to addressed the challenge of waste management on the island, becoming a model for insular waste management. The Canary Islands have set an objective of decreasing the area of soil degraded by uncontrolled dumping of waste. With support from ERDF, and national funds, Tenerife is reforming its waste management system with an ambition of zero waste see Tenerife case study).

3.12.4 Tourism in mountain areas

At the global level, mountains have a specific chapter in 'Agenda 21' and are also considered in instruments with an environmental or nature conservation focus, such as the UN Convention on Biological Diversity (EEA, 2010). At the European level, there is no single, sectoral and territorially integrated policy framework for mountains. Instead, policies on mountains are implemented at various governance levels, both top-down and bottom-up. There are, however, a few relevant regional strategies and conventions. The Carpathian and Alpine Conventions are sub-regional treaties to foster the sustainable development and the protection of the respective mountain ranges, and are relevant as they emphasise interactions of mountains and adjacent lowland and urban areas. For instance, the Alpine Convention implementation Protocol in the field of tourism (2005) provides a framework for the sustainable development of Alpine tourism. However, the efficiency of such strategies need to be further assessed. An analysis of the Alpine Convention's contribution to sustainable tourism development states that it did not receive systemic governmental support and that any success in implementation is primarily attributed to local initiatives where local actors have gained interest in the spatial policies and striven to find innovative projects to enhance livelihoods (Ogrin, 2012). According to Euromontana,"policies initiated by public authorities to develop tourism in mountain areas are weak, and few initiatives are specifically oriented towards mountain tourism". At Member State level, the implementation of general mountain policies is often part of other policies, usually addressed in sectors such as agriculture (most frequently), environment, rural development and, more rarely, tourism. Three countries have a formal integrated mountain policy: France, Italy and Switzerland have a formal integrated mountain policy. Austria and Norway are examples of countries that have included specific pro-mountain tourism promotions in their national tourism strategies (Euromontana, 2011).

Text Box 3-7: Transnational initiatives for sustainable tourism in mountain regions

The Strategy for Sustainable Tourism Development of the Carpathians involves seven countries (Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia, and Ukraine). Published in 2014, it gives a common vision for the sustainable development of the transnational region over the next ten years (2015-2020). The development of the strategy was characterised by the involvement of many different relevant stakeholders of the mountain region and includes objectives, country action plans, a joint action plan, and concrete institutional, financial arrangements for implementation. The Strategy aims to ensure a concerted development of sustainable tourism in an economically less developed, transnational mountainous region of Europe.

The Alpine Pearls transnational initiative is the result of two successive Interreg projects which enabled cooperation between 27 communities from seven different countries in the Alps. It is a network for environmentally and climate friendly tourist transportation destinations, offering guests the potential to arrive without a car and to have easy access to public transportation on

site. To enable sustainability of the initiative without EU funding, the local stakeholders founded a network based on membership fees (DG Internal Policies, 2016).

3.12.5 Tourism in SPAs

The EU Arctic Policy[24] addresses territorial development issues in SPAs. The communication identifies opportunities in the field of the Green and Blue Economy, such as multi-source energy systems, eco-tourism and low-emission food production for the Arctic region. Policy developments in Nordic countries (Finland, Norway, Sweden) are particularly relevant with regard to SPAs, as these are the countries in which sparsity has been the object of dedicated policies over several decades, leading them to request special status for these areas as part of EU accession negotiations.

Text Box 3-8: Lapland tourism strategy

In Finnish Lapland, tourism development is guided by the Lapland tourism strategy, which steers the development of tourism in the region by defining the starting points and focus areas for the development. The objective is to promote the competitiveness and growth of the tourism industry in Lapland, support the development work of the tourist centres and areas, and increase the effect of the public funding allocated for the development of tourism (Regional Council of Lapland, n.d.).

3.13 Conclusions and policy recommendations

Sustainable tourism is strongly defined by the location of where it takes place. Different geographical specificities of a territory bring variations in natural assets, and the geographical location and other aspects, such as the conditions of infrastructure and transport, highly influence the potential for developing sustainable tourism. Tourism is not a “one size fits all” solution, as there are various factors and conditions that need be considered if tourism development is to be a lasting success (Debarbieux, 2014. The geographic specificities of a region are therefore particularly significant when it comes to sustainable tourism; for example, tourism on an island differs greatly from that in a remote mountain area. This chapter has attempted to define some of the distinctive features of tourism in a number of TGS; coastal areas, islands, mountainous areas and SPAs, and has outlined some key policy directions.

- Sustainable tourism brings plentiful opportunities for TGS and is a way for these regions to benefit from their natural and cultural assets. A conscious and responsible approach to tourism, developed in line with its ecological capacities and in cooperation with local communities, can bring increased opportunities in terms of economic development and improved well-being for the populations of regions which, in some cases, are far for economic centres and urban areas.

[24] Joint Communication to the European Parliament and the Council An integrated European Union policy for the Arctic Brussels, 27.4.2016 JOIN(2016) 21 final

- The spatial character of tourism makes it highly relevant to further analyse sustainable tourism in the context of various TGS. To conduct such analyses, there is a need to improve data for the different TGS and use the existing indicators and also to develop specific indicators targeted to tourism in TGS, that would further facilitate and improve the relevance of data collection. The results of such analyses should inform the process of better defining sustainable tourism in TGS to inform future policy processes.
- When planning for sustainable tourism, it is necessary to consider the specificities of the diverse geographic characteristic of different territories throughout the process. This will allows strategies to address the specific assets and potentials for developing sustainable tourism and better target the identified challenges by designing objectives, targets, and concrete measures tailored to the specific geographic regions.
- It would be advantageous to reflect the importance of TGS on all governance levels when planning for sustainable tourism, starting with the level of the EU. The EU 2010 Strategy for Tourism suggests a strategy for sustainable coastal and marine tourism, which is welcome. This should be extended to proposing separate strategies also for other TGS, such as mountainous areas and SPAs. A future European Sustainable Tourism policy should also encourage Member States to develop integrated tourism strategies at central and sub-regional levels, diversified according to the geographical specificities of their territories,
- The political recognition of the importance and the potentials of sustainable tourism in various TGS is crucial, on all levels of governance.
- The fragmented, cross-sectoral character of tourism policy requires the development of integrated policy and coordination at all governance levels –European as well as national, regional and TGS levels. Common goals and objectives per TGS category therefore need to be developed horizontally; responsibilities for implementation need to be defined in line ministries in order to develop an effective and coherent European tourism strategy.
- Territories that fall within the same category of TGS share many common features for developing sustainable tourism (in terms of natural and cultural capital, potentials, challenges, etc.) even if they are located in different Member States. As tourism crosses national borders, cross-border cooperation (including trans-border networks) is an important tool for promoting sustainable tourism. This is particularly important in a TGS context ,as regions and Member States could find it advantageous to cooperate transnationally on the basis of their TGS. The level of governance to be used for this purpose would not have to be limited to regional governance. Cooperation among other types of administrative units might be more relevant and efficient depending on the situation; other potential units for cooperation might include TGS sub-units or other types of transnational actors.

- Regions with less developed tourism strategies can benefit from the exchange of good practices with other regions. For instance, many mountain areas are cross-border, and transnational mountain ranges need to share the solutions they have developed to address common problems; some require common strategies. For ensuring the efficiency of TGS-specific trans-national strategies, it would be crucial to ensure that they are developed in parallel with the establishment of adequate institutions, with structural governmental support.

4 Module 2.1: PSO – identification and implementation in TGS

4.1 Introduction

4.1.1 Traditional arguments for government intervention in the transport sector

Transport infrastructures and services are a prerequisite for providing access to services, for reducing accessibility gaps between places and markets (Mirwaldt et al., 2009) as well as for facilitating flows of goods and people by reducing related transport costs or transport barriers (Button, 1998; Pedroni and Canning, 2004). The key role of transport in the European economies has aroused debates on the financing of existing and new transport infrastructure, as well as on the quality and process of the provision of transport services.

The traditional framework of economic theory identifies three main reasons that may justify government intervention in transport sector:

- The “infant industry” or “infant region” considers transport services and infrastructure as essential in the initial stage of industrial or regional development. This assumption justifies government support at the beginning of a new economic phase or in response to an economic crisis.
- The “market imperfection” argument states that the Pareto-efficient allocation of resources does not necessarily occur spontaneously. Interventions by public authorities address a sub-optimal allocation of local resources due to market failures (imperfect competition, imperfect information, absence of markets, externalities).
- The “territorial and social equity” argument is based on the observation that market dynamics generate results that are inequitable and unacceptable in terms of social and territorial cohesion. Public authorities intervene to re-establish “acceptable” levels of disparities.

In addition to these traditional arguments of economic theory, more recent economic co-evolutionary development theories suggest that political and socio-cultural factors (Millward, 2005) and technological ones (von Tunzelmann, 2003) mutually influence each other in regional and local development processes. Political and socio-cultural factors include the balance between market and government intervention, the influence of other policies (regional and infrastructural policies in particular) as well as the distribution of power and competences across all government levels (national, regional, local). Technological factors include physical transport networks (e.g. roads, railways), other equipment, and ICT used to deliver transport-related services. PSOs intervene on both these levels, as they have an impact on both the governance of transport service provision (i.e. political and socio-cultural factors) and on the technological solutions used.

Furthermore, public interventions in the transport sector can be related to other dimensions of regional development, e.g. preservation of the natural environment, geopolitical concerns and resilience in the face of changing framework conditions on the medium to long term (e.g. with respect to energy provision or climate change).

4.1.1 Historical background of traditional government intervention and challenges in transport sector

For a long time, scholars and public authorities considered investments in transport services as stimuli for local economic development and a necessary condition to satisfy mobility needs of individuals and companies (Nijkamp, 1986b). This justified public policies to finance and operate transport services. Up to the 1990s, public authorities extensively regulated and managed both the provision of transport services and their fares, in order to achieve social objectives such as fair access to the service and protection of vulnerable groups.

From the 1990s, the transport sector experienced a wave of privatization and deregulation, including liberalization and market opening. This led to a stronger separation of the transport system into infrastructure and transport services management. European regulation acknowledges that infrastructures can be the subject of exclusive and thus monopolist ownership. However, competition for services (passenger or freight services) offered on this infrastructure is encouraged.

In the same period, governments reduced their control on service provision and eliminated some restrictions to enable a functioning of a free market. This was based on the belief that private operators would be able to achieve better technical efficiency (producing outputs at lowest cost) and allocative efficiency (producing outputs most closely meeting market demands) in a competitive market.

EU transport policies have strongly supported the openness of transport sector. In 1992, the European Commission adopted the White Paper on the future development of transport policy (COM(1992)0494). With this, the Commission called for the opening up of transport markets, the development of the trans-European network, the strengthening of safety and social harmonization, and the launching of measures for "sustainable mobility". In the subsequent White Paper of July 1998 (COM(1998)0466), the Commission highlighted the existence of differences between Member States in the pricing of transport services, which could lead to distortions of competition. The adoption of these documents and their prescriptions were in line with European competition policy, as defined in its essential aspects by the Treaty on the Functioning of the European Union, in particular Articles 81 to 90[25], plus the Council Regulation

[25] Based on these fundamental texts, competition policy is structured around four main areas of action:
- the suppression of agreements restricting competition and abuses of dominant positions;
- control of concentrations between undertakings;
- liberalisation of economic sectors subject to monopoly;
- State aid control.

on the control of concentrations between undertakings and European transport policy, as defined by Articles 70-77 in the same Treaty.

These measures opened the transport market to new private operators and encouraged competition between operators. The increased competition and deregulation have resulted in lower prices in many transport markets (Brueckner and Spiller, 1991; Hensher and Brewer, 2001). This market opening has required transport providers to reconfigure their networks and enhance service quality. Thanks to the lower entry barriers, these providers started to increase capacity, improve their efficiency, and reduce costs. However, in some cases, these measures did not lead to the desired quality of infrastructures and services for all citizens. For this reason, public operators started to reflect on the consequences and the links between regulation, liberalization, and solidarity (Thelen, 2010, 2012, 2014).

4.1.2 The current orientation of government in transport sector

Public intervention may be necessary in the case of incapacity of markets to deliver public goods and services at desirable quality levels, from either an efficiency or a social equity perspective. Public interventions which address these market failures can have several forms: regulation, financing, public production, and regional development orientation.

Regulation

Regulation sets and improves rules to restore the conditions of competition, monitor the market functioning, and define the quality, the quantity and the price of services provided. Regulation may also include the removal of a wide array of nontariff barriers, including border controls, national standards, preferential procurement policies, and industrial subsidies. This form of public intervention may mitigate negative externalities or regulate natural monopolies, and enhances efficient performance.

Based on European regulations, central governments intervene to ensure that competition works by eliminating legal barriers. Regional administrations are co-responsible for the legal and political framework of service provision. They are directly responsible for the design and management of the transport services. Finally, they adopt decisions which are coherent with local development needs. Thus, they coordinate the whole transport offer and implement most regional transport services.

Public subsidies

Public authorities may subsidise companies to support the provision of transport services of high importance for the local community or to reduce the transport tariff. Such subsidies raise issues if beneficiaries get an unfair advantage over their competitors in other EU countries, as this may distort competition and set up State Aids.

A government intervention is not a "state aid" if it meets these four essential requirements[26]:

- The organisation receiving funds (compensation) must actually have public service obligations to discharge, and these obligations must be clearly defined;
- The parameters on the basis of which the compensation is calculated must be established in advance in an objective and transparent manner;
- The compensation must not exceed what is necessary to cover all or part of the costs incurred in the discharge of the public sector obligations, taking into account the relevant receipts and a reasonable profit;
- Where the undertaking which is to discharge public service obligations is not chosen pursuant to a public procurement procedure which would allow for the selection of the tenderer capable of providing those services at the least cost to the community.

The level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking, well-run and adequately equipped, would have incurred. These criteria were defined by the Court of Justice of the European Union in its so-called 'Altmark judgment'.

A specific Commission economic advisory group of academic experts in 2006, at the end of Altmark package evaluation, provided a specific vision with regard to government intervention. It states that this intervention could be considered as state aid policy measure if:

- State aid is a legitimate answer to market failures, with particular reference to externalities, public good or equity concerns;
- State aid does not unduly distort the competition and should be subject to a cost-benefit analysis.

Public production and self-organised community solutions

There are several models that involve public and private operators differently, such as the public model, private model, and community-based initiatives. Public authorities can provide a service directly or through a publicity-owned operator.

There are also some examples where communities have started to organize and provide own transport services to overcome the lack of public transport connections, according to their needs. Such initiatives can be partly or entirely based on volunteers.

[26] Based on http://ec.europa.eu/competition/state_aid/overview/public_services_en.html

4.1.3 Government intervention in TGS transport systems between market failures and social rights

The range of institutional options available to remedy market failures in the delivery of transport services is quite large, from direct government provision to unsubsidized concessions, with several forms of public-private partnerships.

Currently, regulatory models for the provision of public transport services differ across Europe. Van de Velde et al., (2008) identify four modalities:

- in-house operations
- route contracting under competition
- network contracting under competition
- deregulated regimes (free market initiative with additional contracting).

Table 6-1 below describes the main characteristics of each model:

Table 4-1: Overview of transport service provision models

Type of model	Provision mode	Characteristics
Public model i.e. public transport is organized and provided by public authorities (examples: subway, tram, regional train and bus services in cities and conurbations)	In-house operations	Public authorities provide a service directly themselves or through a publicly owned operator, and there is a monopoly of public transport provision.
	Route contracting under competition	Public authorities determine the social policy goals pursued by the transport services. They then ma competitive tendering procedure.
	Network contracting under-competition	The tendering includes the issues of the realization and design of the services. The authority decides only on the requested standards of the services.
	Deregulated regimes (free market initiative with additional contracting).	These free market initiatives with additional contracting concern compensation for fares, special requirements (timetable, frequency, etc.).
Private model	Public transport is solely provided by private actors, as demand and profitability are sufficient (e.g. long distance trains, flights, long-distance bus transport, ferries)	
Community initiatives	Volunteers organize and provide bus services (for instance, for school children or the elderly) based on fixed schedules or on-demand services	

Source: own elaboration based on case studies analysis (2018), (Kubera, 2016; van de Velde, D.; Beck, A.; van Elburg, J.; Terschüren, KH., 2008)

These models are characterized by different degrees of state involvement. In in-house operations, the state regulates the service, delivers it, and owns the network. Acting as a monopolist, it may benefit from the positive effects of the natural monopoly (monopolistic rent), provides the service while also meeting social needs, but distorts the functioning of the market by dramatically reducing competition. In other public models, the state regulates the service, but does not provide it directly. Regulation can be more or less intense: it can concern only the procedure of entrusting the service; or it can also include the definition of operational standards. Depending on the intensity of the regulation, some TGS routes can be protected with service

regulations, while others may be unregulated and their users are likely to receive poor service and pay high costs.

Service regulation may be realized on the basis of the identification of a Public service obligation (PSO). A PSO is a non-exclusive mechanism that interferes with the functioning of the free market in order to provide acceptable service supply to citizens. According to the EU regulation on air services[27], public authorities define the system of PSO related to transport services (frequency, seats, subsidies, etc.) and include it in calls for tender. The EU regulation on train and road passenger transport services[28] states that the PSO "*means a requirement defined or determined by a competent authority in order to ensure public passenger transport services in the general interest that an operator, if it were considering its own commercial interests, would not assume or would not assume to the same extent or under the same conditions without reward*".

Public authorities entrust the transport service exclusively after completion of a public selection procedure. The selected operator is then contracted to operate services on behalf of the tendering authorities, according to the obligations defined in the call in a monopoly situation. In return, it may receive compensation for the service provided, or it may cover its costs solely from the proceeds of the tariffs.

4.1.4 PSOs as an instrument to promote territorial cohesion and regional development

PSOs may be a tool to support regional development by promoting accessibility of more isolated areas. The EU regulation on air services states that PSOs may be provided on a route that serves peripheral or underdeveloped areas which are "considered vital for the economic and social development of the region". This implies that public operators need to verify the "proportionality between the envisaged obligation and the economic development needs of the region concerned" (ibid.), i.e. that the PSO should be proportionate to the specific territorial needs. Proportionality means, for instance, that the capacity of the means of transport is adjusted to the actual users, or the frequency of journeys is higher in the periods of greatest inflow. The analysis of these needs becomes crucial and may be carried out through the study of economic planning documents, transport planning documents, as well as consultations with associations representing private actors (associations representing companies or commuters).

Additionally, public administrations that impose PSOs should take into consideration a wide definition of territorial accessibility, including not only a single transport mode or connection,

[27] REGULATION (EC) No 1008/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 September 2008 on common rules for the operation of air services in the Community (Recast) - Official Journal of the European Union. L 293/3.
[28] REGULATION (EC) No 1370/2007 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70

but also intermodal connections and connections at destinations that provide access to services and opportunities. Similarly, they need to promote intense coordination of transport services in terms of scheduling/connecting times despite the low density of the population and firms.

4.2 Patterns of mobility and accessibility in TGS

TGS are exposed to specific types of accessibility and transport-related issues:

- **Dependence on a limited number of transport modes or connections** which, in connection to climatic constraints (described below) and other technical and human factors, creates vulnerability to transport disruptions.
- **Dependence on a specific gateway 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 just simply a central town. Without the services offered in the gateways, the TGS would be disconnected.
- **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 season or in cases of unfavourable weather, ships or planes may not depart, buses may take longer to reach their destinations, or roads may even be blocked by avalanches. As these transport connections often represent the only service connecting the islands to the mainland, or the high-mountain range to the lowland, service disruptions will disconnect the TGS from the rest of the world. In the absence of alternative modes and/or transport services, such disconnections may occur for longer periods.

Text Box 4-1 Effects of weather on ferry services between Malta and Gozo

Malta is currently connected with Gozo by frequent ferry services. However, due to the weather conditions, sometimes the ships do not respect the timetable or are forced to stay in port during the winter. To remedy these problems, the Maltese Government is considering building a bridge connecting the two islands. Some argue against this possibility on the basis of financial and technical arguments, but some Gozitans also argue that the insularity of Gozo helps preserve its specific assets.

Text Box 4-2 Effects of weather on transport services

Adverse or extreme weather conditions are one of the main causes of disruptions to transport services[29]**.** As example, **in Bornholm**, the definition of extreme weather for all

[29] Others are: lack of maintenance of rolling stock (i.e. flight or ferry services may be suspended if the plane or vessel is in bad condition) or shortages in staff (for example, in case of illness there are often no substitutes for bus or train drivers, plane pilots or ferry captains so that services have to be cancelled –

ferries includes a certain water level at the harbour that significantly deviates from the normal water level and the fog is so dense that it is necessary to reduce speed.

Adverse weather conditions increase travel time. In **Alto Turia**, the travelling time by bus is up to three hours and fifteen minutes from Castielfabib to Valencia: a long journey that, in winter, can be complicated at early hours in the morning because of the weather conditions.

In a few cases, TGS have alternative connections. Færgen (in Bornholm) has only ever had a few cancellations due to adverse weather conditions. When wind/wave conditions prevent the fast speed ferries from departing, the problem is usually resolved by using a larger ferry.

Vulnerability to climate change has direct consequences not only on the supply of transport services, but generally on the attractiveness of whole territory. For example, as underlined by Maltese case studies expert, **Gozo**'s reliance on the ferry service, which is subject to weather conditions and connects Gozo solely to the northernmost part of Malta, has deterred businesses from investing in Gozo.

- **Disconnection from neighbouring territories**: relief and topographic conditions hamper easy access to centres from, for example, valleys that are far away, or disconnected islands.
- **Transport needs of TGS may be specific**, e.g. in relation to ageing populations, prevailing economic activities or mobility patterns. This situation may evolve, as illustrated by the examples below.

Text Box 4-3 Evolution of commuting in Bornholm (Denmark)

Bornholm experienced a significant increase in in-commuting of 34% and an increase in out-commuting of 44% during the period 2010-2016. Thereby the island has become more integrated with the national labour market despite its remote location. Nationwide, about half of the population commute; on Bornholm only 5% of the labour force commute to the island and 8% outside of the island. Looking at the level of education, out-commuters include an even distribution of skilled and unskilled workers, whereas most of the in-commuters are unskilled workers. The increasing levels of commuting have also led to increasing numbers of ferry and plane passengers, as there are the only modes connecting Bornholm with the rest of the world**.**

Text Box 4-4 Second-home owners and commuters in Inland of Côte d'Azur (France)

Inland of Côte d'Azur has recorded a positive evolution mostly related to in-migration (new settlements). In addition, a significant share of the population living in the area are second-home owners (almost 33% of all dwellings are second homes) and pensioners who travel

for example, this happened in Germany with the train services connecting the Sylt Wadden Island with the German mainland).

between the area and coastal cities on a regular basis. In this context, the demand for public transport service is high among specific parts of the population: elderly people, pupils, tourists and second home-owners.

- **Challenging situations for emergency patient transport**: among services, air ambulance and rescue services are some of the most crucial. Due to sparse road networks, long distances and difficult topographic conditions in many TGS (mountains, islands, peripheral areas), air ambulances are the only mean of rescue services. Therefore, it is of prime interest for TGS to organize efficient and reliable air ambulance services. This directly implies that flight connections are also crucial. For many TGS, such as islands and peripheral regions, flight connections are the only mode of transport. Due to the extremely low population demand of these areas, many of these flights are subject to PSO regulations. More importantly, PSO flight routes ensure the interconnectivity of islands and of the different parts of TGS.
- **Seasonality**, often linked to the importance of tourism activities.
- **Environmental vulnerabilities**: 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 also 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 may further limit access to these territories and narrow local economic attractiveness.

Table 6-2 lists some of the general specificities of the case study areas of importance to the provision of transport services.

Table 4-2: TGS territorial specificities

Case study	Physical morphological context (mountain area, sea, etc.)	Presence of small and dispersed municipalities	Far from the main urban centre of the region	Poor connections to mainland	Short access to regional airport
Alto Turia	Mountain area	✓	✓	✗	✗
Bornholm	Island	✓	✗	✓	✓
Inland Cote d'Azur	Mountain area	✓	✓	✗	✓
Gozo	Island/Peripheral location	✗	✗	✓	✗
Middle Dalmatian Archipelago	Island	✓	✓	✓	✗
Wadden Islands	Island	✓	✓[30]	✓	✗
Nordland	Coastal area/Island/Peripheral location	✓	✓	✗	✓

Source: own elaboration based on case studies analysis (2018)

4.2.1 Institutional specificities

European and national policy frameworks are not necessarily adapted to the specific situation of TGS.

The European regulatory framework applies rules on competition and transport throughout Europe in order to create a single market, open to all operators. To avoid distortions, this framework does therefore not provide specific derogations that take account of the specific territorial features of TGS. European TEN-T policies have focused on main road axes and corridors to connect to Europe's core regions and hubs.

The implementation of transport policies adapted to the specificities of TGS is primarily linked to infrastructure and flows on secondary axes, which are the responsibility of national and regional authorities. Specific governance arrangements to take better of account TGS specificities have been observed.

[30] Islands do not have dispersed settlements. On each island, there is just one very small village.

Text Box 4-5: Specific institutional arrangements for Gozo (Malta)

The Ministry of **Gozo** was set up in 1987, under the Government of Malta, in an attempt to devolve power to the Gozitan people. In 1993, 14 Local Councils were introduced on the island establishing local government in Gozo. Their functions are at the level of the locality and defined in the Local Councils Act[31] (*Local Councils Act (Chapter 363 of the Laws of Malta)*, 1993). Regular elections are held to elect local government leaders. Since Gozo is a part of Malta, people in Gozo also vote for the Maltese government in elections held every five years. There are also several regional structures and entities that have been set up in and for Gozo, e.g. such as the Gozo Civic Council, the Gozo Administrative Secretary.

Text Box 4-6: The Wadden islands: a transnational archipelago

The **Wadden Islands** are in the Wadden Sea in the southeast of the North Sea, along the Danish, German and Dutch coastline. From northeast to southwest, the inhabited islands comprise the Danish Wadden Sea Islands, the German North Frisian and East Frisian, and the Dutch West Frisian islands, plus several inhabited holms and uninhabited islands. The connections among islands are negotiated and coordinated between different national authorities that operate in different countries.

Many TGS have relationships to territories that belong to other countries. For example, Malta is very close to Italy, Bornholm to many other European countries. Within a common regulatory and policy framework dictated by European Union, all countries are autonomous in defining the organization and the functioning of transport systems. This can lead to different regulatory framework of service provision and require a greater commitment of national and local administrations to converge their respective interests towards the delivery of shared services.

Text Box 4-7: Importance of land transport in Sweden
ffor connections between Bornholm (Denmark) and Copenhagen

In **Bornholm**, the Ystad route is subsidised, even though this ferry connection is with Sweden. This has offered the opportunity to allow off-island daily commuting to Malmö and Copenhagen so that islanders can take up better employment opportunities. The fast ferry service to Ystad has allowed residents to exploit the Øresund Bridge from Sweden to Denmark as a combined sea and bridge commuter run into Copenhagen.

[31] Local Councils provide support to the Transport Authority through their function of providing and maintaining proper road signs, providing for the installation of bus shelters and establishing parking and pedestrian areas. However, they are not involved in the design or the implementation of PSO for transport.

4.3 How can PSOs mitigate TGS specificities and improve their accessibility?

PSOs may improve territorial accessibility as they can mitigate the effects of territorial, economic, social and institutional specificities.

4.3.1 PSO and Territorial specificities

By improving local accessibility, PSO requirements may contribute to reducing the negative consequences of TGS territorial specificities such as geographical isolation, distance from regional centres/hubs, low population density, scattered settlements, dependence on a single means of transport, lack of coordination between the services already provided, or vulnerability to adverse climatic conditions

A PSO may reduce geographical isolation as it provides a minimum standard of transport services and regulates this 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. Specifically, the PSO contract conditions determine the frequency of connections between two or more well-defined locations, for example among or between peripheral centres and the main regional centres. PSO contract conditions may refer to the connections of remote areas with the main regional infrastructural/transport hubs.

Text Box 4-8: Connections between the Middle Dalmatian Archipelago and the mainland

In the Middle Dalmatian Archipelago, the case study area has 14 state PSO maritime transport lines: 7 ferry lines, 6 high-speed lines, and a shipping (classic boat) line. The economic relevance of the routes that connect the islands to Split (or the two smaller neighbouring towns of Makarska and Drvenik), and thus to the national highway towards the capital city and other European centres, and Croatia's second largest airport in Split is extremely high.

Text Box 4-9: Connections between Gozo and points of interest on the island of Malta

In **Maltas** the ferry service between Cirkewwa (Malta) and Mgarr is well connected to bus services, including direct buses to and from various locations. An express bus service is also available to the airport. However, as this is the only connection between the two islands, there are often long travel times and traffic congestion from Ċirkewwa to the central areas of Malta.

PSO contracts also include the description of modes of service, way of operation, and standard of vehicle. This has direct effects on the intensity and the capacity of transport services. PSO obligations may promote the combined use of several means of transport on a regular basis. However, in almost all the case studies, PSO contracts concern only one mean of transport. This is due to the lack of infrastructure connections, the choice to make investments in support of one single means of transport, and the geomorphological characteristics of the territories.

Text Box 4-10: Multimodal connections when travelling from the Inland of Côte d'Azur (France) and in Nordland (Norway)

In **Inland of Côte d'Azur**, regional authorities would like to promote intermodal links: in particular, the connections between the interurban buses and the regional railway line in order to offer a shortcut to city centres and to intra-urban transport (Nice-Côte d'Azur, Grasse, Cannes, Antibes). According to the sub-regional transport director, the transition from inter-urban transport to intra-urban network could be improved, enabling significant reduction of travel time from mountainous-SPA valleys to cities. **Nordland** has PSOs that cover express coastal passenger transport services, bus transport services (transport for disabled included), ferry services for regional road network and air connections. Most transport connections are therefore addressed by PSOs.

PSO may contribute to promoting the coordination of transport services in terms of scheduling/connecting times despite the low density of population and firms. This can be done by careful planning of schedules that take into account the actual demand for the service. In this sense, in all case studies, the PSO contracts include specific timetable requirements that meet the specific needs of elderly, students, commuters and, sometimes, tourists.

Transport service in TGS may be vulnerable due to service interruptions, such as technical problems, management failure, force majeure, or critical weather conditions. PSOs may reduce this vulnerability. The contract may exactly define the conditions that legitimately lead to the interruption of the service and state the alternative connections; additionally, it can provide the measures to encounter criticisms that have emerged and penalize an operator who causes service interruptions. In all case studies, the PSO contracts include the description of vulnerability/interruption cases due to adverse climate conditions. Specifically, they allow a service interruption without the operator suffering any penalty in the case of exceptional heavy snowfall or sea storms, for example. However, they do not provide alternative services due to the lack of alternative connections to those regulated with PSOs. Sometimes, PSO contracts include penalties to be applied when the interruption is due to technical problems caused by the operator.

4.3.2 PSO and Economic specificities

PSO requirements may contribute to improving local accessibility and consequently to reducing the effects of some negative TGS economic specificities. By ensuring a minimum level of services, the PSO increases connections with the most important regional economic centres. The increased availability of transport services allows the local population to access existing services on the territory or those offered by nearby centres.

Text Box 4-11: Dependence of PSO routes in the Dutch Wadden Islands

A PSO on the **Dutch Wadden islands** routes allows to access to local and nearby services. The population and enterprises on Ameland, in particular, are dependent on the ferry connection to the mainland for day-to-day activities, for example for the delivery of goods.

More specialised services are only available on the island and are generally reached in day trips. This includes shopping, visiting family and friends and leisure. For other services, such as secondary education or hospital care, longer trips are planned.

Reliable connections resulting from PSO regulations may encourage the use of public transport. In the regions that regulate some routes (Bornholm, the Middle Dalmatian Archipelago for example) the number of passengers has increased. The high frequency of connections makes the areas more attractive for residents, commuters, second home-owners, and tourists.

4.3.3 PSOs and social specificities

The adoption of a PSO requires the reconfiguration of the transport service offer and thus gives the opportunity to structure it according to the specific needs of the effective and potential population.

First, PSO contracts may include some specific clauses to provide detailed special fares in favour of workers, residents, large families, and retired people. This happens in all considered TGS.

Second, PSO requirements may be defined specifically to meet the potential needs of students and commuters. In all considered TGS, PSOs target the frequency of transport services according to the mobility needs of students and workers by offering round-trips, especially in the morning and the evening. However, due to the geographical isolation, in some TGS, users cannot commute on a daily basis and are forced to spend a night away from home. Some PSO contracts require service operator to offer a minimum level of seating capacity to be supplied over a specific period of time (day, week, and month). There are no specific requirements related to the minimum size of transport means.

Third, PSO prescriptions might satisfy the specific mobility needs of tourists and second-home owners. In the most touristic territories, such as **Malta and Gozo, the Middle Dalmatian Archipelago, and the Wadden Islands**, PSO contracts include separate and reinforced requirements for the summer season to manage the increased fluctuations in traffic for touristic purposes in this period of the year.

4.3.4 PSOs and institutional specificities

As PSOs interfere with the free functioning of the market, national governments need to properly evaluate its proper adoption and ensure that there is a need to reduce social and economic disparities. In the considered TGS, PSO adoption is more a solution adopted to remedy a long-lasting isolation or socio-economic decline, than a measure adopted following a trigger or a sudden event. It is therefore the result of a long analysis and evaluation process by the responsible administration.

PSO contracts may include some form of subsidies or financial compensations. The provision of these financial aids may stimulate new operators to provide services and allow them to cover their costs. However, they do not allow operators to benefit from overcompensation, as the subsidies could constitute State aid, prohibited by European legislation.

Text Box 4-12: PSO contract provisions in case study areas

Generally, operators receive an annual payment/flat rate contribution throughout the contract period (**Bornholm, Côte d´Azur, the Middle Dalmatian Archipelago**). In **Bornholm**, the contract also provides the operator with a passenger income. Similarly, in **Cote d´Azur**, operators receive an operating income; its profitability is directly linked to transport occupancy rates, as ticketing revenues are transferred to the operator.

Some operators receive additional contributions in order to define subsidised fares for specific social groups (i.e., pensioners or people with handicaps) (**Malta & Gozo**) or reduce the tariff on freight of goods (**Bornholm**). In **the Middle Dalmatian Archipelago**, operators receive a public service compensation if service provision revenue is not sufficient to cover the costs of the PSO. Additionally, operators may obtain specific contributions when exceptional events occur.

On **Wadden Islands**, the concession requires that the service provider delivers a regular service, even when demand does not cover operational costs. The demand is not really sufficient in the winter period. The losses that the provider makes in winter are then compensated during tourism season when there is sufficient demand and, therefore, profit. The service provider for **Ameland (Dutch Wadden Islands)** is obliged to have a "healthy financial policy". This means that the operator shall limit price increases (and discuss them yearly with the national authorities). This condition of financial health means that the operator shall not have high profits and must re-invest profits in service delivery.

4.3.5 PSO case study overview

The following table summarises the most relevant aspects for each analysed PSO contract. With regard to availability and frequency, PSO requirements set a minimum service level and frequency on a daily basis. Not all PSO contracts adjust the services supply according to the seasonality of demand or provide for special conditions in case of adverse climate events.

Table 4-3: Case study overview. PSO Contracts.

Indicator	Availability	Frequency	Seasonality	Vulnerability
Bornholm	Two ferry routes	Daily	✓	✓
Côte d'Azur	Bus transport	n.a.	n.a.	n.a.
Alto Turia	Bus transport	Some specific days/Regular and on demand service	n.a.	✓
Malta & Gozo	Ferry services	Daily	✓	✓
Middle Dalmatian Archipelago	Ferry services	Several daily connections	✓	✓
Nordland	Ferry, bus and air services	Several daily connections	✓	n.a.
Wadden Islands	Ferry and bus services	Several daily connections	✓	n.a.

Source: own elaboration based on case studies analysis (2018)

4.4 PSO governance process

The PSO adoption involves several phases, as illustrated by Figure 4-1.

Figure 4-1: PSO Process phases

Source: own elaboration based on case studies analysis (2018)

The design, conclusion and execution of PSOs are defined by national and regional laws in compliance with European competition and transport rules. The following table summarises the most relevant aspects for each considered PSO procedures that have been analysed.

Table 4-4: Case study overview. The analysed PSO procedures.

Indicator	Tendering authority	Selection criteria	Special fares	Subsidies	Monitoring
Bornholm	National level	Quantitative & qualitative criteria	✓	✗	✓
Côte d'Azur	Regional level	n.a.	n.a.	✗	✗
Alto Turia	Local level	n.a.	✓	✗	✓
Malta & Gozo	National level	n.a.	✓	✗	✓
Middle Dalmatian Archipelago	National level	n.a.	✓	✓	✓
Nordland	National level	n.a.	n.a.	✗	✗
Wadden Islands	National level	n.a.	n.a.	✗	✗

Source: own elaboration based on case studies analysis (2018)

4.4.1 The role of public operators

PSO are implemented almost exclusively by national or regional authorities. The design of a PSO requires numerous assessments. The first evaluates the importance of the possible regulated routes for local development. Specifically, the EU regulation on air services (EU regulation No. 1008/2008) states that PSOs may be provided on routes that serve a peripheral or underdeveloped area and are "considered vital for the economic and social development of the region". This implies the public operators have to assess the need for a PSO according to the importance of the regulated routes for local development.

The second assessment concerns the proportionality of public intervention. Public institutions need to verify the "proportionality between the envisaged obligation and the economic development needs of the region concerned" (ibid.). This means that PSOs should be proportionate to the specific territorial needs and not cover unsolicited services. For all analysed TGS, the adoption of sophisticated and regulated methods for verifying the vital importance or the proportionality of PSO, as well as understanding the actual mobility needs of firms, families and commuters, are challenges. This may be due to the lack of power (decision about PSOs will be made elsewhere), shortages in staff (i.e. they do not have enough staff to carefully prepare a PSO), lack of experience or lack of knowledge of the staff involved, and lack of bidders (i.e. the public authorities cannot select from a large variety of bidders, but have to take what is offered).

Additionally, public authorities highlight the territorial, economic, social and institutional specificities of their TGS, and mention their implications for the demand and supply of transport

services at local level. The importance of accessibility for the economic development of TGS is therefore recognised.

Text Box 4-13: Expected social and economic effects of improved transport connections in Malta and in the Middle Dalmatian Archipelago

The 'Transport Master Plan 2025' for **Malta and Gozo** refers to the complementary nature of the fast ferry services alleviating problems in connectivity especially during periods of peak demand. The fast ferry service to Valletta, which is currently not operational, is expected to be beneficial in terms of reducing traffic congestion. Given that Valletta is a hub with many different connections, this service should lead to reduced commuting times to the inner harbour and central areas, as well as the hospital and university routes.

Many planning documents in **the Middle Dalmatian Archipelago** emphasise the development of maritime transport connections to the mainland as the first step in dealing with demographic imbalances, which are the main societal challenge facing these islands.

Public authorities generally have an obligation to monitor the execution of the PSO contract. All authorities in the case study areas carry out this verification periodically. Some take measures to control the economic and financial sustainability of the service provision and, in the event of a negative outcome, impose a restructuring of the service or provide additional subsidies.

Text Box 4-14: Compensations for financial losses in PSO contracts in the Middle Dalmatian Archipelago and Alto Turia

In **the Middle Dalmatian Archipelago**, operators receive a public service compensation if the service revenues do not cover the costs of the PSO. Correction grants may amount up to 10% of the public service charge. At the end of each year, the operator submits the financial statement of all lines, and the agency for coastal maritime traffic reviews the accounts to determine the final actual costs and line revenues. In **Alto Turia**, if the regular line is in deficit, the operator can compensate this deficit internally by running other services.

Some public authorities experience difficulties in processing information on PSO provision and in organising a monitoring system. Service providers are generally not obliged to submit periodic reports. Authorities that require these reports to be drawn up do so to monitor cost coverage.

Text Box 4-15: Monitoring of PSO implementation in the Middle Dalmatian Archipelago

In **the Middle Dalmatian Archipelago,** supervision of the execution of the contract is carried out by the Agency for coastal liner shipping, to which the shipping company is obliged to deliver monthly and annual reports to show the detailed costs covered by the public service grant.

4.4.2 The contribution of local communities in PSO procedure

As mentioned above, the design and implementation of PSOs is carried out almost exclusively by national or regional authorities. Participation of local communities is limited or inexistent. This is a paradox, as local communities are generally well-placed to identify transportation needs. Only few PSOs adopt specific methods to consult local communities through surveys of commuter communities, workers' and business associations. Example of such consultations are provided in Text Box 4-16 and Text Box 4-17.

Text Box 4-16: Bodies involved in the elaboration of PSOs in Malta

In **Malta and Gozo**, plans for maritime transport services are first elaborated by national authorities, but are then negotiated between representatives of the islands' municipalities, the county and the Agency for Coastal Maritime Liner Services. This agency is under the authority of the Ministry for Maritime Affairs, Transport and Infrastructure.

Text Box 4-17: Bodies involved in the elaboration of PSOs in Dutch Wadden islands

In the **Dutch Wadden Islands**, the concession specified quantitative and qualitative requirements for the ferry connection, responding to the needs of the island population. These requirements have been agreed between the issuer of the concession, the national Ministry of Infrastructure and Environments, the island municipality, the province of Fryslân and have been put out for open consultation. This has made it possible to take better account of mobility needs of the population of the islands.

Similarly, during the provision of the service and at the end of PSO contract, local communities are often not involved in the monitoring process. In some instances, surveys on the quality of the service and the level of satisfaction of users are organised. However, this is not systematic.

4.4.3 The role of service operator in PSO procedures

The transport service is entrusted at the end of an open selection procedure. However, few proposals are submitted in TGS areas. Due to the limited possibilities to make profits, and the market characteristics, few transport firms operate in TGS. In many cases, this implies insufficient competition, leading to a risk of a degraded cost/quality of service ratio, high cost, and low efficiency. At the same time, the participation of operators in the selection procedure may be affected by the provision of financial compensation. If some subsidies of financial aids are provided for, the contracted operator has the certainty of covering the costs for the entire contract, which may encourage the submission of proposals. Finally, the participation of operators may depend on the duration of the contract.

4.5 Policy recommendations

Building on the summary of lessons learnt from the case studies, the following proposals can be made:

- **Multi-level territorial governance could strengthen the design and implementation of PSOs**. Procedures should involve local communities and associations, governmental entities and agencies, governments, and promote their cooperation. The considered procedures are generally promoted by just a single entity (generally, the national government), with limited consultations of public and private stakeholders. The cooperation of stakeholders is crucial in order to design and implement PSOs that concretely respond to local needs.
- **Territorial cooperation on the design and implementation of PSOs is crucial in territories that extend over more than one region or need to be connected with nearby regions that belong to different states.** This cooperation involves both public and private actors. As TGS often extend across regional and national boundaries, the specific needs of these territories can be addressed through territorial cooperation.
- **Combined measures addressing multiple transportation modes are called for.** In almost all case studies, PSO contracts concern only one mean of transport. This is due to the lack of infrastructure connections and the choice to make investments in support of a single means of transport. This makes it difficult to address insufficient coordination between different transportation modes.
- **The contribution of PSOs to regional and local development strategies may be defined more precisely.** PSO requirements alone are not enough in terms of providing adequate services and capacity development to allow growth and diversification of the economic structures and labour markets in some TGS. It is necessary to understand the exact role of such contractual arrangements around the provision of PSOs in order to support entrepreneurial activities and development. This is a necessary step for the development of local labour markets, especially in rural TGS where there are opportunities to benefit from more dynamic interaction with regional centres.
- **The importance of PSOs for social cohesion may be highlighted.** Regulated transport services may contribute to reducing the distances and possible inequalities between citizens and communities. The small municipalities scattered throughout TGS can create networks and exchange information, services and experiences. Local populations can access more services and work and leisure opportunities, meet new people and exchange experiences. Lower fares for specific categories of users play an important role in this respect.
- **Focus on community-based solutions in addition to economic actors**. Transport connections under PSOs help people to access markets and services. They can connect dispersed sites, people and communities, cementing the social capital.

However, one can also consider more cooperative, community-based solutions to transport needs. These may reinforce territorial and social cohesion that, in turn, stimulates social innovation experiences and initiatives for local economic development.

- **The offer of transport services and, therefore, also PSO requirements could be more targeted to the needs of local communities and differentiated from those expected in tourist seasons**. For example, services might be concentrated in business days/timetables when social, education and health services are provided.
- **The vulnerability of transport services needs to be taken into consideration in the design of PSOs**. Interruption of services, due to technical failures, hazards, floods or management problems may disconnect some TGS, since no alternative routes are available. Analysing the vulnerability of the transport infrastructures and transport service is essential to better understand the importance of single pathways.
- **Gateways are important for connecting TGS with the rest of the world.** Single pathways connect TGS with other regions or the rest of the world through certain gateways or hubs. Gateways may be airports, train stations, etc.: wherever residents want to go, they need to pass through them. Some are quite small, offering only few services of general interest, apart from the transport service itself. **Without these services, the TGS would be disconnected.** Due to their strategic importance, public institutions can invest in gateways and consider them as an essential element guaranteeing the basic connectivity of the TGS.
- **Transport on demand in small, remote communities and the integration of regular transport and school transport** are possible solutions for enhancing local accessibility in a cost-efficient way. This may require enhanced cross-sectoral coordination.
- **PSO-related decision-making processes could be more open**. There can be extensive secrecy regarding specific provisions of PSO calls prior to their publication, so that no potential bidders have an undue advantage. This implies that representatives of civil society are also not in a capacity to comment on these provisions. The case studies also showed that public authorities are reluctant to share the contracts with chosen service providers. This makes it difficult to assess the extent to which these contracts can contribute to a more balanced and sustainable development in TGS, and limits democratic debate on their different provisions.

5 Module 2.2: Social innovation in the provision of SGIs in TGS

This chapter addresses the unfolding of social innovation in TGS for the provision of services and services of general interest (SGI). It starts by presenting the concept of social innovation (SI) and an overview of the main European policies and instruments that have been supporting social innovation up to now and the ones under development for the post-2020 period. Building on this knowledge and the lessons learnt from the six SI module case studies, the section develops an analytical matrix that assesses features and interrelations that are relevant to SI within TGS. The matrix represents a relevant framework and basis to consider when developing instruments that support SI.

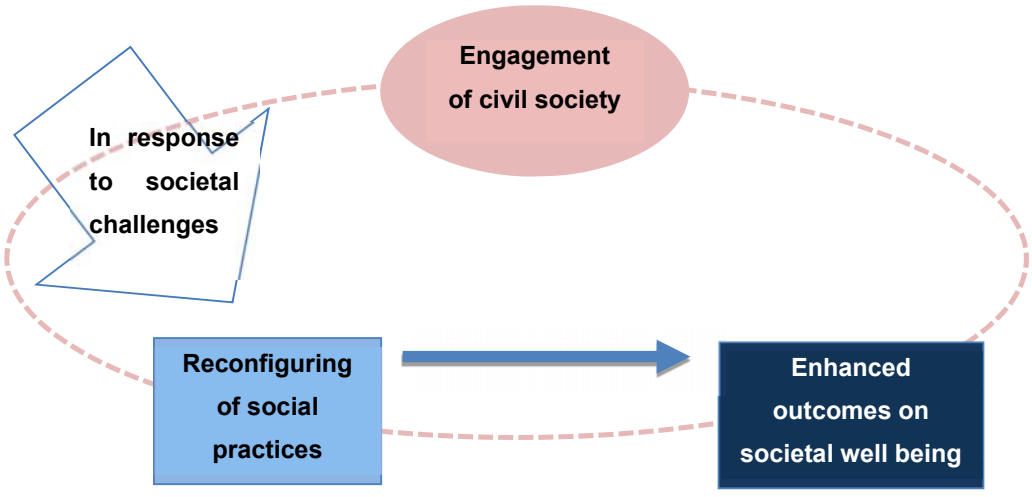
Finally, it provides concrete guidelines on how to approach the analysis and understanding of SI in TGS through the analytical matrix to identify improvements in the upcoming EU policies supporting SI.

5.1 Social innovation in TGS

5.1.1 Defining Social Innovation

Social innovation (SI) is "*the reconfiguration of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors*" (SIMRA project, 2017: 1). This definition has been developed within the SIMRA Horizon 2020 project on the basis of comprehensive theoretical research, and is adopted in this chapter. According to the definition, SI is shaped around some key points: new social practices, societal challenges, societal wellbeing and the involvement of actors (Figure 5-1).

Figure 5-1: Summary of relevant elements for a process or product to be considered social innovation



Source: Own elaboration, 2018

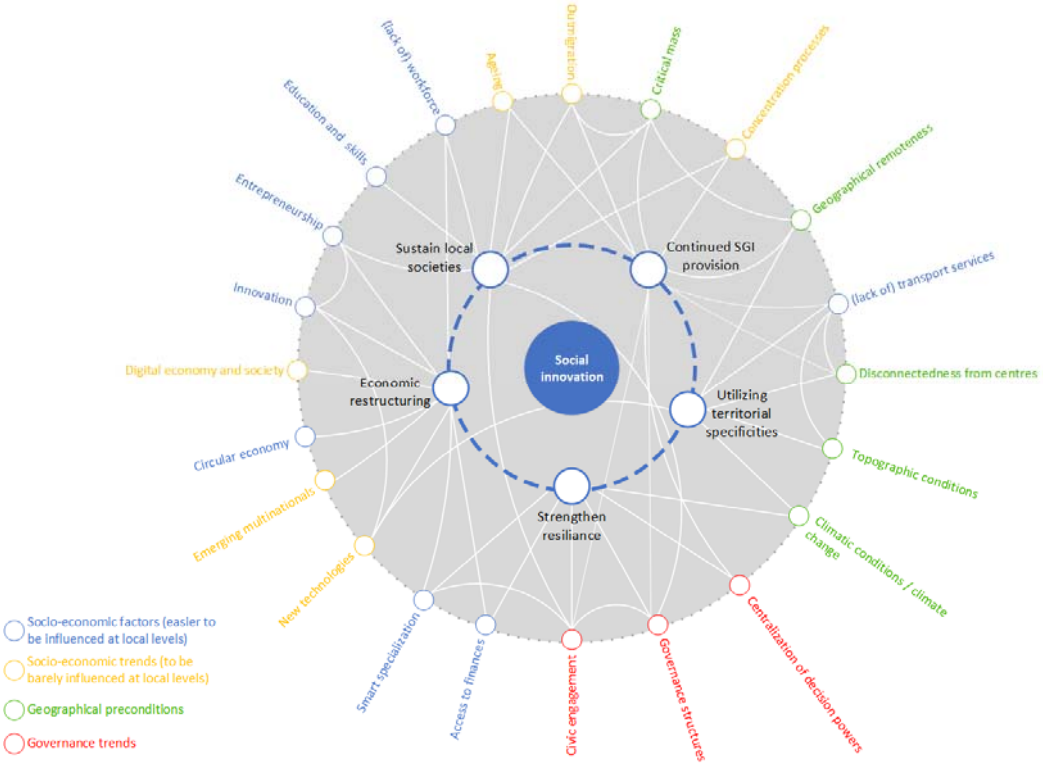
Social practices are defined as activity patterns infused with meaning that order social life (Lounsbury and Crumley, 2007). Building on this concept, we understand social practices as all relationships (e.g. collaborations, networks, governance structure) (SIMRA project, 2017: 29), behaviours, action and procedures that characterise society. These are iteratively and reciprocally created by society agents who are both constrained and empowered by them (Cajaiba-Santana, 2014). The *reconfiguration* of these social practices addresses the innovative organisational and governance elements of interaction between SI actors. The innovation can either come from a disruptive technology but, more likely and of relevance for SI, from a different and new organisation and/or interplay of factors and actors, which is innovative in that specific context. Projects could be innovative within a local (rural) context, even if that idea, collaboration or technology already existed elsewhere (Bosworth et al., 2015: 1). By *societal challenges,* the definition refers both to great societal challenges (e.g. sustainable development, disadvantages across regions or social groups), and wicked problems[32], as well as local everyday issues. Framing this within our module, it means targeting SI that addresses challenges that TGS face. This report addresses explicitly TGS confronted to demographic and economic challenges, specifically depopulation and economic decline or stagnation, and concerned by commonly recognised factors of constraints of sparsity and lack of critical mass. TGS are often linked to objective factors of constraint, such as low potential accessibility, remoteness from urban centres, and lack of critical mass. These factors are not omnipresent in, nor specific to, TGS, but can often be observed in them. Objective factors of constraint bring about some difficulties in the provision of services. For example, due to a lack of a sufficient critical mass and limited economies of scale, economic efficiency in the delivery of services may be low. In relation to this, TGS communities face very tangible problems (e.g. the availability of nearby shops, access to first aid or care services) and strive for concrete solutions.

However, TGS communities can also capitalise on specific assets, e.g. strong territorial identity, social proximity, and trust., which facilitate SI. The case studies have addressed SI from the perspective of communities that seek to generate the services they need and, as a result, to enhance their *societal wellbeing*. The voluntary *engagement of civil society* actors is a key aspect of SI. It is formalised as the development of a 'third sector', composed of non-governmental, not-for-profit organisations that constitute the so-called 'social economy'. We therefore consider specifically the rules and regulations in place for this.

Companies or public administration may be the initiators of SI, but it is the engagement of communities in the development and implementation process that makes an innovation social (SIMRA project, 2017).

[32] Wicked problems are defined as unsolvable, ongoing and multifaceted problems. They can only be managed rather than solved (Rittel and Webber, 1973)

Figure 5-2: Social innovation key issues in TGS



Source: own elaboration based on literature and European document review (2018)

Figure 5-3

represents the complexity of SI. Its inner ring represents the five main objectives to be addressed with SI in TGS: 1) strengthen resilience, 2) use of territorial specificities, 3) economic restructuring, 4) continued SGI provision and 5) sustaining local societies. The outer ring identifies geographical preconditions, governance trends, social and economic trends, social and economic patterns, and SI drivers. These are imposed upon the TGS from outside, can only partially be influenced by local communities. In this complex and changing environment, communities have to adapt. SI can be a promising approach to reach more inclusive growth focussing on a living community.

Strengthening the resilience and utilization of territorial specificities means building on the strengths of the territory, which can be the solid territorial identity, trust, and social proximity. As mentioned in 2010 by the Bepa report, social challenges should not only be seen as a risk, but as a source of economic and social opportunities (Sabato et al., 2015) and "although not unique to rural areas, perpetuating views that rural communities are particularly cohesive and sociable indicate a conducive research context" (Bosworth et al., 2015). *Economic restructuring* is often both an objective of SI and a trigger that stimulates its development. *Continued services and SGI provision* is another key objective of SI in TGS. Indeed, the availability (or absence) of a wide range of services influences peoples' settlement choices, and a community needs services to keep being lively. In its Third Cohesion Report, the European Commission stated that "..people should not be disadvantaged by wherever they happen to live or work in the Union" (European Commission, 2004). This was then theorised as a component of the 'European model of society' (Faludi, 2007: 10), which also entails that the market should not be the only player in Europe, and values beyond growth should be considered (Commission of the European Communities, 2004; Faludi, 2007; Sapir, 2005).

In order to facilitate the spreading of SI in the provision of SGIs and to comply with the priorities of the European model of society, the 2009 Barca report argued that "a new combination of the social and the territorial agenda is required. The social agenda needs to be "territorialised", the territorial agenda "socialised". The place-based approach to social inclusion should be the result of these two shifts" (Barca, 2009: 36).

The final objective of SI in TGS, *sustaining local societies*, is tightly linked to the concept of community engagement in the development of SI and in the fulfilment of living communities through services provision. When it comes to the involvement of the society and the third sector in services provision, four different forms of involvement emerge from theory: "*co-governance*, *co-management*, c*o-production* and *co-creation*" (Pestoff and Brandsen, 2008: 100). These models will be further analysed within the analytical matrix. All four models have in common the generation of the commitment of local societies through active participation. Empirical evidence shows that the higher the degree of involvement of local actors and the local society, the higher the level of commitment and thus the level of identification.

Summarising, communities in TGS tend to face very tangible and concrete issues. The SI approach helps in finding and implementing solutions to these issues in bottom up and

participative ways. The following sections provide a framework to analyse SIs. Institutional innovation, policies and instrument can foster the spreading of SI. The following section underlines what has been done up to now at European level and the most relevant policy proposals for the upcoming programming period (2021-2027).

5.1.2 European policies and instruments to foster SI

SI is included in the European Union 2020 agenda (European Commission, 2010c), which displays its relevance at the European level. However, the recognition and use of this term has only spread over the past 10 years. Before the late 2000s, the label “social innovation” was rarely used in EU documents (Jenson and Harrisson, 2013; Sabato et al., 2015). Despite the support of several EU instruments and processes (see Table 7.1), a strategic framework was still missing.

Table 5-1: European Union initiatives linked to Social Innovation before 2010

Year	Name	Type of instrument	Scope
1975-1994	Anti-poverty Programme	EU programme	Among other objectives, combat social exclusion and poverty as community wide phenomenon that need community-wide responses. Strong collaboration between scientific community, national and local policy makers and disadvantaged communities.
2000	Lisbon Strategy	Strategic document	Strategy was based on economic and social pillars, no explicit reference to SI
1994-1999 2000-2006	URBAN I URBAN II	EU programme (ERDF)	Sustain the development of urban neighbourhoods through an integrated approach and the involvement of local communities
2006	Lisbon Revised Strategy	Strategical document	Five priorities: Investing more in knowledge and innovation; Unlocking business potential, especially for SMEs; Increasing employment opportunities for priority categories; Climate change and energy policy for Europe. Social innovation not explicitly mentioned.
2007-2013	INTERREG IVC	EU programme (ERDF)	Funding for partnership and community engagement and socially innovative projects. However, the interpretation of innovation was technological.
2000-2006 2007-2013	EQUAL	EU programme (ESF)	Initiative linked to the European Employment Strategy aiming at combating discrimination and inequalities in the labour market. It promoted innovative approaches to policy delivery through community empowerment.
1991-1993 1994-1999 2000-2006	LEADER I LEADER II LEADER +	EU programme (EARDF)	Mobilisation of local actors for integrated and bottom-up rural development initiatives
2007 +	LEADER incorporated in EARDF	EU programme (EARDF)	
2008	Renewed Social agenda	Strategic document	Foresees a more participative paradigm to social intervention
2007-2013	PROGRESS [33] (Community action programme for employment and Social Solidarity)	EU programme (ESF)	Supports the implementation of EU objectives in the field of employment and social affairs

Source: own elaboration based on Moulaert et al., 2017; Sabato et al., 2015, European Union - Regional Policy, 2007

[33] http://ec.europa.eu/social/home.jsp?langId=en; http://ec.europa.eu/social/main.jsp?catId=836&langId=en

Towards the end of the 2000s, the European Political Strategy Centre (EPSC, also known as Bureau of European Policy Advisers) developed the report “Social innovation: a decade of changes” (Bureau of European Policy Advisers and European Commission, 2011). This played a key role in flagging SI as priority on the eve of the Europe 2020 Strategy (Sabato and Verschraegen, 2016). The report links SI to the welfare system, which can be enabled by SI, and highlights the entrepreneurial dimension of SI.

This aspect further emerges in the EU 2020 Strategy (see Text Box 5-1), where SI is mentioned in two out of the ten Integrated Guidelines (IG) and in the Flagship Initiatives “Innovation Union” and “European Platform against poverty”. Concerning the SI dimension of Europe 2020, one should consider that the promotion of inclusive growth is among the key priorities of the Strategy’s Integrated Guidelines (IG) n.10 on employment policies, with particular reference to the objective “Promoting social inclusion and combating poverty”.

Text Box 5-1: The EU 2020 strategy and the European semester

The EU 2020 strategy (European Commission, 2010c) focuses on key policy reforms for Europe, combining them with national targets. The strategy aims at turning EU into a smart sustainable and inclusive economy and to reach five headline targets. With regard to the three types of growth, the strategy identifies flagship initiatives aimed at catalysing progress under each priority theme. The strategy implementation process is promoted by the Integrated Guidelines (IG) and the European semester. In parallel to the EU 2020 strategy, ten IG have been developed for two policy clusters: economic policy and the employment policy (Council recommendation 27.04.2010 SEC (2010) 488 final; Proposal for a Council decision 27.4.2010 COM(2010) 193 final)[34] . The IG set out the framework for the Europe 2020 strategy and reforms at Member State level. On the basis of these guidelines, the European Semester contributes to the strategy implementation. Each autumn, the Commission develops the Annual Growth Survey (AGS) on the basis of the IG, identifying the key economic challenges and the key priorities for the upcoming year. Taking the AGS into account, the Member States develop National Reform Programmes (NRPs), which illustrate actions that Member States will implement to progress the Europe 2020 targets. The NRPs are reviewed by the EU Commission and the Council, which can give country-specific recommendations.

[34] Council recommendation of 27.4.2010 on broad guidelines for the economic policies of the Member States and of the Union Part I of the Europe 2020 Integrated Guidelines {COM(2010) 193 final} Brussels, 27.4.2010 SEC(2010) 488 final, Annex: Broad guidelines for the economic policies of the Member States and of the Union. Proposal for a Council decision on guidelines for the employment policies of the Member States, part II of the Europe 2020 Integrated Guidelines 2010/0115 (NLE)

Within the Europe 2020 strategy, SI is mentioned in several contexts. IG 7 “Increasing labour market participation and reducing structural unemployment” invites Member States to “remove barriers to labour market entry for newcomers, support self-employment and job creation in areas including green employment and care and promote *social innovation*” (Council Recommendation of 27.4.2010, SEC(2010) 488 final, annex: p 21). Furthermore, IG 10 ”Promoting social inclusion and combating poverty” encourages Member States to “actively promote the social economy and *social innovation* in support of the most vulnerable” (Council Decision on guidelines for the employment policies of the Member States, 2010/707/EU, annex). Two Flagship initiatives[35] of the Europe 2020 strategy also mention SI. The “Innovation Union”[36] includes SI as one of its commitments alongside the more traditional forms of innovation: “Social innovation should become a mainstream focus in the next generation of European Social Fund programmes. Member States (MS) are encouraged to already step up efforts to promote social innovation through the ESF” (European Commission, 2011c: 24) and proposes “Social Innovation Europe” (SIE) as a pilot initiative. The latter was launched in 2011 by the DG Enterprise and Industry and run by an external consortium, and acts as a platform where social innovators can meet and exchange information. Finally, the flagship initiative “European platform against Poverty and Social exclusion” (EPAP) (European Commission, 2010b) foresees the promotion of “Evidence based social innovation” as one of the actions towards social and territorial cohesion and proposes a European initiative on SI, especially through the ESF and Progress programmes.

After the adoption of the EU 2020 strategy, SI has been promoted in Europe through the Social business initiative[37] (European Commission, 2011b), which focuses on supporting social enterprises as drivers of SI. Furthermore, in 2013 the European Social Innovation Competition was established to showcase successful SIs.

In the 2014-2020 programming period, another strategic policy framework that underlined the importance of SI was introduced: the Social Investment Package (SIP) (European Commission, 2013a). Most of the initiatives foreseen by the EPAP were funded by the SIP (Sabato et al., 2015: 25).

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[35] The seven Flagship initiatives of the Europe 2020 strategy are: “Innovation Union”; “Youth on the move”; “A digital Agenda for Europe”; “Resource efficient Europe”; “An industrial policy for the globalisation era”; “An agenda for new skills and job”; “European platform against poverty”

[36] “Social innovation is an important new field which should be nurtured. It is about tapping into the ingenuity of charities, associations and social entrepreneurs to find new ways of meeting social needs which are not adequately met by the market or the public sector. It can also be about tapping into this same ingenuity to bring about the behavioral changes which are needed to tackle the major societal challenges, such as climate change. As well as meeting social needs and tackling societal challenges, social innovations empower people and create new social relationships and models of collaboration. They are thus innovative in themselves and good for society’s capacity to innovate” P.23

[37] http://ec.europa.eu/growth/sectors/social-economy/enterprises_en

Text Box 5-2: The Social Investment Package

The Social Investment Package (SIP) was introduced in 2013. This integrated policy framework takes account of the social, economic and budgetary divergences between Member States. SIP has three parts: the European Commission's recommendation\ on 'Towards Social Investment for Growth and Cohesion' and on 'Investing in Children: breaking the cycle of disadvantage'; and a series of Staff Working Documents. The SIP calls for an evidence base on SI, and encourages Member States to reform domestic social protection systems to make them adequate, efficient and sustainable in the context of budget constraints, and to complement their work with the mobilisation of the third sector and private resource (Sabato et al., 2015). SI is a key theme of the SIP, as it tries to connect SI with other social policy tools (i.e. the European Semester) and funds (i.e. Structural and Cohesion funds, Horizon 2020 and the upcoming Programme for Employment and Social Innovation).

In addition, the achievement of Europe 2020 employment and anti-poverty targets in the 2014-2020 programming period was supported by the Programme for Employment and Social Innovation (EaSI) (Regulation (EU) No 1296/2013 of the European Parliament and of the Council)[38] and ESI funds. Both the EPAP and the SIP had the ambition to integrate social innovation into the framework of cohesion policy. Important steps in this direction emerge from both the common provision regulation on the ESI Funds and the regulation on the ERDF and ESF (Sabato et al., 2015: 30). The common strategic framework providing guidance for the ESI funds also complements the EaSI programme. According to the regulation of the European Social Fund[39], "Member States shall identify, either in their operational programmes or at a later stage during implementation, fields for social innovation that correspond to the Member States' specific needs" (art. 9.2), and specify in their operational programmes how the investments will contribute to transnational cooperation and social innovation (art 11.3b). The ERDF has promoted innovative action in the area of sustainable local development,[40] including studies and pilot projects to identify and test new solutions which address issues related to sustainable urban development and of relevance at Union level (art.8). SI is also mentioned under the investment priority "strengthening research, technological development and innovation" (art 5).

[38] Regulation (EU) no 1296/2013 of the European Parliament and of the Council of 11 December 2013 on a European Union Programme for Employment and Social Innovation ("EaSI") and amending Decision No 283/2010/EU establishing a European Progress Microfinance Facility for employment and social inclusion. Link

[39] Regulation (EU) No 1304/2013 of the European Parliament and of the Council of 17 December 2013 on the European Social Fund and repealing Council Regulation (EC) No 1081/200. http://data.europa.eu/eli/reg/2013/1304/oj

[40] Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1301

FP7 (2007-2013) and Horizon 2020 (2014-2020) have also financed research on the topic of setting up social incubators and labs.

The European Commission's Bureau of European Policy Advisers had a key role in including the theme of SI in the EU agenda. Previously, the label of SI was seldom used and rarely mentioned among objectives. As a consequence, SI received attention in the EU 2020 strategy launched in 2010 and both financial resources, visibility tools and networking and cognitive resources followed (Sabato et al., 2015). In the field of the fight against poverty and social exclusion, the discussion on SI has facilitated the scaling up of socially innovative projects. However, the prevailing approach has also led to a pattern of 'constrained social innovation', where approaches to be followed have already been decided in advance, limiting the space for bottom-up ideas. This may also be linked to the utilisation of SI to reform the welfare state, in which the mobilisation of the third sector and private actors is part of a strategy to compensate for a reduced availability of public funding. This utilitarian approach sits uneasily with a long-standing discourse about SI as a community-based process of societal transformation (Sabato et al., 2015: 36).

Table 5-2: Summary on European Union Initiatives to promote SI after 2010

Time Frame	**Name**	**Type of instrument**	**Initiator**	**Link to SI**
2010, ongoing	EU 2020 Strategy	**Strategic policy Framework**	European Commission and Council	Within Integrated Guideline 7 "Increasing labour market participation and reducing structural unemployment" Member States are invited to support self-employment and job creation also through SI
				Within integrated Guideline 10 "Promoting social inclusion and combating poverty" Member States are invited to promote social innovation in support of the most vulnerable
				Within the Flagship Initiative "Innovation Union", EC and Member States are encouraged to let SI become part of 2013-2017 European Social Fund programmes
				Flagship Initiative "European platform against Poverty and Social exclusion" foresees to promote evidence-based SI through the ESF and Progress programmes; and seeks for a European initiative on social innovation
2011 - 2013	Social Innovation Europe(SIE)	Visibility and cognitive tool	DG Enterprise	Platform to enhance visibility and collect information on SI
2013, ongoing	European Social Innovation Comp	Visibility and cognitive tool	Diogo Vasconcelos and the EU commission	Yearly initiative to give visibility to SI at Member State level

Time Frame	Name	Type of instrument	Initiator	Link to SI
	etition [41]			
2011, ongoing	Social Business Initiative[42]	Action plan, discussion platform	DG Internal market, Industry, Entrepreneurship and SMEs	Support the development of social enterprises, key stakeholders in the social economy and SI; prompt a debate on the avenues to be explored in the medium/long term. SBI identifies 11 priority measures, organised around 3 themes: Making it easier for social enterprises to obtain funding, Increasing the visibility of social entrepreneurship, Making the legal environment friendlier for social enterprises.
2013, ongoing	Social Investment Package	Strategic policy Framework	European Commission	Policy framework for redirecting Member States' policies towards social investment, with a view to ensuring the adequacy and sustainability of budgets for social policies and for the government and private sector as a whole.
2014 - 2020	Programme for Employment and Social Innovation EaSI	Funding	European Commission	Programme financing projects contributing to the achievement of the social flagship initiatives of Europe 2020
2014 - 2020	European Structural and investment funds	Funding	European Commission	ESF: promotes projects on "Evidence based social innovation" and actions towards social and territorial cohesion ERDF: co-finances studies and pilot projects on SI linked to local development, also through Community Led Local Development[43]
2007-2013	FP7	Funding	European Commission	Programme co-financing research projects. Starting from 2010 the programme has started to financing a number of projects on evidence-based SI.
2014-2020	Horizon 2020	Funding	European Commission	

Source: own elaboration based on (Sabato et al., 2015) and regulation assessment

[41] www.eusic.challenges.org/about/

[42] www.ec.europa.eu/growth/sectors/social-economy/enterprises_en

[43]https://enrd.ec.europa.eu/projects-practice

5.1.3 Looking forward: social innovation in the 2021-2027 programming period

Currently, the budget for the next programming period budget is being negotiated. On 2nd May 2018, the European Commission published its proposal for the next multiannual financial framework for 2021-2027. In the proposed Common Provisions Regulation, the 11 thematic objectives used in 2014-2020 have been replaced by five policy objectives[44]. SI is of relevance for two of these - "a smarter Europe – innovative and smart economic transformation" and "a more social Europe implementing the European Pillar of social rights". It is proposed to include the current Employment and Social Innovation Programme (EaSI) as a specific strand in the new European Social Fund Plus (ESF+). Specific guidelines on the contribution of ESF+ to SI are included in the regulatory proposal of the European Commission for ESF+ published on 30th May 2018.[45] Recitals 16 and 17 of this proposal contains definitions of 'social innovation'[46] and 'social experimentation'[47]. Article 13 encourages Member States to support SI and social experimentations "*based on partnerships involving public authorities, the private sector, and civil society such as the Local Action Groups designing and implementing community-led local development strategies*"[48].

The following section will identify aspects to be taken into account for the promotion of SI in TGS, and proposes an analytical matrix that can serve as basis to systematically planning and reviewing SI in TGS.

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[44] 1) a smarter Europe - innovative and smart economic transformation; 2) a greener, low-carbon Europe; 3) a more connected Europe - mobility and regional ICT connectivity; 4) a more social Europe - implementing the European Pillar of Social Rights (European Commission, 2017c); 5) Europe closer to citizens – sustainable and integrated development of urban, rural and coastal areas through local initiatives.

[45] COM(2018) 382 final Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the European Social Fund Plus (ESF+) {SEC(2018) 273 final} - {SWD(2018) 289 final}. 30.05.2018. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1540817802760&uri=CELEX:52018PC0382

[46] "'social innovations' mean activities that are social both as to their ends and their means and in particular those which relate to the development and implementation of new ideas (concerning products, services and models) that simultaneously meet social needs and create new social relationships or collaborations, thereby benefiting society and boosting its capacity to act" (ibid., recital 16)

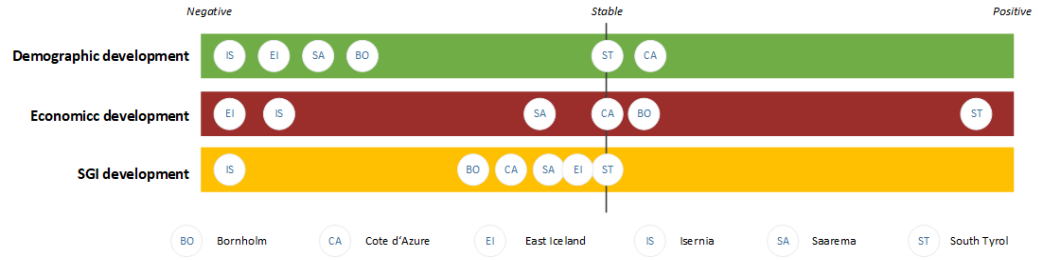
[47] "'social experimentations' mean policy interventions that offer an innovative response to social needs, implemented on a small scale and in conditions that enable their impact to be measured, prior to being implemented in other contexts or on a larger scale, if the results prove convincing" (ibid., recital 17)

[48] Ibid., Article 13.

5.2 Characteristic elements of SI and their application on case studies

The module has examined six case studies of SI in TGS. The considered examples have developed in reaction to the challenges faced by the six areas and, by engaging the local community, have aimed to formulate innovative solutions to improve local wellbeing. Figure 5-3 gives an overview of the main trends and challenges within the considered areas concerning their demographic, economic and community development.

Figure 5-3: Overview of main challenges in the considered TGS case studies

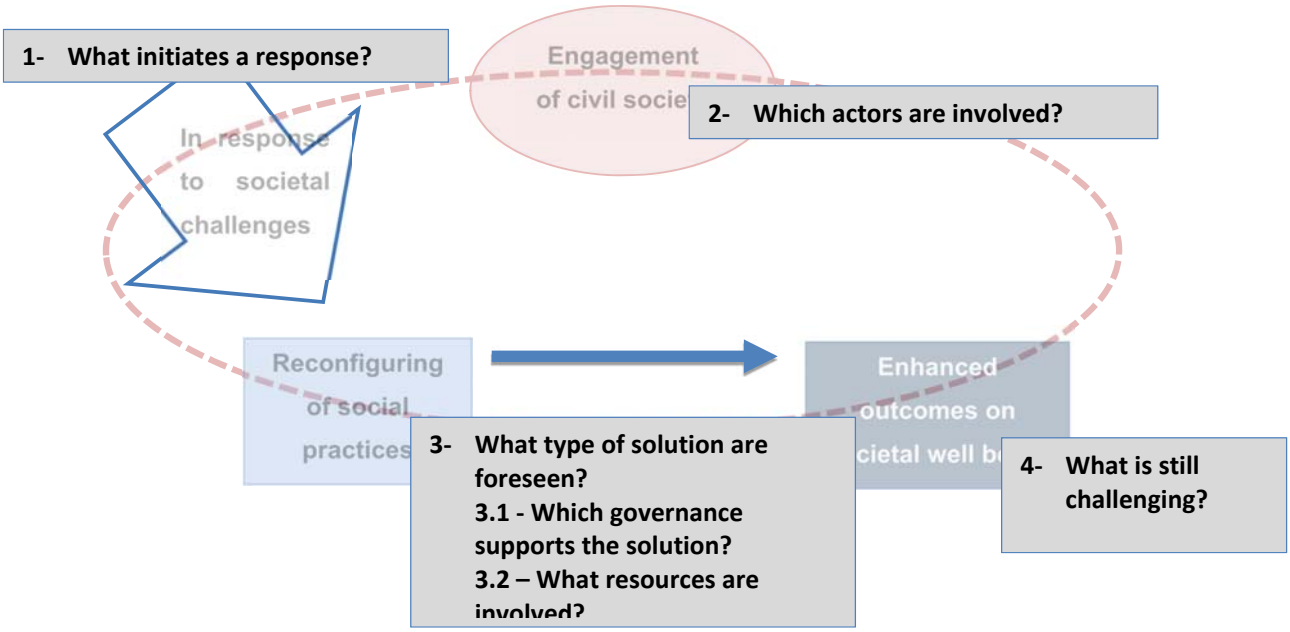


Source: own elaboration based on case studies analysis (2018)

While the considered instances of SI all have a strong social impact, their objectives are different. Three (Bornholm, East Iceland and Isernia) of the cases have a strong link with economic local development, whereas the Côte Azur case study is connected to an institutional innovation and deals mainly with the relationships between the public administration and the community. Finally, South Tyrol and Saaremaa deal with a SI seeking to exploit possibilities offered by broadband internet access.

It is therefore relevant to find some characteristic elements that allow the assessment of each SI and possibly to find recurrent patterns when it applies to very diverse sectors. Building on the relevant elements for a process or a product to be considered SI according to the SIMRA definition (Figure 5-1), this module investigates the dynamics behind these elements.

Figure 5-4: Question to assess the Si dynamic and to find characteristic elements



Source: own elaboration, 2018

Five questions are considered: 1) What initiates the response to societal challenges?; this leads to the analysis of SI *triggers*. 2) Which societal actors are involved and in which stage of the process?; this steers the analysis towards the *actors involved*. 3) What type of solution is foreseen in the reconfiguring of social practices? and specifically 3.1) Which governance supports the solution? and 3.2) What resources are involved?; these three questions lead to a deeper analysis of the *concrete governance arrangements* and involved *resources.*

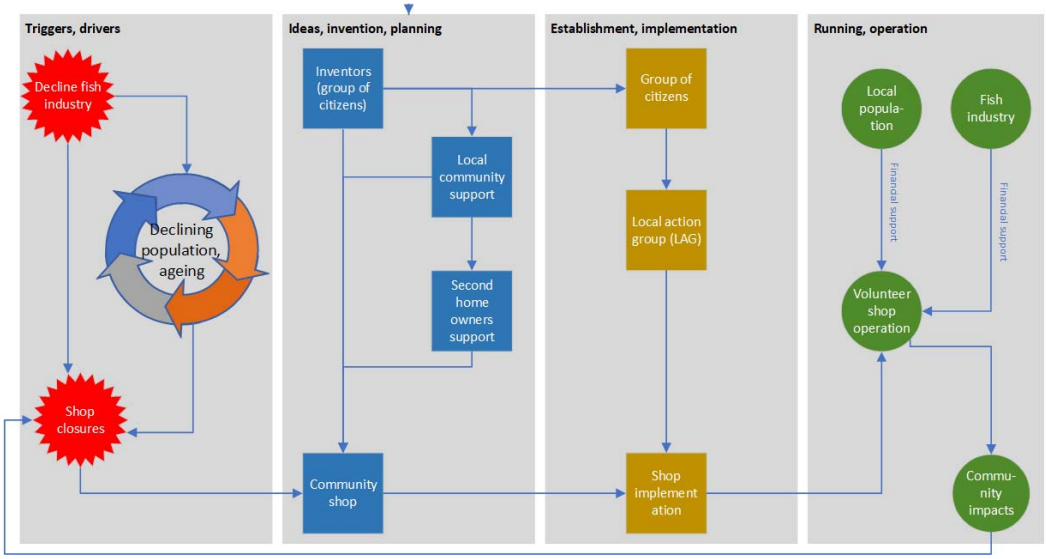
The following section give an overview of the characteristic elements within the six case studies and lays the foundation to develop the analytical matrix.

5.2.1 Bornholm: when local economic development pairs up with social goals

The main challenge faced by the island of Bornholm (Denmark) is population shrinking and ageing. This is, on one hand, due to the economic crisis that involved the local fishing industry in the 1980s, and on the other to the demographic trends, which show a higher death rate than birth one. Within this scenario, in 2009 the last shop of the village of Aarsdale (400 inhabitants) was closed. The shop not only provided goods; it was also a meeting place for social interaction, especially for many seniors. Its closure was therefore a significant social issue and a triggering factor for the local population and associations to develop the idea of a proximity shop. Once some initial challenges had been overcome, the group of initiators managed to gain the support of a large group of actors, including also the second home-owners. The operative governance model of the shop initially involved the main civic associations that were the initiators. However, a separate association was soon founded in order to fully exploit the potentials and to access

the Local Action Group (LAG) funding requirements. The SI is fully based on volunteer work to cover the shop opening hours, and organise the local product supply and parallel services, such as the website. The shop represents for the community a place where both basic goods can be found and where people meet. Furthermore, all shop incomes are reinvested in the community. Therefore, the shop represents an example of strong community involvement. Beyond the human resources, a large share of private money from a large fish industry and from private persons contributed to the development of the shop. In a second stage, the association has gained further income from a modest membership fee, paid annually by local people, and deals have been agreed with local producers in order to buy selected goods at a special price. The SI system is still based upon private loans and it is not self-sufficient on the basis of its activities.

Figure 5-5: Bornholm model: bottom-up SI initiated by local community



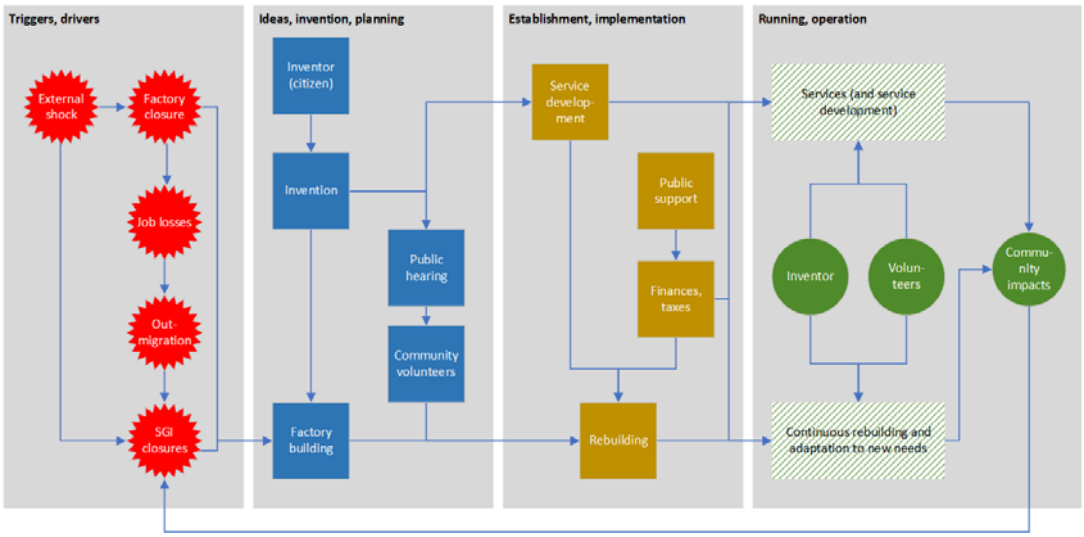
Source: own elaboration on the basis of the case study

5.2.2 East Iceland: creative centre to restore local economy

The village of Stöðvarfjörður (184 inhabitants in 2016) is located in a sparsely populated coastal area in East Iceland, far away from the capital of Reykjavík. Accessibility and depopulation, as well as limited work opportunities, mainly linked to the aluminium and fishing sector, are the main challenges. In 2005, the biggest fishing company of the area closed up, followed by the bank and post office. This acted as trigger for a group of inhabitants to start elaborating the SI idea. In 2011, a group of community members founded a non-profit cooperation in order to utilize the abandoned fish factory. The aim was to support sectors different from the mainstream ones and contribute to the regeneration of the community (Copus et al., 2016). The initiators involved from the very beginning the municipality, which was very supportive. The abandoned fish factory was turned into a multi-functional centre, offering cultural and educational services as well as studio spaces for artists and musicians, a market space for local products, and a community hall. The structure is managed by a non-profit association. The spaces can be used

against a monthly rent and a membership fee. The centre's main resources are voluntary work, donations and public grants. Even if its direct economic impact is limited, the social and cultural services offered by the centre influence people's choice to (re)locate to the area.

Figure 5-6: East Iceland model: bottom-up SI initiated by local community

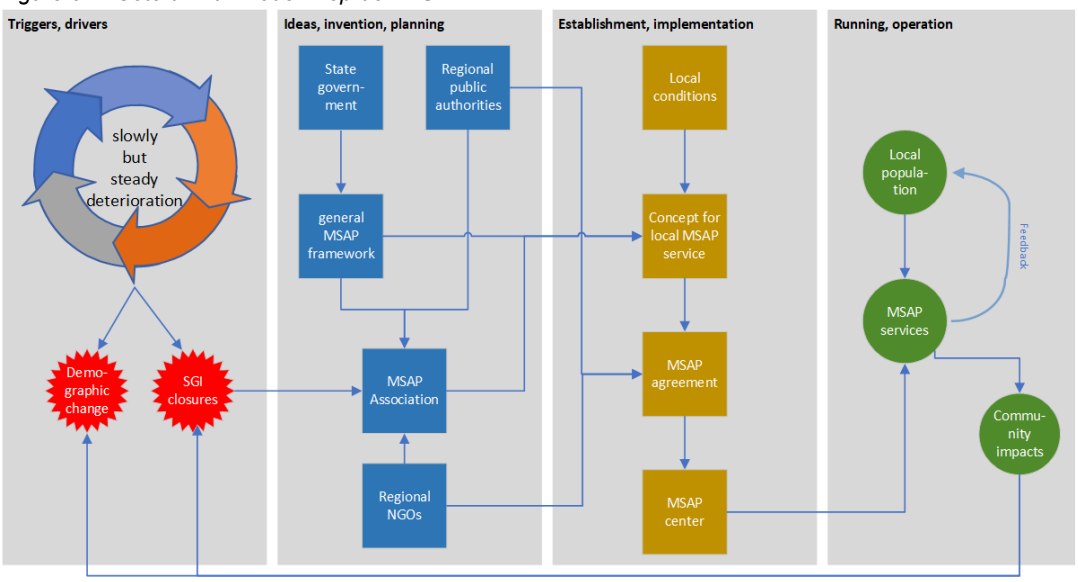


Source: own elaboration based on case study analysis (2018)

5.2.3 Côte d´Azur: Maison de service au public to improve public services provision

The inland of Côte d'Azur is a low-density mountainous rural area, whose population has declined for more than 50 years. In parallel, there has been a slow but continuous loss of SGI provision. The considered example of SI was triggered by an institutional innovation, launched in 2010 by the central government: the "Maison de service au public" (MSAP). This is a national framework regulation that promotes the opening of centres which foster the accessibility of services. Actors involved in the MSAP are municipal, inter-municipal bodies, and NGOs as well as state authorities based on a partnership convention. In the MSAP, users can find services concerning information technology, support for administrative procedures and employment, social assistance, and legal consulting and grants application. The operative governance model is quite flexible and, in the considered case, is based on an operative multi-year strategy that sets the objectives and actions as well as the staff and resources. The resources to cover the costs come half from the municipality and the other half from the state and national operators. No voluntary participation of the community is foreseen apart from some pilot cases. Thus, the example is tightly linked to an institutional innovation, whereas the "social innovation" dimension remains limited. This limited involvement of local communities is related to two factors: first, only a few long-established inhabitants consider the MSAP as a context for community involvement; second, the case study suggests that those who have moved to these areas recently and who could be more inclined to get involved within such a framework are not sufficiently integrated in their respective local community.

Figure 5-7: Côte d'Azur model: Top-down SI



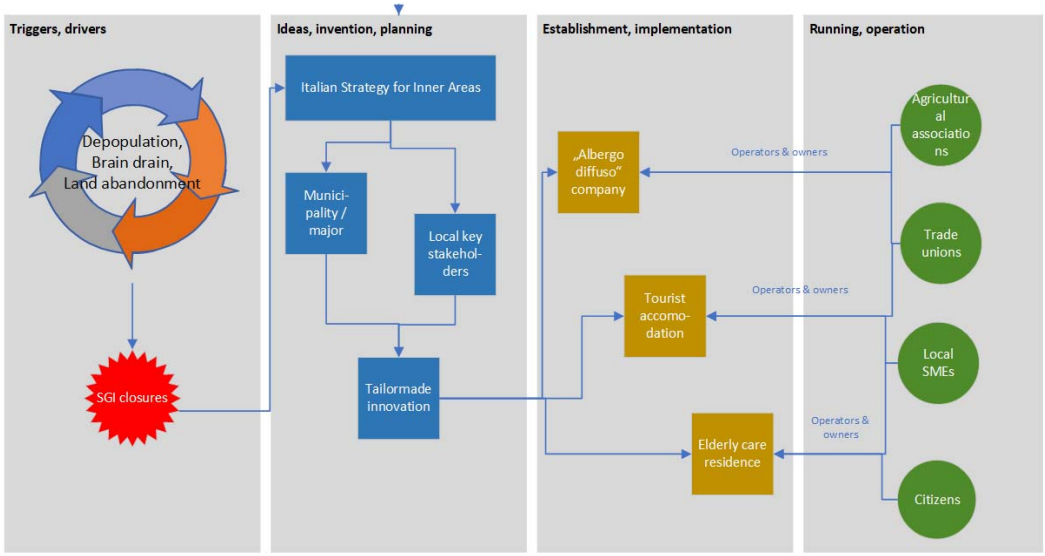
Source: own elaboration based on case study analysis (2018)

5.2.4 Isernia: multi actor governance to foster local development and social services

As the previous example, SI in Isernia (Italy) relies heavily on Institutional Innovation, in this case promoted in the framework of the national "Strategy for Inner Areas". Castel del Giudice (350 inhabitants), a village located in the hinterland in the province of Isernia, suffers from depopulation, brain drain and land abandonment, with significant impacts on the social economic fabric and the provision of public services. The triggers of SI are the Italian "Strategy for Inner Areas" (Public Investment Evaluation Unit (UVAL), 2014) and the actions of certain individuals. The Strategy is tailor-made for areas that aim to improve livelihoods by promoting a "bottom-up" partnership. In this framework, the SI was developed through a close cooperation among the municipality, the mayor, and the key local stakeholders. The outcome was threefold: the establishment of a company that recovered abandoned agricultural fields to produce apples; the development of "Albergo diffuso", an accommodation for tourists built in abandoned buildings; and the creation of an assisted care residence for elderly citizens. The SI consists in the high level of involvement of community stakeholders in the operative governance of these three new companies. The main operators of the three different sectors (agricultural associations, trade unions and other SME's from the whole national territory; owner of hospitality structures and tourist guides, environmental associations, social workers and health staff) play an active part in the whole project. Also, resources were collected in a participative way. The three social businesses were set up with the participation of citizens as direct owners, directs investors and direct beneficiaries, and the public authority guaranteed the mortgage.

Possible pitfalls concern the integration of the community, more engagement could be foreseen through voluntary work.

Figure 5-8: Isernia model: Top-down SI



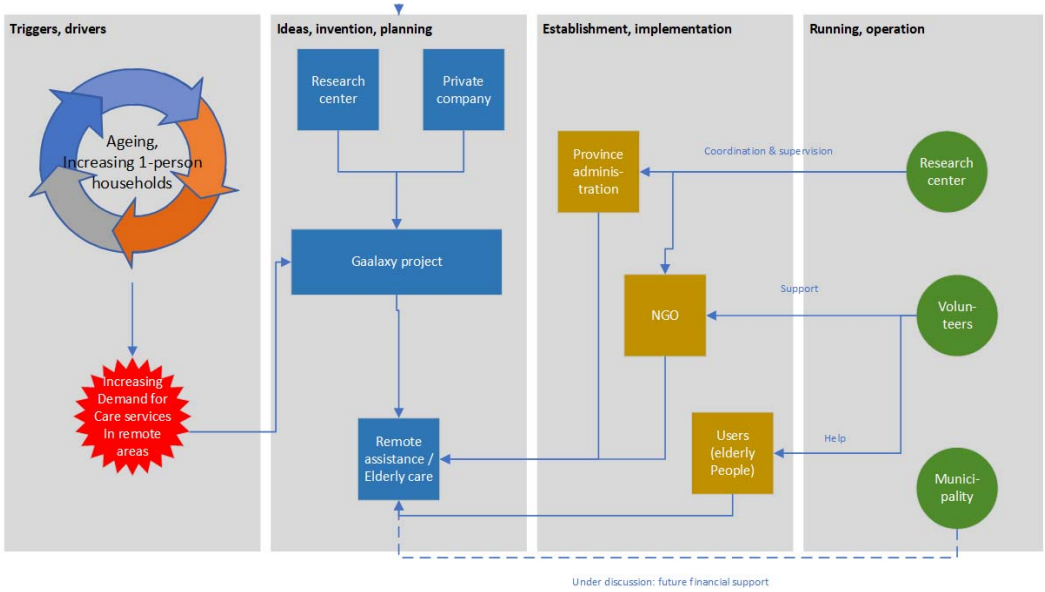
Source: own elaboration based on case study analysis (2018)

5.2.5 South Tyrol: broadband as a basis to improve elderly care at home

Ageing and an increasing proportion of one-person households represent relevant trends in South Tyrol (Italy). These put pressure on the social system due to increasing demands for care services to be provided in isolated areas. Furthermore, local actors observe that the needs of seniors living alone can be addressed better and more efficiently in their homes. In this framework, the European co-funded project Gaalaxy[49] was the trigger for SI. The initiators were a research centre and a private company. Building on a service of remote assistance that was already working in the area, they developed an integrated system of sensors and devices to monitor the health status of users and detect sudden changes, in order to quickly react. The system foresees a high involvement of the user, who cooperates in the development of the system and in its improvement. The system was tested in the province in coordination with local administration and is managed by the NGO association that previously provided the remote assistance service. The research centre coordinates and supervises the process. The SI dimension results from the active involvement of the local community, both by actively involving the users and by relying on volunteers organised by the NGO. Currently all costs are covered by the European funds, but there is an undergoing discussion on how the municipality can fund the initiative after the project ends.

[49] www.gaalaxy.eu

Figure 5-9: South Tyrol model: Bottom-up SI with the involvement of local administration



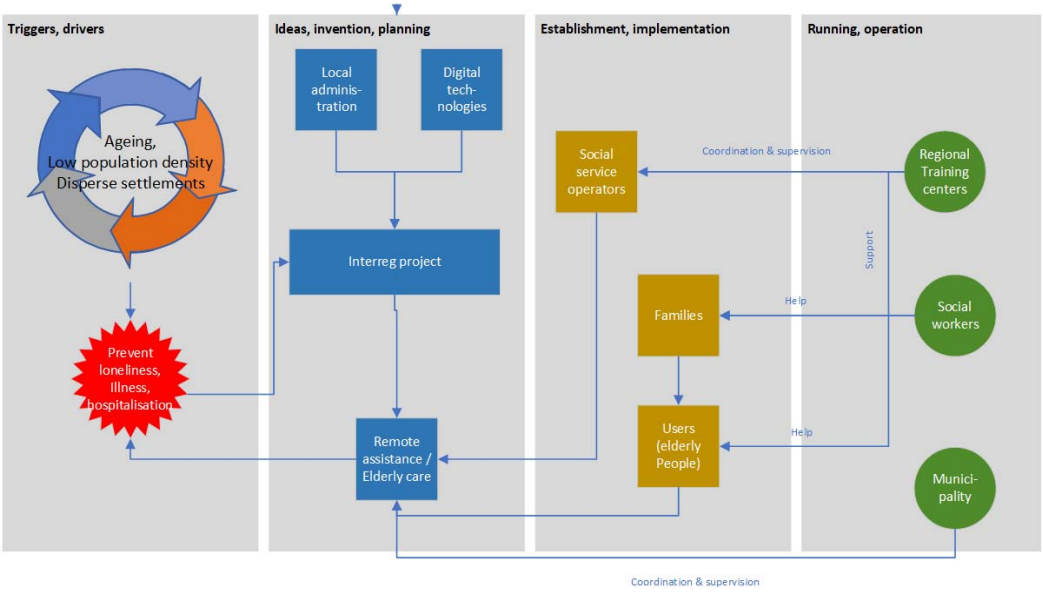
Source: own elaboration based on case study analysis (2018)

5.2.6 Saaremaa: distance services in social care to support a fragile population

Saaremaa is the largest island of Estonia in the Baltic sea and the ageing of the population as well as low population density and dispersed settlements represent major challenges. Poor availability of fast and reliable internet connections and low accessibility to health care facilities represent additional constraints. The willingness by local administrators to prevent loneliness, illness and hospitalisation and promote the use of digital technologies are the driving factors for SI. This was triggered and implemented through an EU-funded Interreg project[50] and involved from the very beginning, social services operators, seniors using the services and their families, the regional training centre, the municipalities, and a local foundation. The project involved the opportunity for seniors to receive personal services through direct contact and dialogue with social workers and enabled family members to connect with the users, who were mainly elderly living in remote areas, through their computers. Operationally, the SI was implemented by the social workers under the supervision of the municipality and a local NGO. Further involvement of the community was foreseen in case the project would continue. The costs of project activities were all covered by Interreg funds. However, the project is now over and it is not yet foreseen to implement its solution on a perennial basis.

[50] http://projects.centralbaltic.eu/project/399-virtu

Figure 5-10: Saaremaa model: bottom-up SI with the involvement of local authorities



Source: own elaboration based on case study analysis (2018)

5.3 Policy recommendations and analytical matrix

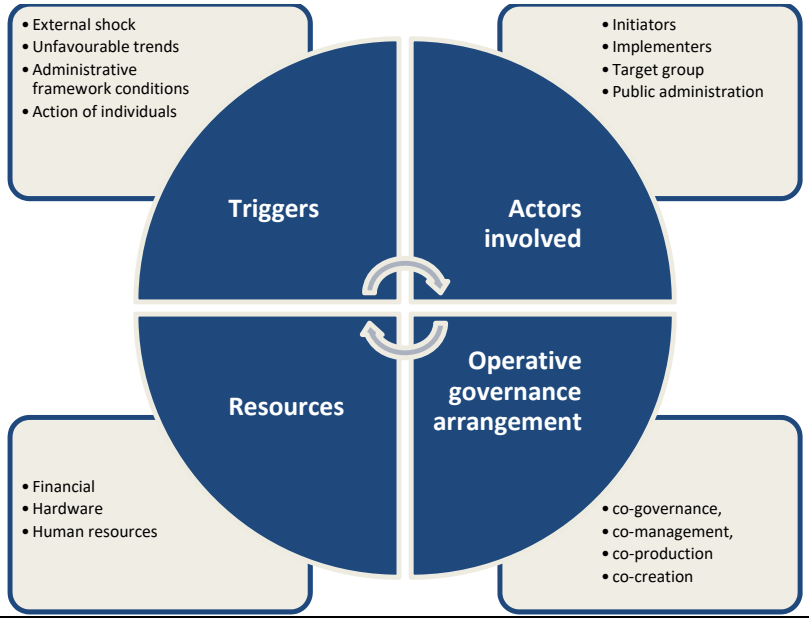
The five characteristic elements outlined in the above section and highlighted in each case study overview are key to assess SI beyond the specific sector to which it is applied. As mentioned in section 0, post-2020 funding is currently being negotiated and concerning the support to SI, the current proposal for a policy instrument refers to "integrated territorial development" via "*integrated* territorial investments", "*community led* local development" based on the "analysis of *needs* and *potential* in the area". Furthermore, it proposes "*social experimentations*" as a way to test and to scale up social innovation. Can the analysis of the five characteristic elements of SI support in shaping a more effective endorsement to SI in territories with geographical specificities? This section assesses each SI characteristic element and tries to reflect on the possible linkages with policy making.

5.3.1 Triggers

The SIMRA project notes that "most SIs are demand-led" (SIMRA project, 2017: 8). Triggers represent the determinants that initiate the SI. Given that a SI starts in response to societal challenges (see section 5.1.1), specific typologies of triggers are identified here. First, *external shock*, both economic and environmental, can unexpectedly stress and test the capacity of existing institutions and the resilience of a community, and trigger SI. Second, the slowly but steady evolution of *unfavourable trends*, e.g. demographic or economic, or a decline in service provision, can represent an unfavourable situation for a community, which can react through a SI. Third, changes in the *administrative framework condition* or in the usual support mechanism,

e.g. lower fiscal resources, limited state transfers or reorganisation of SGI provision can be triggers of SI. Last but not least, the *action of individuals* can be a relevant trigger. As observed in the Isernia case study, some individuals may be originally from outside the area, bringing new ideas and mindset in the community. These however need to be perceived as leaders in order to act as triggers for the whole community.

Figure 5-11: The analytical matrix: assess social innovation beyond the context



Source: own elaboration on the basis of the analysis, 2018

Going back to the practical application of this classification, it is relevant to highlight the interlinkages with possible policy instruments. Policies create the framework conditions for the SI to bloom, e.g. in response to external shocks or negative trends. This is, for instance, the case in the example from the Inland of Côte d'Azur, where national authorities have provided the instruments for a smoother application of SI (a deeper analysis of the concrete governance mechanism follows in second 7.3.2 below). Furthermore, policies can empower individuals and stimulate action. A good example is the policy exchange promoted by Interreg Europe[51] through the policy learning platform. This could possibly be further developed by offering exchanges among policy makers, especially from and to TGS, as these face similar problems.

In some of the TGS (i.e. South Tyrol and Saaremaa), the SI started with public funding. How can public money further trigger SI? Below (see section 5.3.4) a virtuous example of SI vouchers promoted by the Chamber of Commerce of Maremma-Tirreno is presented. If it is

[51]www.interregeurope.eu

based on an analysis of the unfavourable trends and *needs*, specific funding aiming at the creation of SI in the identified sectors might be a relevant tool to foster *community-led* solutions.

Table 5-3: Triggers

TGS	Trigger	Trigger category
Bornholm	Depopulation and population ageing; Closure of shop in the village due to a lack of critical mass	*external shock*
East Iceland	Low accessibility and depopulation, low differentiation of work opportunities; Closure of large factory as well as bank and post office	*external shock*
Côte d'Azur	Population decline and decrease of SGI provision; Framework law by the central government on Maison de service au public	*steady unfavourable trends & administrative framework condition*
Isernia	Depopulation, brain drain, land abandonment; Italian national strategy for inner areas, action of some local leaders	*steady unfavourable trends & administrative framework condition*
South Tyrol	Ageing of population and increase in the number of one-member families; Pressure to the social system and European project	*unfavourable trends*
Saaremaa	Ageing of population, low population density, poor internet connection, low accessibility of health facilities; Willingness to prevent loneliness and hospitalisation and to foster the spreading of IT; Interreg project	*unfavourable trends*

Source: own elaboration, 2018

5.3.2 Actors involved

In order to understand and better target policies to support SI, it is relevant to assess which actors are involved and how they interact with each other. SI actors can be classified in the following categories: *initiators*, *implementers* and *target groups*.

Concerning the typology of *initiators*, the case studies give a quite wide overview of the different options. Whereas in Bornholm and East Iceland the initiators of SI were civil society members, in Côte d'Azur and Isernia, central and local government played the major role at the beginning, and in South Tyrol and Saaremaa the needs of local society were filtered and elaborated by

the local authorities or local scientific institutions. This leads to the identification of three main patterns:

- Bottom-up approach by the local community (Bornholm and East Iceland)
- Bottom-up approach with the involvement of local authorities (Saaremaa and South Tyrol)
- Top-down approach by local authorities (Isernia and Côte d´Azur)

Text Box 5-3: Bottom-up and top-down models

The model adopted by East Iceland illustrated in Figure 5-6 shows how a group of citizens invented the so called 'creative centre' by converting the industrial area into spaces for arts and music. The idea was to attract artists and musicians from abroad to reuse abandoned industry sites and generate a new vision and new income for the village. Through public hearings, they obtained support from volunteers and the local community. Having obtained such positive feedback, the inventors further developed their ideas and gained public support (loans, taxation issues) to rebuild the factory building. It is therefore evident that the approach is not top-down, but a fully bottom-up model initiated by the community.

The South Tyrol SI also represents a bottom-up initiative, but it is mediated by the research centre and the municipality which, together with the technical support of a private company, elaborated the SI structure. (Figure 5-9)

The French case (Figure 5-7) adopts a top-down model, but with the participation of other actors, both public and private. The state government developed a general so-called MSAP ("Maisons de Services au Public") framework to assist regions facing such vicious circles. Based upon this general framework, regional public authorities may either establish an MSAP directly or support regional NGOs to establish one. The local NGO develops a concept for the MSAP service, taking into account the specific local conditions. This concept is then transformed into an MSAP agreement, according to which the MSAP centre is physically established. Up to this point, the local community have not been involved in the planning or implementation of the MSAP directly – only indirectly via the participating NGO or NGOs. In the MSAP centre, the participating actors provide the MSAP services to the local population. Meanwhile, the MSAP collects feedback from the population (i.e. from the service users) to improve or extend the offered services through a council of users or surveys. It is hoped that the MSAP centres will have positive community impacts by maintaining service provision, thus counteracting negative demographic processes and the further closure of SGIs.

In both cases of bottom-up and top-down models, a reflection on the role of public authorities is useful. The cases have highlighted how SI can positively impact the relationships between the involved stakeholders (e.g. NGOs, private users) and public administration. This can be seen for instance in the South Tyrol SI, where the activities have reduced the distance between citizens and public administration and promoted new and future forms of collaboration among

them. This is also true for the Isernia case study, where the public administration is now seen as a reliable partner for investments. However, it is key to understand the functioning and factors of success (and failure) of how a public administration may properly support SI initiators so that the creation of SI can be more easily spread. Another question is how to avoid the risk to constrain the SI approach into a pre-defined pattern, as brought up in the last programming period instruments to support SI (Section 5.1.2).

First, it is relevant to begin with an analysis of the TGS needs as well as support measures for SI which are consistent with the local development strategy. In Isernia, the existence of the Strategy of Inner Areas was a relevant basis for the SI to develop.

Second, public authorities can have a relevant role in providing physical infrastructure or guarantee access to spaces, as for instance in the East Iceland case, where the municipality depreciated old real-estate tax debts and arranged for agreements with insurance debts.

Third, public authorities can support SI by providing knowledge. Raising awareness on SI can support more informed and possibly more effective SI, compared to the spontaneous ones analysed in the case studies. Furthermore, it can support fostering soft skills and training, which can lead to a better engagement or operators. Staff should receive proper training, guidance and information. For example, if social care staff are unfamiliar with the technology used and, even worse are unmotivated, it may affect the entire process. This was one of the pitfalls in the first stage of the Saarema project.

Last but not least, public authorities can offer technological prerequisites that allow SI to be implemented. Broadband, for instance, is a basic prerequisite. A functioning and high-speed Internet infrastructure is an important precondition for e.g. distant care services. This is a particular challenge for sparsely populated and remote areas, where the cost of developing the infrastructure is higher than the revenues.

The role of implementers will be deepened in the “operative governance models” section 7.3.3 below. The identification and engagement of target groups goes along with the definition of needs was explained in the previous section (5.3.1).

Table 5-4: Characteristic element: Actors involved

TGS	Role	Actors involved
Bornholm	*Initiators*	Local civic association (LCA) & volunteers
	Implementers	LCA, volunteers (also second home owners), local producers
	Target group	Local population, in particular the elderly
East Iceland	*Initiators*	group of community members
	Implementers	group of community members, municipality, no-profit association
	Target	local and foreign artists, schools, entrepreneurs
Côte d'Azur	*Initiators*	Municipal, inter-municipal, NGOs, state authorities
	Implementers	Municipal, inter-municipal, NGOs
	Target group	local population both long-time resident and new residents
Isernia	*Initiators*	Municipal, major, local stakeholders
	Implementers	association and companies created through private-public-partnership; trade unions,
	Target group	local population, newcomers, tourists
South Tyrol	*Initiators*	Research centre, private company
	Implementers	local NGO, research centre, private company, volunteers, family of users
	Target group	fragile population of people living alone and their families, municipality
Saaremaa	*Initiators*	local administrators of the municipalities and some local foundation
	Implementers	municipalities and some local foundations, social services operators, regional training centre
	Target group	social services operators, elderly users and their families

5.3.3 Type of solutions: operative governance model

Governance arrangements developed in SI often entail new balances among the public authorities and the private and non-profit actors involved. These can be shaped in different ways, which have been theorised in the context of public service provision: co-governance, co-management, co-production and co-creation. "*Co-governance* refers to an arrangement, in which the third sector participates in the planning of public services; within *co-management,* the third sector produces services in collaboration with the state. *Co-production* indicates when citizens produce their own services, at least in part. The latter could also refer to autonomous service delivery by citizens without direct state involvement, but with public financing and regulation" (Pestoff and Brandsen, 2008: 100). In addition to these, another governance model is to be mentioned: *Co-creation.* This implies a new division of roles in public service provision, where citizens become partners to public officials (Voorberg et al., 2017). Figure 5-12 and Figure 5-13 show the perception of the service from the public authority and the NGO perspective with regard to the distribution of authority, responsibility and accountability.

Figure 5-12: The perspectives of a public authority in case of different governance arrangements

Source: Borrini et al., 2013: 45

Figure 5-13: The perspectives of local stakeholders in case of different governance arrangements

Source: Borrini et al., 2013: 45

Government can be located at any of the points of the line shown in Figure 5-12, depending on the choices made in terms of authority, responsibility, and accountability. The same applies to private actors (Figure 5-13). As a result, a diversity of governance settings of SI emerge. Their objective is to empower local actors, enabling them to address the challenges they confront, thereby increasing the resilience of local communities in the face of changing social, economic and environmental framework conditions (Benneworth et al., 2014)

Table 5-5 displays the operative governance models and classifies them according to the categories of the analytical matrix.

Table 5-5: Operative governance model

TGS	Operative governance model	Type of governance
Bornholm	Creation of autonomous association that organises activities; association is composed of volunteers who cover shop opening hours, manage materials supply	Co-production
East Iceland	A non-profit organisation governs the structure. Users can benefit from the facilities against a monthly fee.	Co-production
Côte d'Azur	The managing body develops an operative multi-year strategy that sets the objectives, actions as well as the staff and resources. An agreement is signed with the local administrators. Top-down approach through national programme; an association of authorities runs the centre	Co-management
Isernia	Public-private partnership in three sectors of interventions. Strong presence of local institution	Co-creation
South Tyrol	In the framework of the project, the service is implemented by the NGO. The research centre coordinates and supervise the service. The community is engaged both from the users' point of view and the people volunteering in the NGO	Co-production
Saaremaa	Trained social carers implemented the services under the supervision of the municipality and local foundation	Co-management

Source: own elaboration on case studies, 2018

5.3.4 Type of solutions: resources

Resources are a relevant part of the functioning of SI. Based on the case studies, three main categories of resources can be identified: financial and hardware resources, and human resources. Table 5-6 classifies the case studies according to the resources used. Some initiatives generate incomes, which may be reinvested into the community. In Bornholm, for instance, income is invested in non-profit projects for the community. Furthermore, training for

the community on the use of defibrillators has been organised and workshops on how to strengthen community cohesion and cooperation are foreseen. Public funds still play a relevant role when it comes to initiating SI. The Interreg Europe project PASSAGE[52] highlights a best practice promoted by the Chamber of Commerce of Maremma Tirreno: SI vouchers as a tool to trigger SI. According to the managers, the vouchers were successful in "mobilising different type of partners and stakeholders, targeting several economic sectors and meeting the needs expressed by local and regional context" (Bottosso, 2017: 18).

Table 5-6: Resources

TGS	Category	Resources
Bornholm	Human Resources	Volunteer work
	Financial and hardware resources	Membership fee, Private donations
East Iceland	Human Resources	Voluntary work
	Financial and hardware resources	Donations, public grant, tax relief
Côte d'Azur	Financial and hardware resources	The associations running the centre share the costs with the central government according to agreements.
Isernia	Financial and hardware resources	Private donation, public financial support, bank guarantee
South Tyrol	Human Resources	Volunteer work
	Financial and hardware resources	Costs are covered by European funds
Saaremaa	Human Resources	Volunteering work within the NGO
	Financial and hardware resources	European funds

Source: own elaboration on the basis of case study

5.3.5 The analytical matrix in policy implementation

The analytical matrix, composed of the four elements described above, can provide a relevant tool in policy implementation in TGS. Figure 5-5 to 7-10 represent a visualisation of the relevant elements of the analytical matrix, applied to real cases. Looking at the current policy perspective (Section 0), a systematic utilisation of the matrix can support in the design and implementation of 'social experimentation' in TGS. The analytical matrix constitutes a structured framework to

[52] https://www.interregeurope.eu/passage/

assess the SI and can support in planning and reviewing the public support to it. Analysing the *triggers* leads to understanding the relevant framework conditions for SI and therefore to the improvement of policies in its support. Mapping the *actors involved* can support in assessing the balance of the solution and better target the public administration intervention according to the guidelines in section 5.3.2. Operative governance model assessments provide an overview of the general balance reached within the solution. Finally, the analysis of *resources* and comparing these to the resources used in successful case studies contributes to assessing what might be still missing. The four categories of assessment all have a common goal: the sustainability of the SI.

5.3.6 Transforming innovative initiatives into perennial solutions

A wide range of SI solutions have been developed to address the challenges that TGS communities confront. As such, SI contributes to the multiplicity of local development paths and territorial diversity. The European Union has contributed to empowering local actors to design and implement these diverse local strategies in accordance with the principle of subsidiarity. However, this has primarily been done within the framework of projects, with a limited timespan. The recurring challenge for SI in TGS is to transform these often promising initiatives into perennial solutions. This *inter alia* presupposes that stable funding solutions are found and that organisational principles allowing sustained community involvement are defined.

Based on the case studies and the analysis above, some key recommendations to establish more perennial solutions on the basis of SI can be drawn up, as listed in Table 5-7 below.

Table 5-7. Recommendations

Topic	Recommendation
Role of public actors	• Develop analysis of needs and support SI that are consistent with local development strategies • Provide equipment and real estate • Provide knowledge and training • Provide prerequisites (e.g. broadband access)
Foster the triggers to SI	• Create policy framework conditions and instruments to foster action of individuals: e.g. Foster exchanges among leaders of different TGS • Monitor the trends and needs of a TGS and on this basis of specific and open SI funding opportunities: e.g. Funding vouchers for SI targeted according needs • Financial resources, equipment and real estate

Source: own elaboration, 2018

6 Module 3.1: Labour Market Transitions

Working lives are becoming extended, more varied and mobile. In Europe, lifelong employment is becoming increasingly rare, being replaced by growing number of atypical job contracts (e.g. fixed-term contracts, temporary work). Confirming this, there has been downward trend in the share of full-time permanent employment from 62% in 2003 to 59% in 2015 (Broughton et al., 2016). Compared to few decades ago, when workers used to have a job for life, there has been a huge change: the average European worker now has more than ten different jobs during their career (European Commission and Government Offices of Sweden, 2017). In relation to mobility, in 2016, 16 million EU citizens lived in another EU country, and almost 2 million commute daily between internal borders (European Commission and Government Offices of Sweden, 2017).

The growing mobility of workers and the rise of flexible working patterns is significantly transforming how labour markets function (Barley et al., 2017). This has been also affected by rapid technological change, with digitalisation and automation leading to the disappearance of some jobs and the emergence of others. In addition, the knowledge society, which that requires higher education and continued education and training, has added new challenges to the sustainability of labour markets

The effects these trends may have in TGS is an issue that should be addressed. Despite their diversity across Europe, TGS tend to have smaller labour markets, disconnections from higher education and training institutions, and insufficient economic diversification. Vulnerable and fragile labour markets are likely to emerge from these conditions. Nevertheless, looking at particularities, such as in- and out-flows that occur in these labour markets, may help TGS actors to describe and address labour issues they confront. A cautious look at the migration patterns may unveil *'who'* and *'for what purposes'* people are moving in and out of TGS and what effects these mobilities will have in the local labour market. In this respect, 'zero net migration' implies a stable population but does not deliver the message of stability in the labour market. The neutral exchange of population could mean that, while younger people are leaving the TGS, pensioners are moving in, with significant implications for the local labour market that may need to be adjusted to new demands (e.g. increasing jobs in the health sector).

The analysis of these transitions can unearth particularities of the labour markets, that can help tailor policies to promote more inclusive and balanced labour markets in the TGS. Notably, TGS and urban labour markets are quite distinct from each other. Strategies currently used to boost the labour markets in urban centres are not useful for TGS. The specificities of these territories call for 'asset-based' development strategies that could contribute to diversification of the economy, delivering more robust labour markets in TGS.

For example, some studies have shown that mountain areas have long traditions of economic diversification and SPAs, apparently assumed as unattractive areas, have been the destination

of some immigrants. In fact, geographical conditions play a key role on the performance of the labour market in these territories. Given that the focus of this chapter is discussing how geographical specificities influence labour market transitions. The key question that is addressed is "How to enhance the robustness of TGS labour markets in a context of increasing geographic mobility of workers, and to more frequent changes of job and employment status?"

To answer this question, some cross-cutting issues that emerged from the cases studies are discussed against a theoretical framework related to labour market and regional development. Table 6-1 provides the case study overview and identifies their relationships with the selected issues.

Table 6-1: Case study overview

Case	Migration	Human capital	Social capital	Entrepreneurship
Molise / Matese, IT	Out-migration young adults			
Norfolk-Suffolk, UK	Out-migration young adults	Need for upskilling due to new economic activities		Agri-business and off-shore windfarms
Nordland, Vågan; NO	In-migration of young adults		In-flow of artists	
Saaremaa, EE	Out-migration young adults	Need for upskilling (40-50 years of age)		ICT
Western Lapland, SE	Out-migration young adults			
Wester Ross; UK	Out-migration young adults		Bottom-up initiatives	Lifestyle entrepreneurs

The knowledge from these cases sets the scene for expanding the discussion about labour mobilities and transitions in other TGS in Europe. Before proceeding to examine how these issues influence the performance of labour markets, the following section presents an overview of the main EU policies

6.1 EU policies that influence labour market transitions

This section briefly presents some of the EU policies that support the mobility of workers, and discusses their suitability to enhance robust labour markets in the TGS.

For the European Commission, labour mobility is essential in the process of building the single market and enhancing European integration. Intra-EU mobility is regarded as a means to 'modernise labour markets and empower people by developing their skills throughout the lifecycle with a view to increase labour market participation and better match labour supply and demand' (European Commission, 2010c)

In this respect, the **European Employment Service Program** (EURES) plays a key role in fostering the single labour market through job-matching across borders and coordination between national employment services. The free movement supported by EU it is likely to have

an impact on the labour markets of TGS, which can, for example, profit from foreign labour during particular periods of the year.

Nevertheless, a constraints of some EU programmes is that they tend to address labour markets as abstract entities, detached from their geographical conditions; or, as the recently published report 'Urban agenda for the EU jobs and skills in the local economy' (European Commission, 2018i) seems to suggest, labour markets have been framed mainly through an urban perspective. In this respect, the European Globalisation Adjustment Fund[53] (EGF) that focuses on workers who became jobless as a result of trade liberalisation deserves attention. Since 2016, this fund supports counselling, job searches and mobility allowances, training, and entrepreneurial support including micro-credits to enable the affected individuals to find a new job quickly. The Fund is activated upon request of a Member State when a company (whether national, multinational or SMEs) lays off more than 1,000 people either in an enterprise, or in a sector within a region, due to structural changes in world trade. One can therefore expect it to be relevant for selected TGS that host companies that target world markets.

The **European Social Fund (ESF)** is one of the main instruments that helps the engagement of people in the labour market, through upskilling of employed, jobless, young and older people. Targeting people from disadvantaged groups to get a job, the ESF prioritizes the adaptation of workers with new skills, and enterprises with new ways of working. It finances a variety of employment-related projects (e.g. vocational training and lifelong learning opportunities; social housing) at local, regional and national levels. The Youth Employment Initiative (YEI) is also an important mechanism to engage younger people in local labour markets. Supporting exclusively young adults who live in regions where youth employment is higher than 25% and are not in education, employment and training, this fund targets regions that face more acute challenges.

While ESF and YEI are important instruments to support inclusion of people in labour markets, their territorial perspective can be further developed. For example, considering that a balanced territorial development is pursued by the EU as a means of achieving territorial and social cohesion and that jobs are not just the result of development, but instrumental in achieving it, thinking about labour markets spatially becomes a fundamental condition to capitalise on the strengths of each territory, so it can best contribute to the sustainable and balanced development of the EU as a whole. With this in mind, associating the granting of these funds to the territorial objectives could be a way of contributing to territorial cohesion.

Knowledge on the spatial distribution of employment and commuter flows has the potential to inform policies to deal more efficiently with the creation and maintenance of jobs. On this matter, the current advancements in the methodology of Labour Market Areas (labour marketAs) seems promising. labour marketAs are economically integrated spatial units within which residents can find jobs within a reasonable commuting distance, or can change their

[53] https://en.wikipedia.org/wiki/European_Globalisation_Adjustment_Fund

employment without changing their place of residence. Disregarding administrative boundaries, the labour marketAs define self-contained spatial unities in terms of employment and commuter flows data. These areas hold useful information on employment, unemployment, and workforce availability among other aspects and as such, are suitable to examine labour mobility and the development of labour markets as well as spatial relationships of adjacent municipalities in terms of a free labour market in the EU (Franconi et al., 2017)

Having seen the potential and limitations of EU polices to address the challenges the labour markets in TGS, the next section discusses the added value of looking at labour markets as a mobile space.

6.2 The importance of flows for robust labour markets

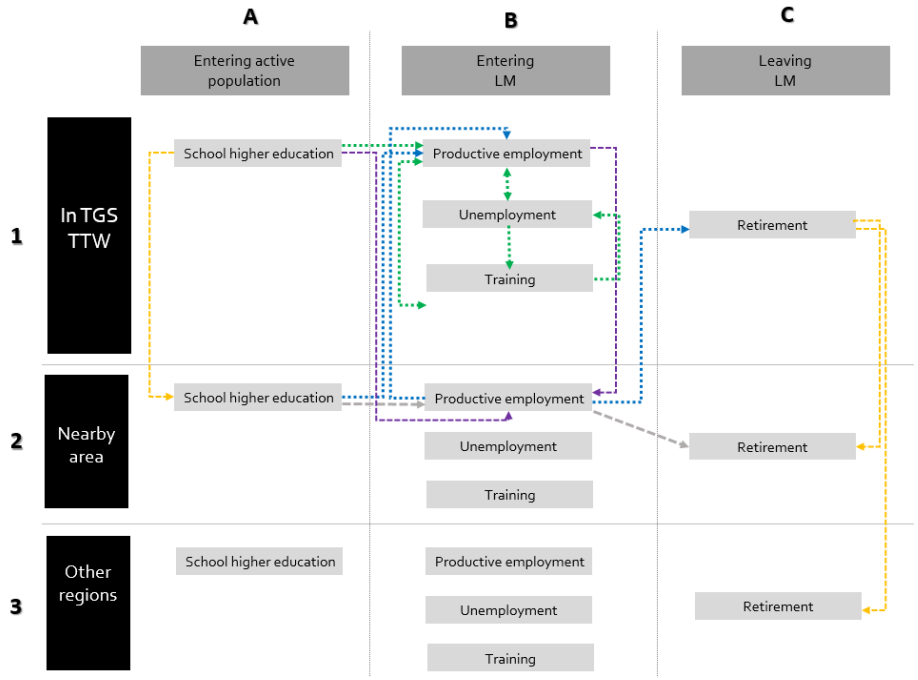
Data about the transitions between labour market statuses at national level for the EU show that the countries with great mobility are those with higher proportion of temporary contracts and part-time jobs, as well as those with less rigorous employment protection legislation (Eurofound, 2014). The same study indicated that there is no correlation between unemployment rate and mobility, and none of the countries with low mobility has low employment rates. These findings suggested that a certain level of mobility between labour market statuses could contribute to low employment (Eurofound, 2014).

There have been many perspectives on labour markets in TGS. For example, focusing on insular labour markets in the Nordic context, Dahlström et al. (2006) propose a tentative definition of a well-functioning insular labour market as *'a region where most transitions to and from gainful economic activity and reproductive activities are voluntary, involve low risks and offer a set of choices for the individual'*. In many TGS, achieving these objectives requires flows in and out of the labour markets. Taken individually, they are too small and undiversified to offer the necessary options to individuals. In and out-flows of workers and students are therefore a necessary precondition for the balanced and sustainable functioning of these TGS labour markets. On this basis, one would add to the above definition of a well-functioning insular labour market that it also '*balances in and out flows with respect to the profiles, competences and aspirations of concerned individuals*'. Thus, better knowledge of these flows and of the factors that trigger them can inform economic and social development policies in these territories.

Labour market transitions are framed in two perspectives: geographical and occupational. The geographical transitions includes different types of labour mobilities (e.g. seasonal, weekly and fly-in/fly-out (FIFO) commuting patterns). Occupational transitions acknowledge every sequence of a personal and occupational career. They can be related to changing from one occupation to another but also and most importantly to changing between labour statuses: for example, getting a job and thus moving from unemployment to employment; losing a job and moving from unemployment to employment; transitions between other statuses from

employment to retirement, from training to employment. Figure 6-1,displays the main flows and labour market statuses considered in ESPON BRIDGES.

Figure 6-1: Model to understand labour market flows and transitions



In Figure 6-1, the rows (1, 2 and 3) represent the spatial dimension which describes 'where' the transitions between the different labour statuses take place (within the TGS, nearby area or other regions) and the columns (A, B and C) represent the 'probable/expected' statuses that people in a particular period of their lives are likely to occupy.

The transitional approach unpacks many particularities of labour markets that are influenced by the configuration of places and regions. For example, one can look at negative changes in net population in a particular region and swiftly assume that this region is losing population, but labour flows may reveal that there are lot of people coming in and working in this region.

6.3 Factors that influence labour mobilities in TGS

Having seen the importance of geographical and occupational transitions for better understanding labour markets in TGS, this section discusses the main patterns of occupational transitions that emerged from the case studies and presents a number of factors that influence the performance of labour markets.

In relation to the transitions between labour market statuses, the analysis of the case studies indicated that seasonal, upskilling and entrepreneurial transitions are the most common labour market transitions in the TGS.

The demand for jobs during particular periods of the year might represent a challenge but also an opportunity. It is true that seasonal jobs might be unattractive for local workers who may feel

compelled to leave the region to find permanent jobs but, as outlined before, the replacement of permanent jobs by temporary jobs is an ongoing trend in the labour markets in Europe and North America. This shift, also called the 'gig economy', means that companies hire independent contractors and free-lancers rather than offering permanent positions (Dragonette, 2016). Despite being commonly applied to service/knowledge economies, the concept 'gig economy' invites discussion of the notion that providing 'stable full time employment' would be an objective *per se*. In the context of TGS, temporary jobs are an opportunity to engage young workers in the labour market. They also trigger movement (migration flows) between regions which, as suggested above, may be a condition for low unemployment. Seasonality gives the opportunities to combine different types of jobs (e.g. ski instructor in the winter and hiking guide in the summer) and enhance a 'more mobile' working life in which a person works for a period in one region and then moves to another. Short-term labour is needed is some sectors of activity. Insofar as transitions between different types of employment are fluid, and that sufficient benefits are provided to workers that are unemployed or underemployed over variable periods of time, seasonal and part-time employment may be socially beneficial.

The qualification debate in the EU (European Centre for the Development of Vocational Training, 2018) touches upon the conflict between the personal development of those who live in TGS and the needs of the local labour market. It is likely that a majority of TGS inhabitants who have the ambition to pursue a career that requires higher education will need to be trained outside of their own area. When they graduate, the chances are that there will be no job openings corresponding to their specific competence labour in the TGS where they grew up, especially if it has a small labour market. They may then chose to locate in other areas. Conversely, TGS companies can find it difficult to recruit staff with the specialised competences they need. This brings up questions on the geographic organisation of training and higher education: to what extent is it purposeful to decentralise such activities? Is the main objective to fulfil the needs of local companies, or to adapt to the demand of potential students?

With respect to the factors that influence the labour market in TGS, the DORA (Dynamic of Rural Areas) model (Bryden et al., 2000) is relevant. This assesses the underlying reasons for differential economic performance in rural localities. The authors argue that differential development can be explained by a combination of 'tangible' and 'less tangible' factors and the way in which these interact in specific national, regional and local contexts. Tangible factors include natural and human resources, infrastructure, investments, economic structures and organization. Less tangible factors consist of market performance, institutions, networks, community, and quality of life. These factors not only define different opportunities and constraints for local development, they also illustrate how effective the local and regional system could be in capturing resources and opportunities and overcoming challenges.

In the present study, human capital, social capital and entrepreneurship are discussed in combination with labour mobility (migration patterns), which, as argued before, is a precondition to deliver robust labour markets in TGS. Looking at these factors from a transitional perspective,

we explore how in and out flows from TGS affect human capital, social capital and networks and entrepreneurship.

6.3.1 Migratory flows in TGS

It is important for authorities and actors in TGS to be able to identify and address imbalances in flows. This section first discusses working mobilities from a life cycle perspective. On this basis, it then develops a reflection on the purposefulness of measures to limit outmigration, promote return migration, and attract in-migrants to TGS.

Considerations from people's life cycle perspective

The movement of people in and out of regions is, to some extent, related to people's stage of life. As suggested in Figure 6-1, the mobilities generated by people entering the active population (young adults), engaged in the labour market (adults) or leaving the labour market (retirees) are particularly important.

The case studies indicate that outmigration of young adults is a common trend. This movement is explained by limited opportunities for further education in TGS. On the other hand, movements of people engaged in the labour market was very much dependent on the context of the different cases. In this respect, the Matese-Molise and Norfolk-Suffolk cases illustrate contrasting situations. While there is growing depopulation of people of working age due to the lack of jobs in Matese-Molise, in Norfolk-Suffolk a significant in-flow of people due to the development of the wind farms is expected. Movements of seniors have been identified as an issue in Norfolk-Suffolk and Wester Ross. In Wester Ross, the inflow of seniors has been pressuring the real estate market and increasing housing prices.

The movement of people in TGS is quite conditioned by the different stages of their lives. For example, children do not move unless accompanied by parents, so one could argue that independent mobility starts around at the age of 15 years old. Moving away from the region to get further and higher education is a common mobility pattern among young adults. The mobility patterns of seniors may include return migration in search of an attractive environment and, at later stages of life, they may move again due to the need to access advanced health services. Table 6-2 illustrates some of these movements.

Table 6-2: Reasons for migration by age category

Groups	Reasons	Out-migration	Return migration	In migration
Young adults	Further education	x		
	First employment	x		x
Adults	Career advancement	x		
	Starting a family		X	x
Young seniors	Attractive environment		x	
Older seniors	Need of specialised health care	x		

In small, isolated communities such as those that can be found in SPAs, remote mountain areas and small islands, demographic movements that would not be of concern in other contexts can have a major impact. For example, the loss of persons with key competences, such as a medical doctor, can significantly affect a local community. Conversely, an inflow of just a few individuals or families with the right qualifications and/or experience can generate a positive development dynamic. The specific importance of these very small population flows for territorial cohesion in TGS needs to be highlighted, as they may be targeted by policies to promote balanced and sustainable development in these territories.

Dealing quantitatively with the migratory patterns in the NSPAs, Gløersen (2009) adds a perspective not only in relation to migratory patterns in general but also about in- and out-migration by age groups. This is based on a cluster analysis of in- and out-flows by age groups at the LAU level (**Error! Reference source not found.**). This revealed that 15 out of 189 labour market areas in the NSPAs had experienced population growth, and that the net migration is a small imbalance between much larger in- and out-migratory flows. As Gløersen (2009) emphasizes, the number of in-migrants in the NSPAs proves that these regions are attractive to some people.

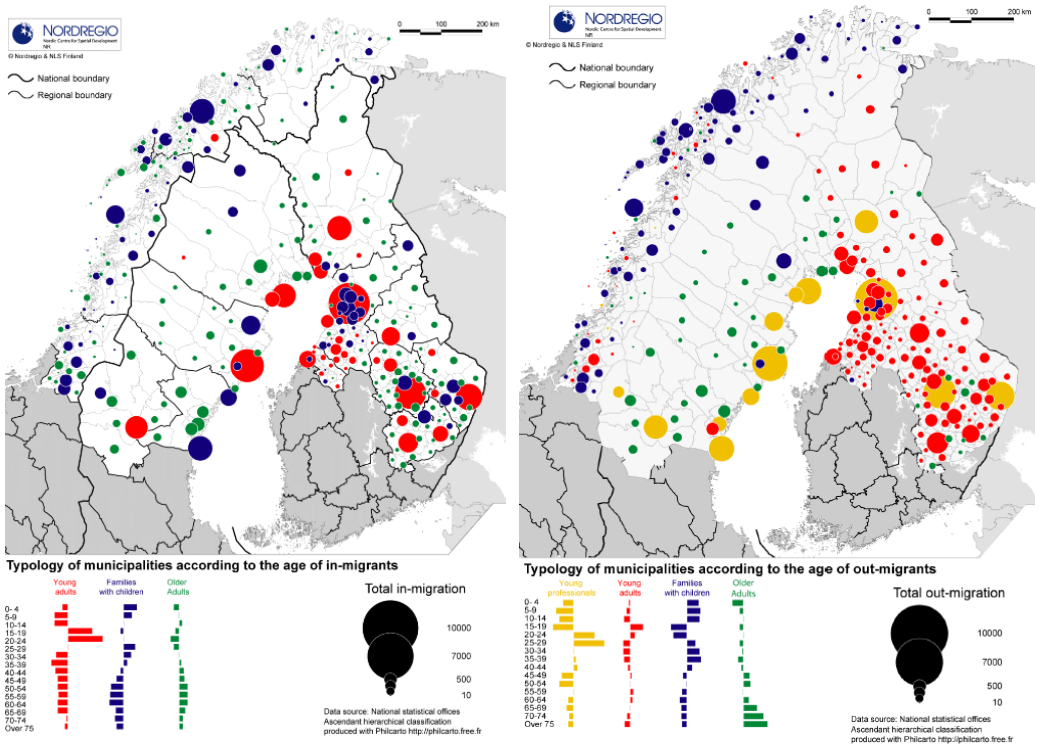


Figure 6-2: In and out-migration by age groups, 2007 – NSPA (Gløersen, 2009)

As shown in Figure 6-2 , young seniors are the group that contribute to in-migration flows on the SPAs in Sweden and Finland. In contrast, young families with children account for a high proportion of inflows in Norwegian SPAs (blue circles in left map), as a result of incentives for

people to settle in these regions after their studies. Because the largest NSPA cities offer extensive higher education opportunities, they attract many young adults (red circles in left map), who then move out after having finished their education (yellow circles in right map). In Norway, the families with children also move out after having worked the period required to receive government incentives. Young adults and older seniors also move out, driven by education or job purposes and to seek advanced care, respectively (Gløersen, 2009).

Limiting out-migration

The implementation of policies and tools to retain residents and attract newcomers to TGS are important for the robustness of local labour market. Nevertheless, issues of retaining people are not straightforward. As the case studies showed, out-migration, especially of young adults who leave the region to seek further and higher education, is a common trend. Leaving the TGS to pursue further education is a necessary component of knowledge-based economic development. Policies to promote such development, e.g. ERDF and ESF-funded programmes, will therefore also lead to enhanced mobility of students and other persons seeking to improve their qualifications.

There is, however, the risk that people do not return to the region after education. The inability of the local labour market to offer employment opportunities corresponding to the qualifications of young adults may be one of the main reasons for this. An option to limit out-migration while ensuring the required competences exist in local labour markets would be to provide more targeted training locally. For example, one issue that emerged in Saaremaa was the inability of the region to attract chefs to work in the restaurants during the summer, due to the low wages. A possible alternative would be offer short-term training outside the region, to compensate for the insufficient skills in the TGS. Such support would be granted conditional on an obligation to return to the home region to work for a specific period of time.

Promotion of return migration

Economic development, adaptation of external knowledge, and working skills are some of the benefits of bringing back people to their regions of origin. Return migration can be triggered by economic and non-economic factors. While economic factors include incentives for training and education, support for entrepreneurship, the non-economic ones are related to family, cultural and social ties that people who left may have with the region.

A number of TGS refer to their diasporas as potential sources of knowhow and capital, as well as networks that can be mobilised for different purposes. The strength of territorial identities associated with island, mountain and sparsely populated territories plays a role in this respect. Programmes designed to keep closer contact and enhance collaboration, to ensure the availability of knowledge about level of development, professional interests and needs of the emigrants, would inform them when and how their profile would fit to particular needs of the

TGS. Targeedt information strategies are thus a mechanism that would boost efficient matching and communication of TGS local governments and their diasporas (see Text Box 6-1)

Text Box 6-1 Development Strategy for Opole Voivodeship, Poland

Co-financed by Cohesion Policy, Opolskie Region developed a set of initiatives to encourage return migration. Branding the region as a destination for former residents at any stage of their lives, the initiatives include support to enterprise incubation systems (e.g. consulting, legal representation, organisational assistance and support services). The governments co-operate with migration communities, social associations, churches and business. To facilitate returns of people of working age and nurture a healthy business environment, the governments invested in high and competitive living standards (infrastructure, natural environment, transport, houses and apartments, etc). Investments to health care and the provision of services in German language were a strategy to enhance the return of elderly people (Kovács et al., n.d.)

Seeking to capitalise on networks rather than on return migration, the Estonian Government is striving to implement the strategy of connecting talents back home and boost the country's economy (see Text Box 6-2). TGS can profit from similar strategies. Maintaining closer contact with emigrants, through events and campaigns, it is likely to be a promising way to increase awareness of the potentialities of TGS to people who do not live in the region.

Text Box 6-2: Bringing talents back home and connecting talents back home

In 2010, the Estonia government launched 'Bring Talents Back Home'. This programme offered incentives to high-skilled workers living abroad to return to the country. Supported by the European Social Fund and with a budget of 120,000 euros, this programme did not bring the expected outcomes, with a return migration of 27 people. Learning from this experience, the Estonian Government changed its perspective. Rather than attempt to bring expatriates to Estonia, the government sees them as ambassadors to create ties between Estonia and other parts of the world. These ties include building up a good image of the country abroad as well as establishing networks and creating business opportunities that might result in a gain for Estonia's labour markets.

Caution is needed when promoting retirement return migration. As the case study of Wester Ross, UK, showed, the increasing number of retirees in the region has pressured the real estate market, pushing up the prices of the houses. This constitutes a challenge for people of working age, who struggle to buy or rent a home. This illustrates the importance of coordinating economic development initiatives with other policy sectors, such as housing and those dealing with the provision of services of general interest.

Attract immigrants

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 skiing slopes, beaches or attractive landscapes, and a strong brand associated with their attractiveness for tourists. The challenge for TGS is therefore to market these assets, to attract in-migrants that value these aspects highly and are prepared to accept, for example, lower accessibility or a limited range of services.

There are many strategies to attract immigrants at different levels. For TGS, information campaigns about the job opportunities in the TGS are a means to overcome, or at least minimise, the mismatch between perception and reality when it comes to job opportunities in the TGS, as observed by Ferrario and Price (2014). These authors found that people do not look for jobs in these territories because there is a perception that there are no jobs available. In this respect, platforms and networks that communicate job opportunities are useful tools. The German initiative described in Text Box 6-3 offers a good example that could be applied in TGS.

Text Box 6-3: Return and Immigration Federation, Germany/east regions (Mecklenburg-Western Pomerania, Saxony-Anhalt, Brandenburg and Thuringia

Established since 2006, this network provides information for migrants on cultural, political and social developments in their home region and strengthens ties with the homeland. The network aims to exchange views about soft and hard factors of retention. It establishes links between economic actors, organisations working with young people and educators in order to provide new opportunities to remain or to move to Länder that previously belonged to East Germany. The aims of this network include: promoting return to and immigration into eastern regions of Germany; assisting high skilled workers by intercession between regional employers; keeping contact with migrants and potential migrants and offering jobs and internships, training and entrepreneurship opportunities. (Kovács et al., n.d.)

Incentives in other policy areas are also effective in attracting in-migrants. In Valmiera (Latvia), incentives in the housing sector have been successful in attracting young professionals with families to the region. The municipality has built homes that are rented to young professionals and their families. They can rent a house for five years – a period that may give an opportunity to newcomers feel engaged in the local community and stay[54]. This project is implemented by the municipal company "Valmieras Namsaimnieks" who took a bank credit for 20 years to build the first two houses. There is a plan to build four more in near future. Valmiera is the first municipality in Latvia to implement this strategy and, after its success, the government and

[54] http://developvalmiera.lv/en/discover-valmiera/

Ministry of Economics is developing a special support programme to support other municipalities. Similar policy incentives have been implemented in TGS regions (see Text Box 6-4).

Text Box 6-4:The successful experience of Alzen, in the Pyrenées Ariégeoises

Alzen, a mountain village in the south-west of France, has managed to quadruple its population (from 60 inhabitants in 1972 to 260 in 2017) and became an attractive destination for new inhabitants, thanks to a policy to improve the way in which in-migrants are welcomed and to develop a socially and culturally more vibrant community. The inhabitants can find jobs in agriculture, public and private sector, and many are self-employed. Twenty people are employed at the Ecomuseum and 15 in the Naturalists of the Ariège association. 55 children are currently enrolled in the local school, which reopened in 1976 with only 4 students. The municipality purchased half the houses of the village (around 21) and transformed them into social housing, allowing families with low income to live there. This initiative is part of the policy to welcome newcomers. (Euromontana, 2018a)

The role of technology in attracting migrants should not be dismissed. The provision of good infrastructure, including efficient broadband as well as proper working places, could be a means to attract qualified workforce. Places where people can gather for work are creative environments that could foster the exchange of ideas and the establishment of networks (see Text Box 6-5)

Text Box 6-5: Edukontor, Kuraasaare, Saaremaa, Estonia

The Edukontor is a co-working space, located in the centre of Kuraasaare, that provides infrastructure for distance workers. People can rent a desk per hour or daily and enjoy the benefits of a working space with fast wi-fi and access to the lounge that enables meeting and mingling with fellow co-workers. Scientists and translators, film and craft lovers, project managers and nutrition advisers, photographers and make-up artists, drafters, lawyers, IT experts are part of this community[55].

A strategy for international migration can also play a role towards well-functioning labour markets in TGS, as it may allow combining the pursuit of territorial cohesion with improving integration of international migrants. The case of Nordland (see Text Box 6-6) shows how immigration has been included as regional development strategy in the region.

Text Box 6-6: Relocation and recruitment from abroad, Nordland, Norway

As a strategy to mitigate the long-term effect of outmigration, Nordland county established the project 'Tilflytting og rekruttering fra utlandet' (Relocation and recruitment from abroad).

[55] https://edukontor.ee/en/home-eng/

With the support of the Norwegian Labour and Welfare Service (NAV), the universities, and the Confederation of Norwegian enterprises (NHO), the municipalities of Nordland county employ strategies to attract immigrants that focus on qualifications for work, settlement and participation in social life. For example, to increase the attractiveness to settle on a long-term basis, Herøy municipality has developed a 'housing building school' which gives financial support to immigrants to build their own homes. As a means to integrate newly arrived migrants in the local community, the Nordland county sport association provides economic incentives to support sports activities. These strategies have proven successful, as many of the immigrants bring competences which are needed in the business sector in Nordland. (Harbo et al., 2017)

Having discussed the purposes of limiting out-migration and different strategies to attract newcomers, the following sections discuss how mobilities interact with less tangible aspects of the TGS (human capital, social capital and networks and entrepreneurship) and their effects in the labour markets in TGS.

6.3.2 Movements between different types of statuses in TGS

This section describes the movements between different types of status on the labour market from the perspectives of human capital, social capital and entrepreneurship

Human capital

Human capital refers to the knowledge and capacity of individuals and the social and economic value of these resources for local development (Becker, 1993). In this respect, human capital stresses the value of local community as a basis for the economy, and thus includes education and skills development.

In most of the case studies, the need to acquire new skills in order to catch up with new competences needed by companies was a recurrent issue. In Saaremaa, increasing unemployment rates among people in the 40-50 year age group was an indicator of the changes in the way that jobs are performed. According to an interviewee, the skills to perform particular jobs (e.g. accountant) have changed significantly with advances of Information Technologies. This has forced older workers, who were unable to adapt to emerging skills requirements, to exit the labour market.

Driven by the ongoing implementation of off-shore windfarms, Norfolk-Suffolk is experiencing economic growth. Nevertheless, only a few unemployed persons in the region have the skills required to fill the new jobs. The main concern is that the education sector does not deliver an education that is targeted enough to these new business needs, or to attract and retain the labour force.

Human capital development attuned to the skills required by local labour markets is fundamental for the economic sustainability of TGS. The University of the Highlands and Islands, in Scotland, has developed an number of inspiring solutions to address this issue. It not only provides qualifications needed by existing business, but also explores assets such as landscapes and cultural heritage around which new activities may be developed. Focusing on the shared characteristics of its mountainous and insular territories and on distance learning, this University has been key to the development of the region (see Text Box 6-7).

Text Box 6-7: Education in and about TGS – University of the Highlands and Islands

In Wester Ross, training to overcome the shortage of skills among the working age population is seen in the initiative developed by the Science Skills Academy, a partnership between Highland and Islands Enterprise, the University of the Highlands and Islands, and Highland Council and industry leaders. In this case, the government has joined efforts with private actors and academia to address imbalances in the local labour market.

In TGS that experience ageing, maintaining skills throughout each individual's lifecycle is a challenge that requires setting up accessible and high-quality opportunities for adult learning. Life-long learning increases the probability of employability at all ages and decreases the risk of detachment from labour markets (International Labour Office, 2018).

The potential of social capital and networks for TGS

Social Capital addresses several of the less tangible aspects, including features of social organisation, such as networks, norms and trust that facilitate the coordination and cooperation for mutual benefit (Putnam, 1993).

Atterton (2007) argues that peripheral regions are characterized by stronger informal networks. These may compensate for the lack of more formal information sources and, thus, act as sources of support and knowledge. This is relevant for small labour markets where demand and supply are limited, and working opportunities are likely to be influenced by personal and professional contacts. Moreover, as argued by Palloni et al. (2001), thicker social networks can also influence the mobility of workers. Looking at international migration, the authors claim that these networks provide important information for potential migrants and lower the risks of failure to integrate in the destination country. Social capital is also an important tool for affiliation. Common values and a strong sense of belonging and identity are important for the retention of people as well as for supporting return migration. For regional development, these networks are helpful in building up shared regional interests and efficient articulation between different stakeholders (Bürcher et al., 2015). In this respect, social capital and networks play a role for pursuing common development objectives in TGS.

A good example of a coastal area that makes successful use of its geographic specificity and social capital is Cold Hawaii in Denmark. After a period of economic stagnation, the region became a successful surfing area (see Text Box 6-8).

Text Box 6-8: Friends of Cold Hawaii association, Klitmøller Denmark

Due to surfing possibilities – 31 surfing spots considered some of the best in Europe – Cold Hawaii became a global brand and has changed the depressed area of Klitmøller, to an attractive surfing destination. The creative and innovative atmosphere particularly attracts young families with children from Denmark and from abroad. With a population of 950 people from 18 nationalities, the greatest challenge of the region is the shortage of housing for rental, as the young families do not initially buy a house. Efficient and fast broadband connection has been fundamental to boost the development of businesses. Fisherman and surfers have a close relationship and worked together to produce the first Cold Hawaii master plan for development. Negotiations between the municipality and local community are going on to produce a second master plan for the next 10–15 years (Jorsal, 2017).

In the context of governance, the Community Empowerment Act of Scotland, 2015, which has supported bottom-up initiatives, is of note. This Act gives the right to community bodies to make requests to local authorities and public bodies for land and buildings they feel they could make better use of. It has enhanced the decentralisation of power, enabling communities to take more control of local assets. By transferring the management and/or ownership of public land and buildings to a community organisation to deliver local social or economic benefit, this Act enhances the creation of stronger ties in communities. This can be implemented based on the LEADER method, now applied in the wider framework of Community-led Local Development (CLLD).

Text Box 6-9: Vi landsbyggare, High coast, Sweden

"Vi landsbygggare" ('We country builders´) implemented in the Swedish 'High coast' - in the municipalities of Härnösand, Sollefteå, Örnsköldsvik and Kramfors – involves 70 entrepreneurs and associations. This initaitive is committed to highlighting the potential development of coastal and peripheral areas. Projects include: improvements in broadband access to create good business environment for the region[56]; employing bottom up-techniques to create ideas, visions and cooperation to increase the attractiveness of the region as a place of residence and to attract visitors[57]; creating opportunities for young people to develop entrepreneurial skills and business ideas for rural areas[58]; and storytelling of people who succeed in the region. Branding the assets of peripheral areas and working on

[56] http://leaderhogakusten.se/bredbandsollefteå/

[57] http://leaderhogakusten.se/nora/

[58] http://leaderhogakusten.se/ung-landsbydsentreprenor/

self-perception to enhance the pride of being or becoming a “landsbyggare” is a strategy that challenges the mindset that only urban centres are able to offer conditions for innovation and development.

Entrepreneurship for a robust labour market

Despite arguments that peripheral areas are unfriendly environments for new and small firms due to marginality and low development (Friedmann, 1973), other studies argue that fringe areas offer favourable conditions for start-up (e.g. lower costs) (Van Horn and Harvey, 1998). Opting for an alternative to overcrowded, congested and polluted metropolitan areas is also appealing for entrepreneurs who focus on high quality of life (Florida, 2002)

Based on empirical data from ten rural peripheries in Europe, Kalantaridis (2004) grouped entrepreneurs according to their personal characteristics and motivations:

- opportunity-driven entrepreneurs are well-educated (typically with a university degree), with some management skills and previous start-up experience;
- necessity-driven entrepreneurs have access to limited number of employment options, do not have tertiary education and are usually unemployed before the start up;
- life-style entrepreneurs are not necessarily driven by economic motives, but rather wish to sustain or improve their professional and personal lives.

In Wester Ross, the latter type of entrepreneur was identified. Lifestyle businesses are common in the area: people open and run their small business in a way that suits them personally, rather than focussing on optimising profit. While these businesses can include the provision of attractive activities and products, e.g. sea kayak touring, the local authorities consider that coordination of these activities is insufficient. As a result, their availability is unpredictable, which has a negative impact, for example, on visitor experiences. This suggests that entrepreneurial competences should be built up in order to support the economic activities in the TGS. In this respect, the Nordic entrepreneurship islands project and modernisation of dairy activities in Slovenia are good examples (see Text Box 6-10 and Text Box 6-11).

Text Box 6-10: Nordic entrepreneurship islands

Understanding that entrepreneurial competences boost societal creativity and ideation, the Nordic entrepreneurship islands project, launched in 2015 by the Nordic Council of Ministers, maps the status of entrepreneurship education on seven Nordic islands. The objective is to ensure that young people at different educational levels will engage in entrepreneurship education at least once during their education, and that resources for student start-ups are available in the Nordic islands. In the long term, the ambition is that new companies will emerge as a result of these initiatives, and more students will obtain skills and competences that will enable them to create and establish new companies in the islands (Reffstrup and Christiansen, 2017)

Text Box 6-11: Modernisation of Planika Dairy, Kobarid in Slovenia

Supported by the ERDF, the modernisation of Planika Dairy was key to overcoming several challenges (e.g. outdated technology and high competition) and help the dairy become one of the leading producers of high-quality fresh milk and cheese in Slovenia. The dairy created a local mountain supply chain with high added value, that resulted in having a positive impact on the local economy and promoting the long tradition of the area in dairy production. The dairy is now a key producer of Tolminc cheese, with a protected designation of origin at EU level since 2012. Around 100 farmers annually supply approximately 8 million litres of high-quality milk. The museum of the dairy, created in 2010 with the aim of showing the tradition of mountain pasture, attracts 8,000 to 10,000 visitors per year, contributing to enhancing the positive image of Planika as well as promoting the rural heritage. In addition, the museum generated one full time-job and three people qualified as tourist guides, combining work at the museum with the local dairy market located near the dairy (Euromontana, 2018a).

6.4 Policy perspectives for a robust labour market in TGS

This chapter has attempted to answer the question "How to enhance the robustness of TGS labour markets in a context of increasing geographic mobility of workers, and more frequent changes of job and employment status?" It has been argued that mobilities and flows are fundamental to enhance robust labour markets in TGS, which are quite different from urban due to their reliance on surrounding areas. Knowledge about these flows and the identification of imbalances is crucial to empower actors to act to minimise instabilities in local labour markets. Focusing on this, the following subsections make proposals about how this analysis can inform discussions on the future of policies at different levels.

European Level

EU policies that promote employment could be more efficient if they consider the territorial dimension. In this respect, the use of the labour markets as a tool to improve sub-national employment should not be dismissed. The possibility to monitor labour market flows, regional commuting, skills mismatches, availability of human capital, and education mobility makes labour markets able to deliver knowledge about flows (in and out-migration), identifying imbalances in these flows and empowering actors to create strategies to react to these imbalances.

The territorial dimension could be included in existing policies such as ESF and YEI. The ESF, for instance, besides targeting disadvantage groups to get jobs, could also apply the requirements set out for territorial development. This would imply taking into consideration the long term objectives of the EU, such as polycentric territorial development, and prioritizing areas for financing employment-related projects (e.g. vocational training and lifelong learning opportunities; social housing).

The European Employment Service Program (EURES), which promotes integration between European labour markets through job-matching across borders and coordination between national employment services, could also take the specificities of territories as basis to enhance employment. Organising joint platforms, including beyond national borders, that provide information about available jobs and training opportunities in mountainous areas or islands could, for example, be a good alternative to attract people who have particular interests in the assets of these areas (e.g. surfing, climbing).

The European Social Fund Plus (ESF+) (European Commission, 2018f) that merges different instruments – ESF, YEI, Fund for European Aid to the Most Deprived (FEAD), Employment and Social Innovation programme (EaSI) and the Health Programme – with the aim of facilitating the implementation of the principles outlined in the European Pillar of Social Rights also needs some consideration. Among other challenges, the ESF+ aims to overcome the low labour mobility and underperformance of Active Labour Market Policies (Alabour market) and education systems. In this respect, the ESF+ mention the needs of supporting targeted mobility schemes to supply jobs where labour shortages are recognised, anticipating skills requirements, and guaranteeing timely and tailor-made assistance to backing labour market matching, transitions and mobility. These goals seem to offer possibilities to address some of the challenges of TGS labour markets. Nevertheless, while investments may help to deliver EU policy objectives, they are just the first step. The coordination of national, regional and local authorities is necessary, as well as the modernisation of labour market institutions and services. For example, the allocation of resources to enhance targeted mobility schemes requires continuously updated knowledge about labour mobility, including information on the qualifications and skills of the labour force, to better support labour matching and transitions. This requires, for example, availability of labour mobility data across Europe at NUTS3 level. As already outlined, matching the granting of ESF+ with the EU's long-term territorial objectives seems a promising avenue to align social and territorial objectives.

Creating value from the specificity through transnational networks could enhance the communication and exchange of good practices, thus helping islands or mountains in different parts of Europe learn from each other and to overcome challenges. Enhancing networks and exchanging good practices in these could highlight the added-value of the specificities of territories.

National Authorities

As discussed previously, the EU Member States play a key role designing policies that promote social and territorial cohesion.

General characteristics of labour markets in TGS, such as their small size and the vulnerabilities related to unbalanced mobilities to which they may be exposed, suggest that welfare policies can be efficient mechanisms to promote the robustness of these markets. These policies can moderate the negative effects of markets by offering incentives that help to retain and/or attract

labour force to TGS. As mentioned above, the Nordic Region has striven to enhance and maintain a more balanced territorial development by offering financial benefits for labour mobility to areas that lack particular competences. This has influenced peoples' decisions to move to peripheral regions and seems to have contributed to minimising the polarization of labour in central areas. Nevertheless, the effects of these incentives on labour mobilities needs further investigation. A systematic analysis on the effects of welfare systems on territorial cohesion would help to clarify when, in which circumstances, and to what extent welfare policies are effective addressing the challenges of outmigration and brain drain that many TGS face.

The impacts of digitalisation on working lives also needs further research. Member States have a dual role in terms of finding a balance between providing protection against potentially negative changes in the working patterns and, at the same time, promoting innovation. As Blix (2017) suggests, the impact of technologies and digitalisation on labour markets is related to the accumulated transitions of people entering and exiting labour markets as well as switching jobs. This reinforces the need to get more accurate information about these mobilities and to pay attention to how technologies and digitalisation affect the development of central and peripheral areas.

As Text Box 6-6 suggested, international migration polices can help to address shrinking populations and shortage of labour force in TGS. Pursuing territorial cohesion while improving the integration of international migrants seems to offer a win-win solution to territories that struggle to maintain their populations. However, this should be accompanied by strategies that promote the integration of immigrants to the local conditions. The involvement of regional and local authorities is essential for the successful engagement of the newcomers.

Regional and local authorities

The number of opportunities provided by increased mobility (people and resources) and advances in information communication technologies have impacts on how development policies at local and regional are designed. As the cases of Saaremaa and Cold Hawaii suggest, the provision of efficient technology infrastructure enables people to live in TGS and perform distance work helps to attract an independent and highly skilled labour force.

Nevertheless, some studies explore the negative aspects of technologies on labour markets, suggesting that automation will have a great impact not only on labour markets but also on patterns of territorial development. Reviewing the literature on the effects of digitalisation on labour markets, Randall et al., (2018) outlined that cities are still the places most likely to experience job creation and are less vulnerable to the automation of jobs. This argument suggests that the labour markets of peripheral regions are more exposed to the negative effects of digitalisation and automation. Nevertheless, as shown by the case study of Norfolk Suffolk, the region is booming with the constrution of off-shore windfarms; and other peripheral regions present great opportunities to engage in bio-economy due to their rich natural resources. The patterns observed by Randall at al. should not be interpreted in a deterministic way by policy

makers and stakeholders. TGS can take advantage of ICT when appropriate framework conditions are in place.

As some of the examples described in this report show, strategies to brand regions are needed to explore the relatively untouched and well-preserved assets of TGS. Effective communication about the culture, history, and nature could be valuable in generating inflows and employment opportunities for TGS. Nevertheless, awareness on the problematic relationships between branding (targeting potential newcomers) and working on self-perception (targeting locals) should be emphasised. The double and conflicting task for TGS – to be open to receive newcomers and investments and, at the same time, retain control of the sustainability of natural and cultural assets of the region – is not straightforward. There are unfortunately many examples of regions that struggle with the tense relationship between locals and tourists, who rather than perceived as visitors and source of income are seen as problems.

Aligning branding strategies with the local characteristics and ensuring that the infrastructure of TGS is able to cope with an inflow of people is advised to avoid these conflicts. In this respect, the participation of local community in decision-making is fundamental. As mentioned in the Wester Ross case study, devolution from national to regional and local levels is more likely to ensure that political decisions respond more efficiently to the local needs. Granting the local level more power to take decisions can trigger the effective participation of local people, enhancing thicker networks within the community while including local knowledge in development strategies (e.g. place-based solutions that explore local potentialities).

7 Module 3.2: Residential economy as a component of development strategies in TGS

7.1 Introductive elements

7.1.1 Policy issues

The EU has adopted the Europe 2020 strategy to promote “smart, sustainable and inclusive growth” as a way to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity, and underpin a sustainable social market economy (European Commission, 2010c). The objectives of this strategy have, in many cases, been transposed uncritically to the regional level, on the assumption that a competitive Europe would be achieved by maximising the competitiveness of all regions, where the level of productivity of an economy is “at the heart of competitiveness” (World Economic Forum, 2014).

This imperative may be difficult to transpose to TGS, especially for sectors that need to overcome challenges linked to geographic specificity. The objective of this chapter is to explore the different ways in which TGS may contribute to European competitiveness, productivity and sustainability. On this basis, the discourse on competitive export-oriented industries as the drivers of economic prosperity in European regions may be nuanced, and alternative approaches of specific relevance for TGS may be sketched. For example, while some TGS focus on exports of goods and services, others may focus on social functions such as leisure, childcare and elderly care. Showing the significance of the residential economic base helps to demonstrate that a wide range of economic development models may be adopted by TGS.

Table 7-1: Overview of relevant policies

	Policies
High level strategies	EU2020 strategy (inclusive growth)
Regulations – directives – legal instruments	
Legal instruments for governance, EU Funds	European Regional Development Fund (ERDF) European Territorial Cooperation (ETC) European Agricultural Fund for Rural Development (EAFRD): Local Action Groups (LAG) can target particular needs and priorities of their territory and develop small-scale projects.
Financial incentives and associated governance arrangements	

7.1.2 Characteristics of TGS

As illustrated by the case studies on residential economy, TGS tend to have some common characteristics. Most of them are portrayed as areas of low population densities with scattered local communities, and demographic trends of declining and ageing populations. The

insufficient critical mass results in the provision of a limited range of services of general interest. These areas also share several similarities in their economic profile. The vulnerability of the tourism sector is often referred to, e.g. due to strong seasonality, insufficient transport infrastructure or risks due to climate change. The weak degree of diversification of the local economy is another similarity; the most important sector is often tourism. The cultural and natural assets are recurrently mentioned main factors explaining their attractiveness as a place for secondary housing and tourism more generally.

It is important that TGS fully use their local assets and valorise the singularity of their territory to strengthen their local economy (e.g. natural assets, human capital, quality of life, local savoir-faire/knowledge), thus contributing to keeping their populations and attracting new inhabitants and tourists. However, mainstream EU policies, with an extensive focus on enhanced competitiveness, are not necessarily adapted to local situations. They contribute to encouraging local stakeholders to consider export-oriented activities as the drivers of local and regional development, including in situations where a focus on residential functions may be more adapted. It is therefore of relevance, especially for TGS, to gain a better understanding of the importance of inflows of incomes, generated by the presence of people in a region, for its economy.

7.1.3 Flows of income due to the presence of people

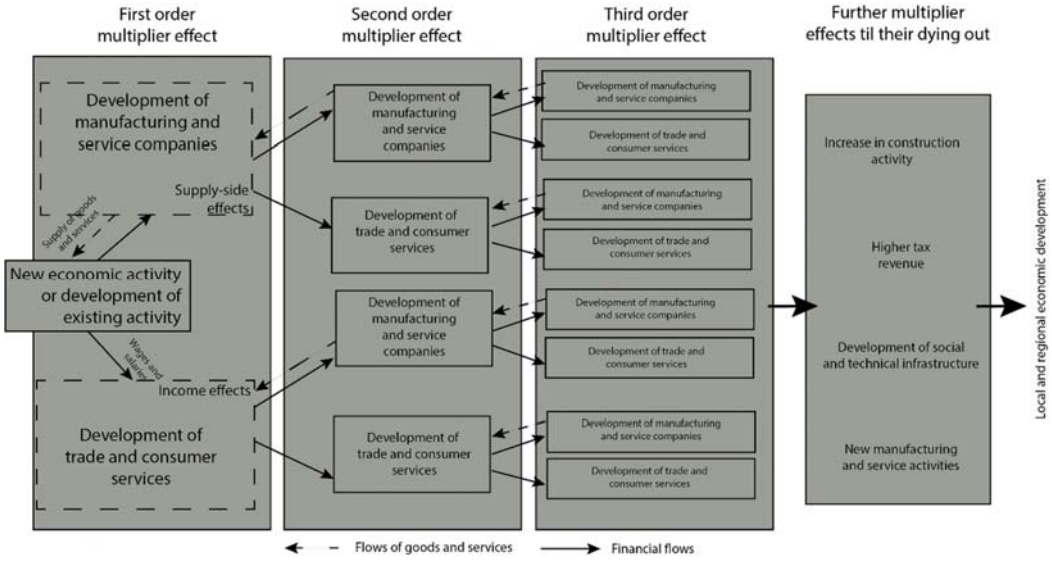
Traditionally, economic theory considers export-based activities as the main determinant of regional development. This is typically case for the theory of economic base, which divides economic activities into ‘basic activities’, targeting external markets, and ‘non-basic activities’, catering for internal demand. The underlying idea is that each additional job in the ‘basic’ sector will generate a certain number of ‘non-basic activities’ as a result of increased local demand for goods and services. This is an iterative process, as additional jobs in ‘non-basic’ sectors also generate increased demand for goods and services. However, according to traditional economic base theory, the initial impetus always comes from exports.

This idea has been increasingly challenged in the last decade, based on two types of observations (Davezies, 2008b). The first is that the mobility of commuters, students, tourists, retired people has increased, contributing to a larger disconnection between place of residence and place of income expenditure. The second is that the transfer of incomes, such as pensions and welfare payments, correspond to large share of household incomes. They can be particularly important in some regions. For instance, in some French regions, around a third of household incomes corresponds to pensions, e.g. in Creuse or Var (ibid.). These two trends contribute to dissociating the location of income production and the location of income spending – and also to strengthening the case for resorting to alternatives to traditional economic base theory, where the residential preference of individuals also drives regional growth. The increasing mobility of both the workforce and the residing population and their associated incomes contributed to shifting the focus of regional development. As an alternative, or in

addition, to measures to promote the development of competitive, export-oriented activities, regional development strategies may focus on providing attractive living environments, to draw economic benefits from incomes of households (salaries, wealth, annuities or transfers).

The relatively large share of these incomes associated to the presence of people contributes to the internal demand for goods and services of a territory, which then generate the development of local economic activities. An increase in income in a local economy generated by the emergence of a new type of economic activity is called the local multiplier effect (Domański and Gwosdz, 2010) . It is used to quantify the influence of a given economic activity on local and regional economic development (see figure 7-1).

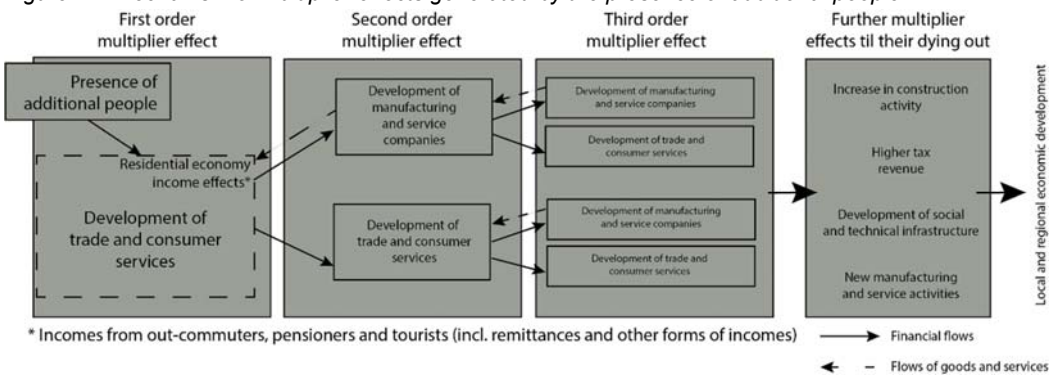
Figure 7-1 Mechanism of multiplier effects generated by new economic activity



(Adapted from Domański and Gwosdz, 2010)

It has been demonstrated that the service sector has a stronger local multiplier effect and is more locally oriented than the manufacturing sector (ibid.). Furthermore, local companies, which generally have important local linkages, have stronger local multiplier effects than large export-based companies (ibid.) These observations confirm the importance of the presence of both people and local economic activities for the development of the economy of a territory. Adapting the figure above for the concept of residential economy highlights the role of the presence of additional people and the associated multiplier effects on local and regional economic development (see figure 7-2). The incomes of out-commuters and pensions as well as the spending of tourists contribute to developing both trade and consumer services locally.

Figure 7-2 Mechanism of multiplier effects generated by the presence of additional people



(Own production, adapted from Domański and Gwosdz, 2010)

This chapter focuses on exploring the residential part of the local economy in TGS, keeping in mind its contribution to the overall territorial developments of the selected areas. The residential economy idea finds its legitimacy in the fact that people residing in a region generate economic activities and a demand for the provision of services locally. Studies on this basis and its importance in balanced regional development emerged in the academic sphere from around 2008 with publications in French language such as Davezies, 2008a, 2008b. However, the use of the concept of residential economy in only a couple of European countries (mostly in French speaking countries) and the existence of two definitions, each with a corresponding way of calculating the residential economy, have limited the use of this concept.

7.2 Methodological elements on the circulation of income associated to the presence of people in TGS

7.2.1 The local circulation of income

The updated version of the economic base theory (Davezies, 2008b) highlights the importance of inflows and outflows of income between a region and other territories (e.g. neighbouring territories, national level). The theory subdivides the economic basis of regions into four different sources of income:

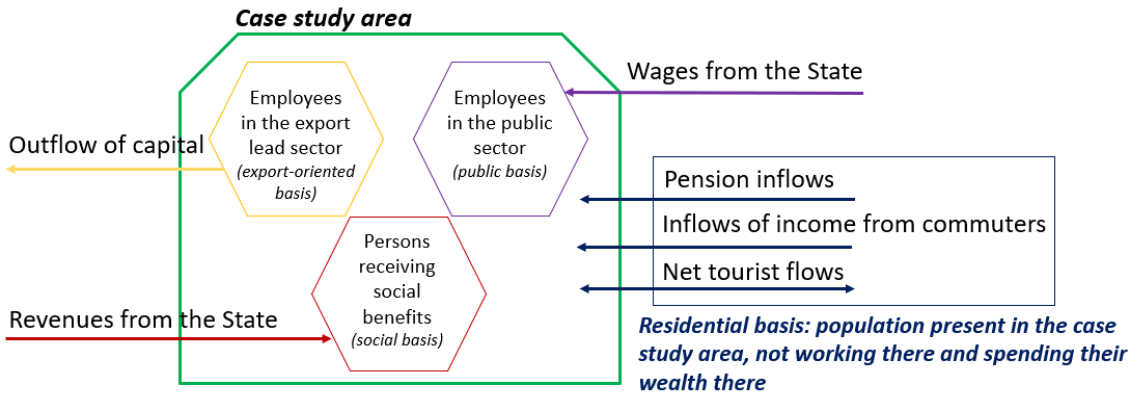
- productive basis: income from goods and services produced locally and to be distributed outside the local area,
- public basis: sum of wages in the public sector transferred from the State to the local area in jobs of the governments/ authorities, health and education sectors,
- social basis: transfer from the State or the region to the local population in the form of unemployment benefits, housing allowance, etc.,
- residential basis: income generated as a result of consumption of goods and services by people who live or stay in the local area without being economically active there.

The focus of this chapter is on the last of these 'bases'. Different population groups may contribute to the residential economy:

- out-commuters bringing their wages to their home area,
- pensioners with their pensions transferred from the State to their place of residency;
- second home owners, who spend income generated in the area where they have their primary home;
- freelancers whose activity is generally not linked to physical presence in any specific place;
- tourists consuming goods and services.

Figure 7-3 schematises the main flows of these four components.

Figure 7-3 Flows of incomes in the local economy



The residential basis of the local economy grew in importance in the 1980s due to a general increase of people´s mobility as well as the increase of transfer incomes (Segessemann and Crevoisier, 2013; Talandier, 2015a). It is enhanced by economic flows generated outside the local area and mostly used within the local area.

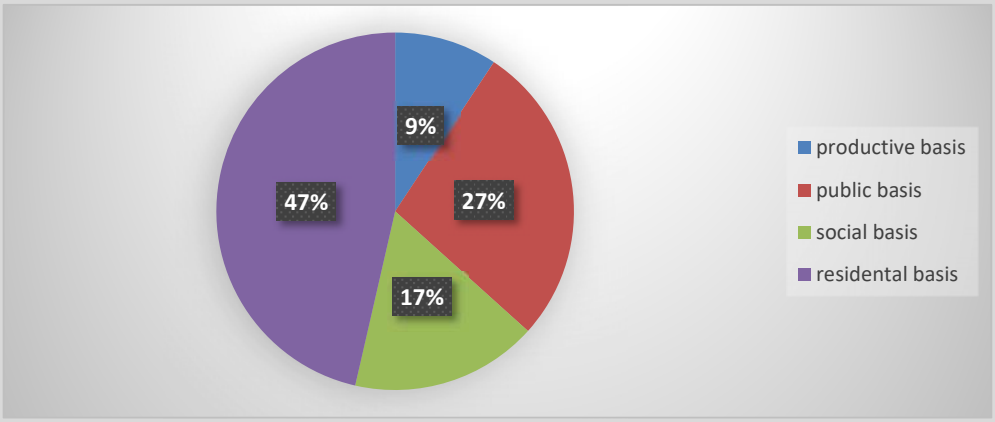
Analyses of economic development at local levels, e.g. TGS and administrative regions, tend to use the traditional methods on looking at revenues created in specific places. However, territories have seen a double disconnection – between workplace and place of residence, and between production place and consumption place – resulting in important flows of revenues that people bring from their workplace, where they earn it, to their place of residence, where they consume it. The location of where the revenues are created becomes less relevant for analysing the economic development of a territory. Such analysis should rather have a stronger focus on where these revenues are spent, including elements on the corresponding flows between wealth creation and wealth consumption.

7.2.2 Economic activities generated by the presence of people

The residential economy represents the largest economic basis of the local economy (basic sector). Studies on French labour market areas (Davezies, 2008c, 2009) have shown that the export-oriented basis accounts for 19%, the public basis for 13%, the social basis for 12%, and the residential basis for the largest share of the local economy, i.e. 55% with an average of 42% in urban areas (ibid) and 62% in rural areas (Talandier, 2015b).

Text Box 7-1 The four economic bases in Vågan in Nordland county in 2016, Norway

Data from Statistics Norway provide a good basis to assess the importance of the four economic bases in the case study of Vågan, Norway. The residential basis makes up to almost half of the income flows in the local economy. These incomes correspond to out-commuters bringing their wages to their home area; pensioners with their pensions transferred from the State to their place of residency; and tourists consuming goods and services. In the specific case of Vågan, the largest contribution of the residential economy is made by tourists (41%), then pensioners (37%) and commuters (25%).



The share of the residential basis of the economy in the TGS is closely linked to its cultural and natural assets (e.g. quality of life, landscape quality, housing quality) and the existence of services on its territory that are enjoyed by the population groups present. The uniqueness of TGS makes them attractive places to live, move to, and visit. The case studies have highlighted that the share of the residential economy is more important in the TGS than their closest urban areas and the average value of the regions in which they are located. The shares of public and social basis are rather similar between TGS and other areas, whereas the share of the export-oriented basis is often lower in TGS than other areas; often explained by a weaker industrial structure. Two points are worth mentioning:

- None of the selected case studies is dominated by an important use of natural resources (e.g. mining or fishing). Such cases would have probably shown different figures, with a more important part of the export-oriented basis.

- Tourism is part of the residential basis. However, it can be seen as being an export-oriented activity in the sense that people come to “consume” tourism as an export-product and tourism places are in competition with one another.

Furthermore, the agglomeration effects in the local economy hardly apply in TGS, where there is often a lack of critical mass or concentration of forces. Indeed, focusing on this concept as a solution for the territorial development of TGS and applying similar concepts of competitiveness in TGS as is done in metropolitan areas might not be fruitful. Hence the need to look at alternative approaches and concepts more applicable in TGS such as residential economy.

7.2.3 Challenges about the concept of residential economy

The residential economy, even if this concept is not explicitly mentioned, has been an important component of regional development. However, with the strong discourse on competitiveness and the importance of export-related activities, the residential economy has been neglected.

A number of issues related to the complexity of the data analysis for studying the concept of residential economy might have contributed to the neglect of this concept. The issues include the limited availability of data on total income by sector of activities at local level: such data is often only public available at national level. Some countries (e.g. Norway) publish this type of data at local level, but it is not possible to perform analyses on total income by sector in TGS in several European countries. A common proxy for the analysis of the residential economy corresponds to analysing the total number of jobs by sector, as this gives some pertinent results. However, comparison of territories, including TGS, located in different countries can be complicated. For instance:

- It is not always straightforward to identify which sectors or activities are export-oriented. Previous analyses have used the size of the company (in number of employees) as an indicator of its export likelihood.
- Sectors are organised differently in countries across Europe. Segessemann (2016) illustrates this issue by comparing the organisation of the banking and retail sectors in (federal) Switzerland and (centralised) France. Banks are organized regionally in Switzerland and nationally in France, and this is also the case for most of their retail sector. This creates some confusion regarding what to include when analysing the theory of the economic base, i.e. what to include in the export-based and the residential bases (ibid).

7.3 Potentials and challenges of attracting population´s incomes in TGS and identification of best practices

The case studies have shown some recurring patterns in many TGS with respect to the residential economy (see table 9-2). Many tend to have a relatively important tourism sector, an ageing population with specific needs, and a high proportion of out-commuters. When

considering individual situations in closer detail, TGS situations with respects to residential economy are particularly diverse:

- Some have a strong export-oriented sector, often based on natural resources (e.g. fisheries, forestry). In these cases, the residential economy tends to be relatively weak.
- Some have very limited export-oriented activities, and primarily function as tourism destinations with large proportions of second homes. The residential economy is in these cases particularly strong.
- TGS areas close to urban centres often have extensive out-commuting, which tends to strengthen the relative importance of the residential economy locally.
- Diverse effects of the balance between residential economy and export economy on the housing market are observed. In particularly attractive TGS areas, real estate prices increase considerably, to the extent that young local people may find it difficult to stay. Other, more remote, TGS areas have insufficient demand to occupy available houses.

Table 7-2: Case study overview

	Services to residents	Complementary with their surroundings	Housing challenges	Precarious jobs	Vulnerable natural and cultural assets
Inland Cote D´Azur, France		X			
Wester Ross, Scotland	X		X		X
Apuseni mountains, Romania		X		X	
Algarve, Portugal			X	X	X
Tatra mountains, Poland		X			X
Nordland, Norway		X		X	
Wadden islands, The Netherlands-Germany			X	X	X

7.3.1 Potentials for TGS

7.3.1.1 Services to residents

A number of sectors of the local economy are directly linked to the demand of the local population (residents and visitors). In TGS where the relatively small size of local communities often means that the critical mass for a number of services cannot be reached, the number of

visitors is considered as a means to reach the level of critical mass and increase the local multiplier effect. The services in question are mostly in the sectors of health care, retail, transportation of passengers, retail, and leisure.

Text Box 7-2 The importance of visitors in supporting the provision of services in the Wadden islands

Pensioners and tourists on the Wadden islands generate demand for different cultural activities, shops, restaurants, cafés, cleaning services, public transport, guided tours and health care services, among others. The presence of these population groups contributes to higher density of services per inhabitant and demand for these services on the islands than elsewhere in the Wadden area, resulting in a relatively good level of service provision on the islands and a good quality of life. Given the low populations of most islands, many services would not be present without the presence of pensioners and tourists, i.e. groups constituting the residential economy. As such, understanding the potential in attracting people and their associated incomes to a region as a way to both support the provision of services that would not be present otherwise and create jobs is of relevance for the regional development of TGS.

7.3.1.2 Complementary with their surroundings

A better integration of TGS within their regional context has been mentioned as a way to achieve more balanced regional development, as well as stronger economy in the TGS. This integration is not only in the sense of development infrastructure (transport and broadband), but also in complementing the natural and cultural assets of the TGS with offers of job opportunities in regional labour centres.

Text Box 7-3 Better integrating the TGS with its surroundings

In Vågan, Norway, policies must address the spatial dimension of linking peripheral regions and TGS better with the dynamics of urban centres and agglomeration processes supported by cluster initiatives. In order to succeed, this must be combined with investments in communication infrastructure and services supporting regional enlargement and diversification.

Similarly, complementarities between the ‘residential’ inland and the more ‘productive’ coastal zone in the Inland Côte D´Azur can be used as a lever for more sustainable regional development. The ‘residential’ inland provides recreational areas, biodiversity, water and energy. Areas with a predominant ‘residential’ function can therefore be a legitimate component in a typology of zones with complementary functions for regional development. The relative importance of ‘redistributive’ sources of income in these areas is, from this perspective, not a weakness, but merely a reflection of their specific role in overall regional development.

7.3.2 Challenges for TGS

7.3.2.1 Housing challenges for low-paid workers

The quality of the natural environment is one of the reasons that attracts people to settle in TGS. However, the possibility of finding cheaper housing options, when available, can also be an important factor. A number of particularly attractive TGS (e.g. certain 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.

Housing seems to be one of the main common challenges across the case studies. Its limited availability can be explained by specific characteristics of their territory, such as physical constraints (e.g. mountainous or sea areas) or local planning rules (e.g. presence of natural park), among others. The limited number 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, as highlighted in the Wadden Islands and Algarve. Finding an appropriate housing solution is an issue within the TGS, creating an in-commuting labour force rather than a locally resident labour force.

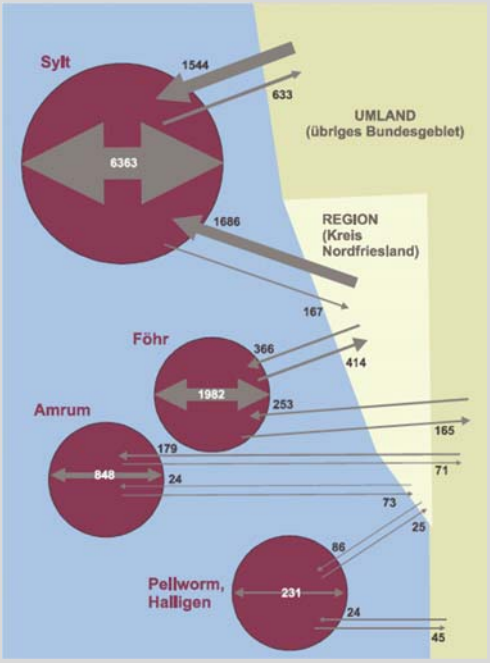
Text Box 7-4 Housing issues in Wester Ross, Algarve, and Wadden islands

The need for increased housing stock was emphasised by interviewees in the case study of Wester Ross. One explained that the productive sector was struggling to recruit employees due to a lack of housing in the area. Much available housing is bought by people retiring to Wester Ross or used for tourism and as second homes. This is considered a barrier to balanced rural development in the area. Another interviewee noted that a consultation was underway for the development of affordable housing, but this needs to be a greater priority.

In the Algarve, the inflow of tourists and foreign pensioners with higher financial resources than the local active population contributes to increase housing prices along the coast, resulting in a need of relocation of the local active population further from the coast, where properties are more affordable.

An interesting finding, in contradiction with the scientific literature, was highlighted in the case of Wadden islands. Areas characterised by a large share of the residential basis of the local economy usually see an important outflow of commuters towards neighbouring labour markets. However, important commuting inflows were actually highlighted in the case of the German North Frisian Islands, a sub-area of the Wadden Islands. The in-commuting is actually greater than the out-commuting flows. This situation can be partially explained by the combination of a shortage of affordable housing on the island and the relatively low salaries in the tourism sector, forcing some of the employed persons in this sector to find a housing solution on the mainland and commute to the island (see Figure 7-4).

Figure 7-4: Commuter flows between the German North Frisian islands and the mainland in 2003



(*Source: urbanus, 2007)*

7.3.2.2 Vulnerable natural and cultural assets

The residential economy relies on the cultural and natural assets of territories, making them attractive places to live in or visit. The cultural and natural assets of TGS makes them unique. However, these assets can be quite vulnerable (e.g. loss of craftmanship techniques due to absence of knowledge transfer, or lack of snow in ski resorts due to climate change) and can hardly be replaced if lost. It is therefore important to approach the residential economy with a long-time perspective (e.g. how to sustain the local knowledge), particularly when considering the very important increase in the number of tourists in TGS in the last decade which, in some cases, has negative impacts on the quality of the place (e.g. degradation of protected areas).

Text Box 7-5: Vulnerable natural assets due to tourism in Tatra mountains

The mountainous TGS character of the case study area is largely perceived as a value and an opportunity as it helps attract tourists and income and is also closely linked to Podhale's rich cultural heritage. The local economy benefits greatly from touristic popularity of Tatra and Podhale, hence the dominance of residential economy. Because tourism is the source of prosperity for the area, it may also be the reason why negative impacts of intensive tourism, such as its environmental impact or the possible threats of the economic dependence on tourism, are to some extent ignored or not considered as important and there are very few examples of supporting productive economy through diversification.

7.3.3 Towards productive-residential systems

Empirical studies have shown that regions that succeed at combining prosperous export-led industrial activities with residential attractiveness , the so-called productive-residential system, have a more resilient local economy and local communities (Talandier, 2012). It is therefore believed that local strategies in TGS should include both the export-based and residential economy in local strategies, instead of having them separated. It does not mean that both bases should have a similar share within the local economy; rather, the right equilibrium between the export-based and residential basis would need to be found for each distinct case.

For instance, the “productive-residential centres”, highlighted in a typology of municipalities in Switzerland (Segessemann and Crevoisier, 2015), which correspond to rural spaces having an intensive productive activity above the Swiss average, are regions attracting more income than exclusively productive and residential areas. Similar results were found in Rhone-Alpes (France), where Annecy, characterised by its balanced productive-residential profile, has a successful development and a tangible social cohesion (Région Rhône-Alpes, 2012)

Having the two approaches included into one document can contribute to another beneficial outcome for the local development of a territory: the identification of transversal axes that are relevant for these two bases of the local economy. These transversal axes can, for instance, correspond to a territorial marketing strategy aiming at attracting companies as well as residents and visitors; another example corresponds to investments in infrastructure projects impacting both the quality of life of residents and the needs of export-led companies (Saint-Malo Agglomération, 2016).

7.4 Policy perspective and recommendations

As noted above, the objectives of the EU 2020 strategy have often been transposed uncritically to the regional level where an export-led economy is seen as the driver to achieve competitiveness (World Economic Forum, 2014), and this may be difficult to transpose to TGS. On this basis, the discourse on competitive export-oriented industries as the drivers of economic prosperity in European regions may be nuanced, and alternative approaches such as residential economy may be put higher on the agenda. Showing the significance of the residential economic base helps both to demonstrate that a wide range of economic development models may be adopted by TGS and to change the perception that territories without export-led economies are low-performing.

The following list of recommendations is based on potentials and challenges identified in the seven case study areas, as well as other sources. The recommendations aim at providing paths for reflection and action to policy-makers and stakeholders interested in how the presence of people on a territory contributes to the local economy.

1. **Gaining insight on the territorial implications of the residential economy in TGS.** This study has explored the relative importance of the residential economy and the associated local multiplier effects, in the context of regional development in a selected number of seven TGS areas across Europe. However, are these cases representative of TGS across Europe? Additional knowledge is required before assessing the possible generalisation of the resulting insights. Increasing the availability of data on income flows would make it easier to assess the extent to which the presence of population may impact local economies.

2. **Creating the conditions for a better regional integration of TGS**. TGS and other territories within an administrative or functional region should be able to find a possibility to reflect on how to best use their own specificities in more complementary ways. In the case of the residential economy, mapping the places of origins and destinations of incomes flows towards TGS would help to better understand the functional area(s) in which the TGS is located. This would highlight both agglomerations in central areas of this functional region capitalising on economies of scale, allowing for a concentration of export-oriented economic activities; and less dense territories with natural and cultural assets, allowing them to focus on housing and social functions. This recognition, which partially fits into the notion of productive-residential systems, would contribute to an overall balanced and sustainable development.

3. **Seeking synergies between different economic sectors**. The small scale of the activities in TGS, as well as their often seasonal characteristics, could be seen as good conditions giving the local population opportunities to gain incomes from different sources (e.g. a farmer having income from his agricultural activities, selling products to tourists and local people, and using parts of his/her housing as accommodation for seasonal tourists or workers).

4. **Resolving the housing challenge**. The lack of affordable housing for low-income households has been highlighted as one of the main challenges in TGS. Hence the development of housing options, such as regulations on the number of social housing units would allow lower-paid workers to settle in TGS. Other measures, such as the introduction of a local tax on second homes or the limitation of the number of housing units for tourists, could be envisaged as ways to balance a housing market in TGS.

5. **Keeping a critical mass by attracting new residents and tourists.** Keeping a certain number of people present in the TGS contributes to ensuring that a reasonable level of

services continues to be provided locally. Marketing campaigns and fairs outside the TGS to advertise these territories as places with good living conditions, thanks to their natural and cultural assets and their local social networks, do show some positive impacts. Also, entrepreneurship funds can be seen as an instrument to attract new residents to work in TGS.

6. **TGS as living laboratories.** Thanks to their relatively small scale in terms of population, their physical delineation (e.g. coasts, mountain), and their relatively limited accessibility compared to other areas in Europe (e.g. limited number of bridges and roads), TGS could be seen as territories to further study the importance of the presence of people for their local economy. Topics for research could, for instance, include how local currencies may enhance multiplier effects in TGS economies, TGS as test zones for the introduction of welfare instruments, such as basic incomes, or territories for implementing self-sustainable development strategies.

7. **Supporting a tourism-dominated economy towards more diversification.** Support should be given to TGS dominated by tourism activities to enhance integration with other sectors, for example agritourism and industrial tourism. This support should aim both to make the tourism sector more sustainable and to consider which other sectors could complement tourism within the local economy to make it more resilient (see module 1.2 on sustainable tourism). In the context of the residential economy, the contribution of tourism to the local economy could be discussed to find the best ways for TGS to benefit from the tourism sector (e.g. sharing economy rental platforms might benefit local economies more than hotel chains owned and managed by actors outside TGS).

8. **Creating the conditions for stakeholders to discuss the importance of the presence of population for their local economy**. Empirical findings on the significance of the presence of population in the economy of a TGS are a necessary first step. However, these empirical findings need to be further used when discussing the role of TGS in regional development. A forum for stakeholders involving regional development analysts would help to assure that empirical findings are both understood and used by stakeholders.

8 Module 4.1: Biodiversity conservation and sustainable development in TGS

Biodiversity across Europe has been shaped by land management practices for several centuries. Trends of reduction in diversity and restrictions in species range have become an increasing concern as anthropogenic impacts have intensified over recent decades. The drivers influencing biodiversity differ across Europe, but there are commonalities within TGS. Here we consider the value of understanding the influence of management and policy on biodiversity protection in TGS.

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 (EEA 2010). Isolation from other islands and the mainland is the main reason why many islands are 'hotspots' (Wong et al., 2005); 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) undevelopedness and d) scale. These qualities are mapped along continua (European Commission, 2013c). Much of the area of Europe's mountains is also identified as having high levels of wilderness qualities (Carver and Fritz, 2016). It is important to note that 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. In spatial terms, two approaches to the conservation of biodiversity can be recognised. Until the last quarter of the previous century, the primary focus was on protecting ecosystems and landscapes through 'top down' approaches: "Nature in, people out" (William M., 2004: 9). National governments established protected areas (national parks, nature reserves, etc.) based on scientific criteria, with little consideration of the interests of local communities or wide consultation. This approach also applies to the establishment of Natura 2000 sites under the EU Habitats and Birds Directives – parts of Europe's green infrastructure. More recent – and more 'bottom up' – approaches to biodiversity conservation have been initiated by local/regional governments. These include both regional (nature) parks (Köster U, 2016) and biosphere reserves, which are subsequently proposed to, and designated by, UNESCO (Hoppstadius and Dahlstrom, 2015; Kratzer A, 2017). Such approaches recognise that:

- biodiversity is an ecosystem service and therefore needs to be considered in the broader context of sustainable development in relation to not only environmental, but also social and economic goals;
- biodiversity is a key element of local and regional landscapes, essential in defining the (place) identity of communities and regions;
- a wide range of stakeholders across multiple sectors must be involved in designating and managing all of these different types of areas.

These two approaches are, however, not mutually exclusive. All biosphere reserves contain legally protected areas and, as noted by Hammer and Siegrist (2016:18), "regional parks, biosphere reserves, UNESCO World Heritage Sites and national parks are today regarded as instruments of regional development in mostly peripheral rural areas". Perhaps paradoxically, while wilderness areas are recognised for their intrinsic values (e.g., naturalness and relative lack of development), they also have potential for rural development (Bauer et al., 2017; Lienhoop N, 2016), especially through tourism, for example, by the European Wilderness Society[59]. Bringing these elements together, Hammer T and Siegrist D (2016b) noted various key needs for the various types of areas described above: to be integrated into regional planning; for better cooperation with nearby urban areas; and for linking park objectives and activities with regional development.

The case study synthesis for this module illustrated the roles of biodiversity in different TGS. Each case study contains different configurations of protected areas and governance mechanisms which influence the management of natural resources and the extent to which biodiversity management was integrated with other land use objectives.

This chapter explores the policy context for the conservation of biodiversity, considering how global and EU policies have been interpreted and implemented at national, regional and local levels and to what extent the relevant polices, plans and actions are considered in the sustainable development of TGS. For example, the concepts of Ecosystem Services and Natural Capital are common parlance in global and EU policy development (Guerry et al., 2015), but the extent to which these concepts have been applied to decision making in TGS is discussed.

A key theme is the integration of biodiversity conservation with other land uses important for development in TGS. Tourism, agriculture, forestry, fishing and aquaculture are all important activities in TGS. It is important to take an integrated approach in the development of sectoral activities in order to establish a clear understanding of synergies and trade-offs. Decision making that takes multiple interests and objectives into account requires high-quality data, decision support tools, and motivated cooperation between stakeholders at a range of levels (local, regional, national and transnational).

[59] http://wilderness-society.org/

Policies, networks, and projects at different scales that are relevant to biodiversity conservation, particularly in the context of sustainable development, in TGS are described below. Recommendations are provided as to how existing policies may help improve biodiversity conservation in TGS and how the findings from BRIDGES may inform future policy development.

Text Box 8-1: Biosphere Reserves as a strategy for sustainable development in Alto Turia and Wester Ross

National frameworks are often viewed as rigid and inflexible structures that are not straightforward to implement at regional and local levels. This tension was highlighted in Alto Turia, where stakeholders feel that policy processes are dictated by people who do not have knowledge of specific territorial challenges and characteristics. Stakeholders described a need for more flexible structures that can easily be adapted to the needs of the territory and the creation of frameworks of trust where stakeholders have a clear role. The main local policy process in place for contributing to the sustainable use of biodiversity in Alto Turia is to develop a proposal to UNESCO for the designation of a biosphere reserve, which is being pursued as a local development strategy for the area.

Wester Ross Biosphere was created in 2016 and is considered an important way of achieving conservation action as part of landscape scale sustainable development. Valuable work is ongoing to bring together stakeholder networks and understand local issues, but other funding sources are required to address conservation challenges. Wester Ross Biosphere is a partner in the SHAPE (Sustainable Heritage Areas: Partnerships for Ecotourism) project, which is funded by the European Commission's Northern Periphery and Arctic Programme. Through this, the Biosphere is developing a Destination Management Plan to establish more sustainable tourism based on the natural and cultural heritage of Wester Ross.

8.1 Policy Context

8.1.1 Global context

Many global conventions address issues relating to biodiversity (Convention on Biological Diversity, n.d.). Most comprehensive is the 1992 United Nations Convention on Biological Diversity (CBD), which aims to ensure the conservation and sustainable use of biodiversity on the planet. In 2010, the Parties to the CBD approved a Strategic Action Plan for 2011-2020. Its vision is that "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people." The plan includes the 20 Aichi Biodiversity Targets, to implement five strategic goals: A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; B: Reduce the direct pressures on biodiversity and promote sustainable use; C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; D: Enhance the benefits to all from biodiversity and ecosystem services;

E: Enhance implementation through participatory planning, knowledge management and capacity building (Conference of the Parties to the Convention on Biological Diversity, 2010). The Parties agreed to translate this overarching framework into national biodiversity strategies and action plans (NBSAP) and to report regularly on their implementation. With regard to TGS, the strategic action plan states that the already established programmes of work for island, mountain, and coastal and marine biodiversity (Convention on Biological Diversity, n.d.) should be considered key tools to be considered in the updating of NBSAP.

It is recognised that rigorous scientific knowledge should underpin the implementation of the CBD at all spatial scales. A first global activity in this regard was the Millennium Ecosystem Assessment (MEA), which was also designed to support other global conventions: on desertification, migratory species and wetlands (the Ramsar Convention) (Millennium Ecosystem Assessment, 2005). The global assessment of the MEA (Hassan et al., 2005) included chapters on coastal, island, marine, and polar ecosystems. In 2012, the UN's Member States established the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) as a response to the failures to halt environmental damage and biodiversity loss (failure to meet the 2010 biodiversity target). Operating as an independent intergovernmental body in support of the CBD, IPBES recognises the need for coordinated international research that brings together the natural and social sciences. Its work includes: **assessments o**n specific themes, methodological issues, and at both regional and global levels; **policy support;** bu**ilding capacity and knowledge**; and **communications and outreach. The first regional and global assessments are currently in preparation** (IPBES, n.d.)**.**

More recently, in 2015, the United Nations General Assembly agreed Agenda 2030 (United Nations General Assembly, 2015), Linked to this global agenda are the Sustainable Development Goals (SDGs), of which two are of particular relevance for biodiversity in TGS: 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development); and 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainable manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss), under which the 'conservation, restoration and sustainable use of mountain ecosystems and their services' are specifically mentioned.

All of these documents and initiatives, and many others at the global scale, recognise the need for fully integrating the conservation of biodiversity into strategies for sustainable development. As noted in the introduction, this has meant a shift from a focus on protected areas to approaches that operate at wider scales and in wider contexts, explicitly considering the needs of local people. In this context, a further global intergovernmental programme should be noted: UNESCO's Man and the Biosphere (MAB) Programme, with its World Network of Biosphere Reserves (WNBR). Each biosphere reserve includes at least one protected area, but covers a wider landscape; and a wide range of stakeholders are involved in governance. The current Strategy and Action Plan for the MAB Programme, to 2025, explicitly link biodiversity conservation to the implementation of the SDGs (UNESCO, 2017). A key focus of the MAB

Programme is to facilitate the exchange of knowledge and experience between members of the WNBR. Over half of these, including many in Europe, are in mountains (Austrian MAB Committee, 2011); and among the thematic networks is the World Network of Island and Coastal Biosphere Reserves (World Network of Island and Coastal Biosphere Reserves, n.d.).

8.1.2 EU context

EU Biodiversity Strategy

The EU Biodiversity Strategy reflects the commitments of the EU under the CBD (European Commission, 2011). It aims to halt the loss of biodiversity and ecosystem services in the EU by 2020, and includes the following vision: "By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided". The strategy contains six targets and 20 actions. The six targets cover:

- Full implementation of EU nature legislation to protect biodiversity
- Better protection for ecosystems, and more use of green infrastructure
- More sustainable agriculture and forestry
- Better management of fish stocks
- Tighter controls on invasive alien species
- A bigger EU contribution to averting global biodiversity loss

Bern Convention and EU Directives

The Council of Europe's 1979 Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention) aims to ensure the conservation and protection of wild plant and animal species and their natural habitats, increase cooperation between contracting parties, and to regulate the exploitation of those species (Council of Europe, n.d.).

The 'Birds and 'Habitats' Directives together form the backbone of the EU's biodiversity policy through the protection of Europe's most valuable species and habitats. The Birds Directive (first adopted in 1979, updated in 2009) protects the 500 wild bird species naturally occurring in the EU. Member States must designate Special Protection Areas (SPAs) for the survival of the most threatened species and all migratory bird species (European Commission, n.d.). To meet the obligations of the Bern Convention, the Habitats Directive was adopted in 1992. It aims to maintain biodiversity across Europe and "protects over 1000 animal and plant species and over 200 habitat types of European importance (European Commission, n.d.). Under the Directive, Member States are expected to "maintain or restore protected habitat and species at a favourable conservation status. Protected sites designated according to the presence of priority species or habitats under the Habitats Directive are known as Special Areas of Conservation (SACs). Together with SPAs, they form the EU-wide network of protected areas, Natura 2000, which includes both nationally-designated protected areas and a large proportion of privately-owned land (European Commission, n.d.). With regard to TGS, the importance of mountains for conservation is shown by the fact that 43% of the total area designated under Natura 2000

is in mountain areas, compared to 29% for Europe as a whole (European Environment Agency, 2010). Comparable figures for other TGS are not available.

Relevant for coastal and island TGS is the Marine Strategy Framework Directive (MSFD) (European Commission, n.d.). This outlines a framework for an ecosystem-based approach to the management of human activities which supports the sustainable use of marine goods and services. The overarching goal is to achieve 'Good Environmental Status (GES) by 2020 across Europe's marine environment; a further requirement is the establishment of Marine Protected Areas (MPAs) for the protection of the marine environment and sustainable use of marine resources (European Environment Agency, 2015a).

Table 8-1: Overview of relevant policies for biodiversity conservation and sustainable development in TGS

	Policies
High level strategies	Millenium Ecosystem Assessment (MEA, 2005) Intergovernmental Platform on Biodiversity and Ecosystem Services (2012) Sustainable Development Goals (2016) UNESCO Man and the Biosphere (MAB) Programme (1971) EU Biodiversity Strategy (2011) Action Plan for the European Union Strategy for the Danube Region (EUSDR, 2011) The Action Plan for the European Union Strategy for the Adriatic and Ionian Region (EUSAIR, 2014) The Action Plan concerning the European Union Strategy for the Alpine Region (EUSALP, 2015)
Regulations – directives – legal instruments	Convention on Biological Diversity (CBD, 1992) Ramsar Convention on Wetlands of International Importance (1971) The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1982) Birds Directive (1979) Habitats Directive (1992) Marine Strategy Framework Directive (MSFD), Water Framework Directive, 2000) Alpine Convention (1995) Carpathian Convention (2003) Danube River Protection Convention (1998) Barcelona convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (1995) Convention on the Protection of the Marine Environment of the Baltic Area Sea (1992)
Legal instruments for governance	Natura 2000
Financial incentives and associated governance arrangements	LIFE programme (1992) Common Agricultural Policy (CAP) Natural Capital Financing Facility (NCFF, 2015)

A further directive for biodiversity conservation is the Water Framework Directive (European Commission, 2000). As this aims to ensure healthy aquatic ecosystems while maintaining a balance between water/nature protection and the sustainable use of water resources, there are

both synergies and conflicts between this and the Birds and Habitats Directives (Janauer et al., 2015).

LIFE programme

The main financial instrument for supporting environment and nature conservation projects in the EU is the LIFE programme, which addresses both Environment and Climate Change (European Commission, n.d.). Nature and Biodiversity projects focus on implementing the Birds and Habitats Directive and the EU Biodiversity Strategy. Other sub programmes include environment and resource efficiency projects that develop and test approaches to address environmental challenges, and environmental governance and information projects that focus on knowledge exchange. Funded projects include many focused on habitats relevant to coast, mountain and marine TGS[60]. Integrated LIFE projects help Member States implement key EU legislation by providing funding for plans, programmes and strategies developed on the regional, multi-regional or national level. These have included a focus on implementation of management in Natura 2000 sites. For example, the LIFE – IP 4 NATURA project aimed to formulate and implement site management plans and species action plans in four regions of Greece where fewer than 2% protected areas had a management plan. The GRIP on LIFE IP worked on a landscape scale to foster greater communication and cooperation between different stakeholders to improve the conservation and integrated management of Sweden's watercourses and wetlands. Integrated projects must mobilise funding from other relevant Union funds to ensure the implementation of other complementary measures. Stakeholders must be actively involved and examples should be provided of how to replicate and transfer success to other geographical areas both within and between Member States. The mid-term review of the EU Biodiversity Strategy to 2020 concluded that 'the LIFE programme remains a small but highly effective funding source for nature and biodiversity' (European Commission, 2015b) (p. 17).

Common Agricultural Policy and Rural Development

Land abandonment and agricultural intensification have been two main causes of farmland biodiversity loss in Europe (European Environment Agency, 2015b). The CAP includes three types of measures of particular importance for the delivery of biodiversity policy goals (Poláková et al., 2011). Most relevant are the agri-environment measures under Pillar II, co-financed by the Member States. These have been used for many targeted schemes to conserve threatened habitats and species and to encourage low-intensity management of High Nature Value (HNV) farmland and forestry within Europe's cultural landscapes (European Environment Agency, 2014; Keenleyside C and Tucker G, 2014). HNV farmland covers 33% of the area of the mountains of the EU (European Environment Agency, 2010). A second type of measure is

[60] Accessible via a searchable database at http://ec.europa.eu/environment/life/project/Projects/index.cfm

cross-compliance, particularly the requirement to keep farmland in Good agricultural and environmental condition (GAEC). In addition, as direct payments under Pillar I provide the basis for cross-compliance, they can influence farmers' behaviour relating to biodiversity and targeting measures under Pillar II. The Greening measures brought in during the 2013 reform of the CAP are also relevant, particularly Ecological Focus Areas (EFA) and Environmentally Sensitive Protected Grassland (ESPG) outside Natura 2000 areas. However, to date, the greening measures have generally led to only small changes in management practices (Alliance Environnement and Thunen Institute, 2017).

Under the proposals for the new CAP, three of the nine specific objectives will concern the environment and climate (climate change, natural resources, biodiversity, habitats and landscapes) (European Commission, 2018b) . Each Member State will have to specify in its CAP Strategic Plan, how it intends to meet these objectives and will use funding from both CAP pillars to support the strategy. A new system of 'conditionality' will link farmers' income support (and other area- and animal-based payments) to the application of environment- and climate-friendly farming practices. A new system of so-called 'eco-schemes', funded from national direct payment allocations, will be mandatory for Member States, although farmers will not be obliged to join them. These eco-schemes will have to address the CAP environment and climate objectives in ways that complement other relevant tools. Member States will be required to dedicate at least 30% of their rural development budget to environment and climate measures. Funding for environment-related measures in areas of natural constraints (ANCs) such as mountainous or coastal regions, will now be in addition to the 30% of rural development. ANCs (previously known as Less-Favoured Areas, LFAs), either specifically designated as mountain or subject to other 'significant natural constraints', cover the majority of the mountain area of the EU, including nearly all the area designated as HNV farmland (European Environment Agency, 2010).

Interreg and Horizon 2020

In the current Interreg Programme, each transnational and cross-border cooperation programme focuses at least 80% of its ERDF allocation on up to four of the ESIF thematic objectives. Under Thematic Objective 6, Investment Priority 6b is "conserving, protecting, promoting and developing natural and cultural heritage", and 6c is "protecting and restoring biodiversity and soil and promoting ecosystem services, including through Natura 2000, and green infrastructure" (European Parliament and European Council, 2013 Article 5). In the Interreg Europe programme, Specific Objective 4.1 is to "improve the implementation of regional development policies and programmes, in particular Investment for Growth and Jobs and, where relevant, European Territorial Cooperation programmes, in the field of the protection and development of natural and cultural heritage." Of the 43 projects funded under this objective, four are particularly relevant to TGS: Celebrating Biodiversity Governance (BioGov), which aims to use participatory governance to improve natural and cultural heritage policies

(coastal, mountains); Delta Lady, which focuses on river deltas and their potential to develop innovative activities aimed at utilisation of local natural and cultural resources, with the aim of defining policy instruments that foster cultural capabilities available from the past and new ones based on ecosystem services for sustainable economic development (coastal); Effectiveness of Policy Instruments for Cross-Border Advancement in Heritage (EPICAH), which aims to promote the improvement of the policy instruments for crossborder cooperation processes in natural and cultural heritage protection and to develop the management of borders by using them as a tourist attraction factor (coastal, mountain); and Innovative Models for Protected Areas: exChange and Transfer (IMPACT), which aims to change management policies in order to promote productive activities in protected areas without compromising biodiversity conservation in them (coastal) (Interreg Europe, n.d.)

Of the 15 transnational Interreg V-B programmes (Interact, n.d.), the majority have priorities under Investment Priority 6b or 6c. Those that appear to be of particular relevance are:

- Adriatic-Ionian: Promote the sustainable valorisation and preservation of natural and cultural heritage as growth assets in the Adriatic-Ionian area;
- Alpine Space: Sustainably valorise Alpine Space cultural and natural heritage; projects include ALPBIONET203), mentioned above; and Alpine Ecosystem Services – mapping, maintenance and management (AlpES);
- Atlantic area: Enhancing natural and cultural assets to stimulate economic development
- Central Europe: Improve integrated environmental management capacities for the protection and sustainable use of natural heritage and resources; projects include Central Europe Eco-Tourism: tools for nature protection (CEETO) (coastal, mountain)
- Danube transnational: Foster sustainable use of natural and cultural heritage and resources: Strengthen joint and integrated approaches to preserve and manage the diversity of natural and cultural heritage and resources in the Danube region as a basis for sustainable development and growth strategies; projects include Local Economy and Nature Conservation in the Danube Region (LENA) (coastal, mountain).
- SUDOE: Improve management methods of the common natural and cultural heritage through the implementation of networks and joint experimentation.

However, even if programmes do not state priorities that appear to be relevant, relevant projects may be funded, such as the SHAPE project funded by the NPA Programme, and Conservation and sustainable capitalization of biodiversity in forested areas (BIOPROSPECT) and Regional cooperation for the transnational ecosystem sustainable development (RECONNECT), both funded by the Balkan-Mediterranean Programme (coastal, mountain).

Many Interreg V-A programmes also pay particular attention to Investment Priority 6b or 6c. One example of cooperative project in the marine environment was the NETCET project, funded by the IPA Adriatic CBC Programme, which aimed to strengthen the sustainable development capabilities of the Adriatic region through concerted action among partners. Best practices strategies were developed for managing the shared natural heritage of the Adriatic Sea (specifically cetaceans and sea turtles).

Overall, a key value of all Interreg projects is that they bring together a wide range of stakeholders with common concerns and (apart from Interreg Europe) in clearly defined parts of Europe. As shown by a number of examples mentioned above, the funding available through Interreg projects allows European or regional organisations to work with their members and/or other stakeholders to develop such projects and, in many cases, act either as coordinator or a partner. This is also the case for Horizon 2020, under which Societal Challenges 3.2 (Food security, sustainable agriculture and forestry etc.) and 3.5 (Climate action, environment, resource efficiency and raw materials) are most relevant. A search of CORDIS identified a number of transnational projects of relevance, including:

- Aquacross, which addresses knowledge, assessment and management for aquatic biodiversity and ecosystem services across EU policies. It seeks to advance the application of ecosystem-based management for aquatic ecosystems in an effort to support the timely achievement of the EU 2020 Biodiversity Strategy and other international conservation targets. One case study is the Danube River Basin, which aims to harmonise inland, coastal and marine ecosystem management to achieve aquatic biodiversity targets.
- the BlueMed Initiative, particularly important for coastal and island TGS. It seeks to promote the blue economy in the Mediterranean Basin through transnational cooperation and to contribute to the creation of new 'blue' jobs, social well being and sustainable growth in the marine and maritime sectors.
- HNV LINK: A Thematic Network on High Value Farming; Learning, Innovation & Knowledge; Learning Area Dalmatian Islands". This project enables the inclusion of the TGS in the European Innovation Partnership for Agriculture (EIP AgriFocus Group), and is focused on collecting innovative solutions in the fields of mechanization, product commercialization, social organization, institutional frameworks and regulatory policies.
- OpenNESS, which promoted a conceptual understanding about ecosystem services and natural capital by creating a Glossary and an Ecosystem Service Reference Book. Many of the case studies were in coastal or mountain areas. A policy analysis of key regulatory frameworks within Europe showed that the ecosystem services concept has not yet been mainstreamed across policy sectors but is confined to biodiversity, forestry and agricultural policies.
- Pegasus, which aimed to transform approaches to rural land management by unlocking the synergies between economic, social and environmental benefits provided by agriculture and forestry. Many of the case studies were in mountain areas.

Ecosystem Services and Natural Capital

The EU has developed a uniform definition and standardised typology for ecosystem services (ES) called the Common International Classification of Ecosystem Services (CICES) (European Environment Agency, n.d.). Spain and the UK have both conducted national ecosystem assessments based on ecosystem services. Ecosystem services are the many benefits that natural environments provide to people and include provisioning services such as food and timber production, regulating services such as nutrient cycling, and cultural services that include landscape value and recreation. It is generally recognised that biodiversity underpins ecosystem function and therefore the provision of ecosystem services. However, debate

continues as to whether the anthropocentric perspective managing ecosystem services equates to biodiversity protection. Relationships between biodiversity and ecosystem function are complex, variable and non-linear. It is therefore important that biodiversity and ecosystem services are monitored in response to different management approaches in order that synergies and trade-offs between multiple ES and biodiversity may be understood (Science for Environment Policy, 2015). Evidence suggests that high levels of biodiversity are required to ensure the long term delivery of ecosystem services. As highlighted in the Science for Environment Policy Report (2015), an important question for policy makers and conservationists is 'Will use of the ecosystem services approach protect biodiversity'? The EU Biodiversity Policy recognises the importance of using as ES approach alongside measures for protecting biodiversity according to its intrinsic value. Relevant to TGS, is the recommendation that ecosystem services be managed and monitored as 'bundles' across space. Maximising one ES e.g. crop production can be associated with declines in others e.g. soil fertility. There can also be trade-offs for different beneficiaries e.g. public goods such as carbon sequestration may need to be traded-off with private interests e.g. productive industries. Bouwma et al., (2018) show that, while the ES concept has a strong presence in the EU Biodiversity Strategy and other policies related to natural resources e.g. the Forest Strategy and MFSD, it tends to be used less in concrete measures and regulations. Very few policies actually require Member States to report on stocks and flows of particular ES. As a result, ES tend to be referred to in national-level strategies but are not often used at sub-national levels. This is clearly demonstrated by the case studies where there is generally very low use or the ES concept in regional or local strategies and plans, and a low level of awareness of ES among stakeholders. A barrier to widespread assessment of ES is the feasibility of conducting systematic monitoring.

In 2015, the European Investment Bank (EIB) and the European Commission created the Natural Capital Financing Facility (NCFF), a EUR 400 million financial instrument to support **projects** delivering on **biodiversity** and **climate adaptation** through tailored loans and investments (European Investment Bank, n.d.). Its primary aim is to demonstrate that biodiversity and ES projects, and nature-based climate adaptation projects can be financed through innovative and market-based mechanisms. The fund targets projects related to green infrastructure, payments for ecosystem services, biodiversity off-sets and pro-biodiversity and adaptation businesses. Projects have to contribute to the objectives of the LIFE programme and include Rewilding Europe Capita[61]l, through which natural focused businesses across Europe receive support. Supported rewilding areas include TGS including various mountain ranges and the Danube Delta.

[61] https://rewildingeurope.com/rewilding-europe-capital/

8.1.3 Protected areas in TGS

The International Union for Conservation of Nature (IUCN) identifies the following categories of protected areas:

- Ia Strict Nature Reserve,
- Ib Wilderness Area
- II National Park
- III Natural Monument or Feature
- IV Habitat/Species Management Area:
- V Protected Landscape/ Seascape
- VI Protected area with sustainable use of natural resources

These categories are used by the EEA in its Common Database on Designated Areas (CDDA)[62]. An overlay of CDDA GIS data with ESPON delineations of TGS shows that different categories are over-represented in each category of TGS. The present section presents outcomes of such an overlay analysis.

The following general patterns are observed for each TGS category:

- For coastal areas, there is a predominance of Protected Landscape / Seascape (IUCN category V) followed by Habitat / Species Management Area (IV) and National Parks (II). Category IV (Habitat/Species Management Area) and Category V (Protected Landscape/Seascape) have the highest coverage for most countries (Table 2-1). For example, Denmark has 11.8% coastal area in category IV with an additional 2.3% in category V. Germany and UK have a greater area in protected landscapes (V) that in habitat/species management areas (IV). Only Norway and Sweden have relatively large area (1.6%, 0.9%) designated as strict nature reserves (Ia). Norway (8.4%) and Iceland (11.7%) also have significant areas under National Park (II) designation. Overall Categories II, IV and V are the most common designations.
- Islands have a particularly high coverage of National Parks (II): almost double that of the other TGS. There are approximately equal proportions of Habitat/Species Management Areas (IV), Protected Landscapes/Seascapes (V) and Protected areas with sustainable resource use (VI). In many countries, none of the island TGS is classified in an IUCN category. National Parks (II) are relatively important particularly in Germany (38.6%), Iceland (14.3%) and, to a lesser extent, in Spain, Finland, Italy, and the Netherlands. There is quite consistent coverage of Habitat/species management areas (IV) across many countries. Protected Landscapes/Seascapes (V) are important in France (26.3%), Sweden (3.8%) and Spain (11.6%). These areas tend to be more populated than other IUCN categories. Some countries also have a considerable area of island TGS designated under Category VI (protected areas with sustainable use) e.g. Cyprus (40.7%) and Portugal (16.6%). Strict nature reserves (Ia) are more frequent in Norway and Sweden (4.1%, 1.6%) and limited elsewhere.
- In mountains, Protected Landscapes (V) make up half of the IUCN designated area, followed by National Parks (II) and Habitat/Species Management areas (IV). National Parks (II) tend to cover a greater area of mountains compared to other TGS across many of the countries. Hungary, Iceland, Norway and Kosovo all had over 10% of their

[62] This database does not include French outermost regions.

mountain area categorised as National Parks. There were also high percentages of protected landscapes (V) in mountain areas in many countries e.g. Belgium 14.5%, Germany 37.2%, France 34%, and UK 29.4%. These protected landscapes are the most populated type of protected area in mountain TGS, and also more populated than protected landscapes in other TGS. Wilderness areas (Category 1b) are not designated in most countries but Sweden (20.3%) has a large coverage in its mountain areas. As with other TGS, strict nature reserves (Ia) do not cover large areas of mountain TGS: the highest proportions are in Norway (2.1%), Bulgaria (1.3%), Slovakia (1.3%) and Kosovo (1%). Population in Categories 1a, 1b and II in mountain areas is very low.

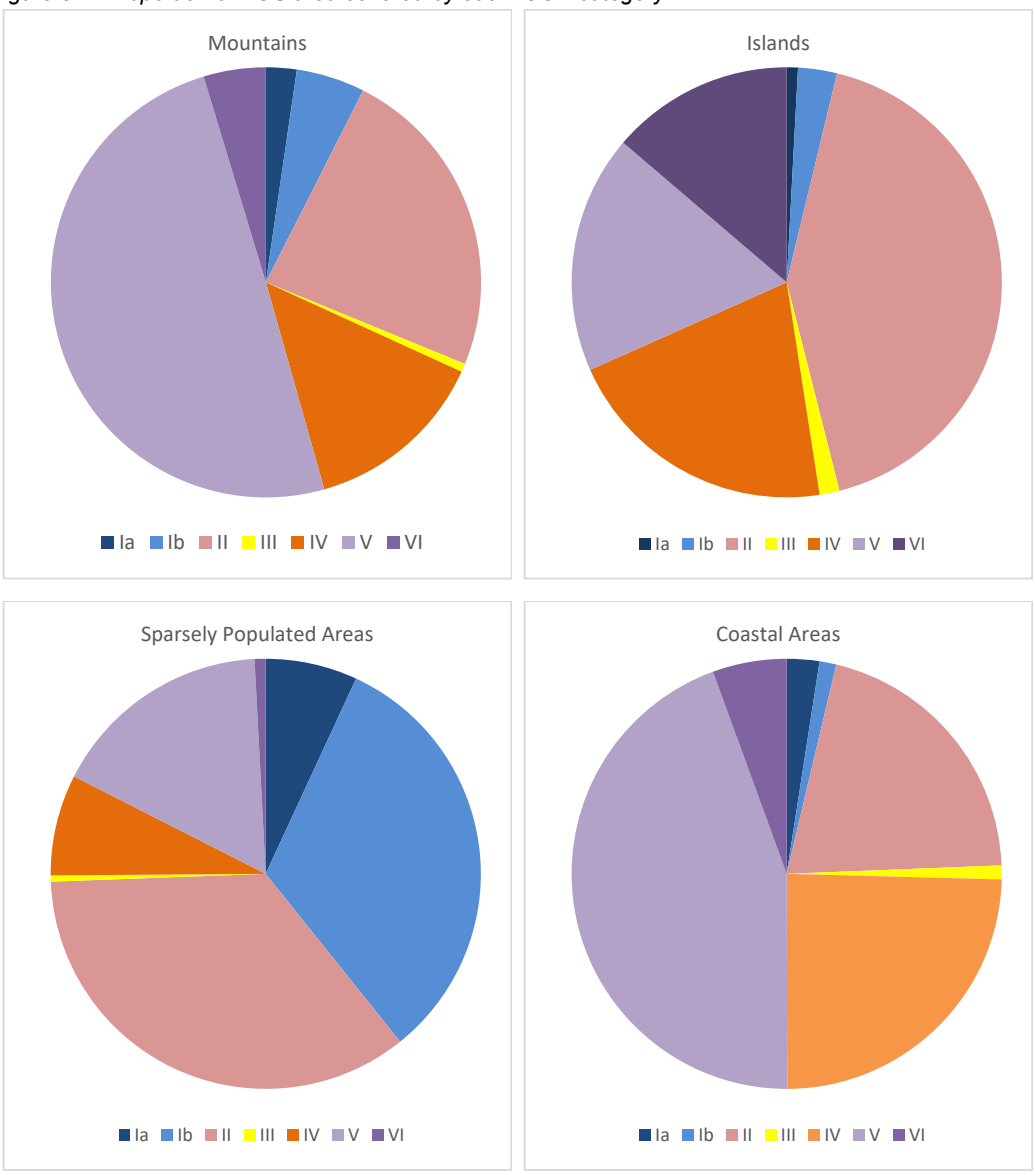
- For the SPAs, Wilderness Areas (Ib) and national parks (II) are most common. SPAs have the greatest proportion of Strict Nature Reserves (Ia). Latvia (3.2%), Norway (1.9%) and Sweden (2%) have some Category 1a (Strict Nature Reserves) in SPAs. Wilderness Areas (Ib) are important in Finland (12%) and Sweden (11.3%) but are usually not present elsewhere. Romania (17.65%) and UK (19.2%) have particularly high proportions of SPAs categorised as Habitat/Species Management Areas (IV). Estonia (6%) and Greece (6.7%) also have relatively high areas of this IUCN category in SPAs. Portugal (19.2%) and Latvia (12.6%) have a high proportion of protected landscapes (V) in SPAs.

Overall, proportions of the different IUCN categories vary considerably across TGS. However, Protected Areas/Seascapes (category V) are particularly well represented across TGS, which suggests an interest in protecting the landscape qualities of such areas while allowing access, sustainable use, and involvement of people. It is worth noting that in some countries, such as the UK, National Parks designated under national legislation are categorised as Protected Landscapes/Seascapes (V).

Mountains tend to have a greater area of Protected Landscapes (category V) and National Parks (II). SPAs tend to have a predominance of National Parks (II). National Parks are more strictly protected than protected landscapes, but will usually include some infrastructure and provision for access.

Many countries had a significant extent of their protected areas categorised as National Parks in their TGS. In Montenegro, all IUCN protected area is categorised as National Park, and 45% in Albania and Luxembourg. In Austrian SPAs, the only IUCN protection is National Parks. Almost 40% of German islands are categorised as National Parks. National Park areas in mountains are typically smaller, with the greatest areas in Iceland and Hungary. Iceland also has the greatest National Park protection in coastal areas.

Figure 8-1: Proportion of TGS area covered by each IUCN category



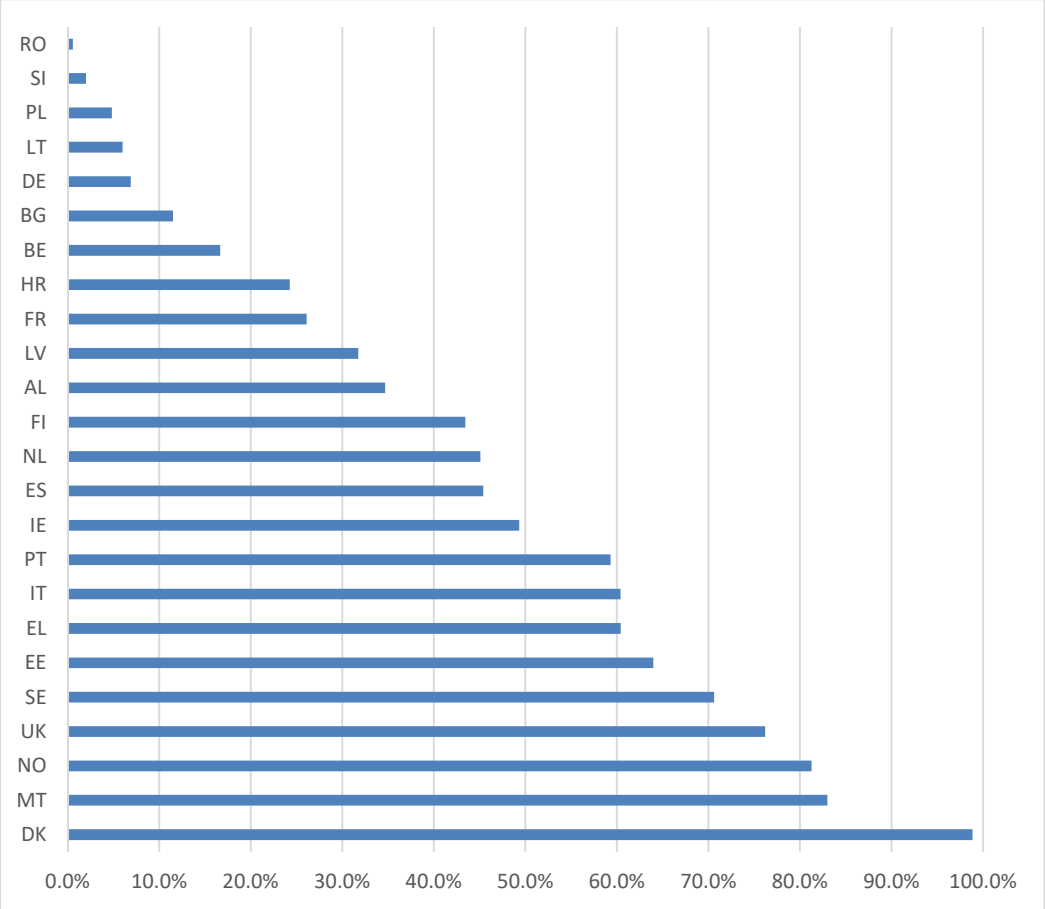
Source: ESPON BRIDGES calculations, based on GIS data produced by EEA

Population is not uniformly distributed through the different IUCN categories. At the national scale, the largest proportion of people live in category V (Protected landscape/seascape) and categoryIV (Habitat/species management areas). This pattern is also reflected in TGS where a higher proportion of the TGS population reside in category V (protected landcape/seascape) than other categories. People are most concentrated in protected areas in mountains; less than half of these proportions are found in SPAs and along coasts, and even less in islands

Proportions of population living in TGS areas vary extensively between European countries. Almost all the population of Danish coastal areas live in protected areas, and at least half the coastal population lives in protected areas in a number of other countries (Portugal, Italy,

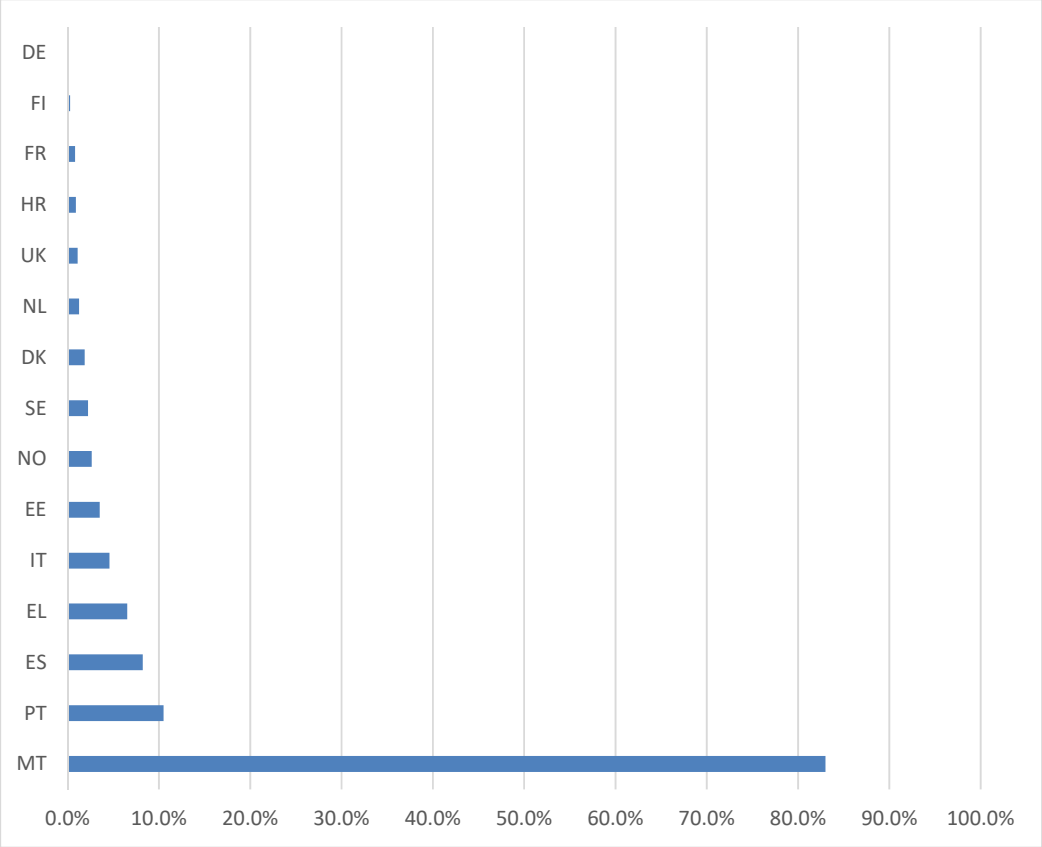
Greece, Estonia, Sweden, UK, Norway, Malta). Proportions in other countries are lower; in Romania less than 1% of the coastal population inhabits a protected area.

Figure 8-2: Percentage of coastal area population living in protected areas



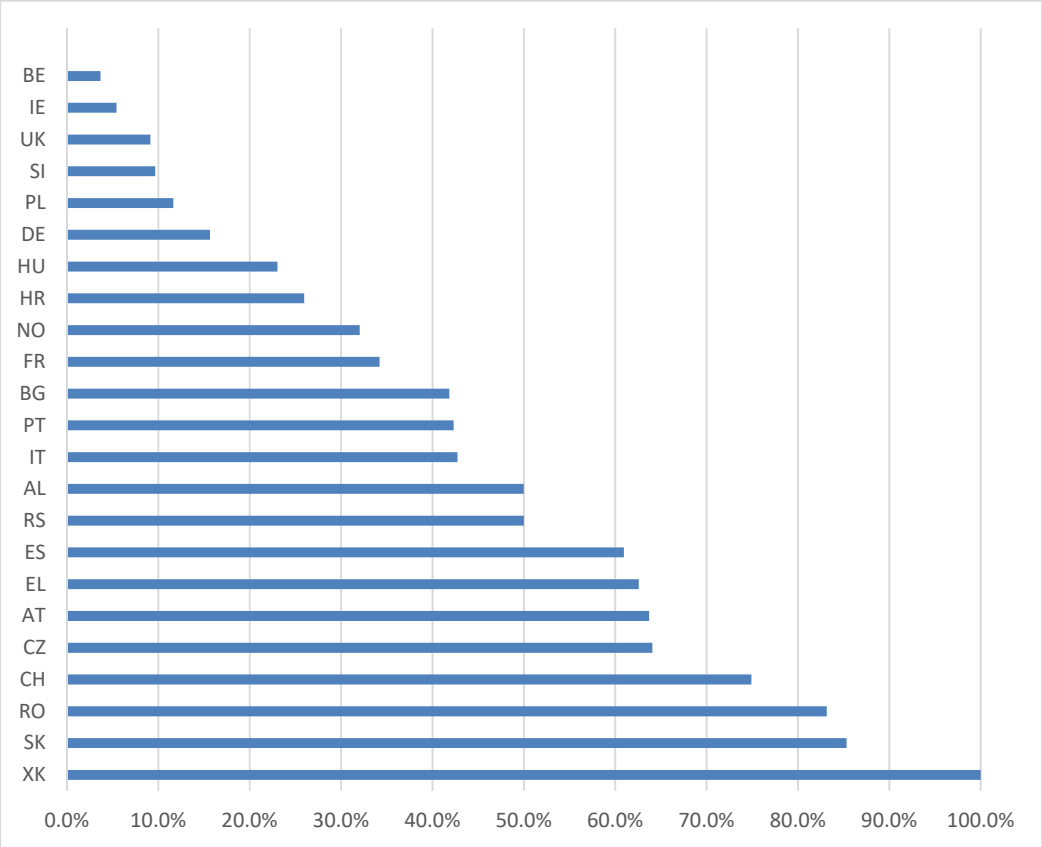
For islands, Malta has by far the largest population, with over 80% of people living in a protected area; no other country has more than 10% (Figure 8-3)

Figure 8-3: Percentage of island population living in protected areas



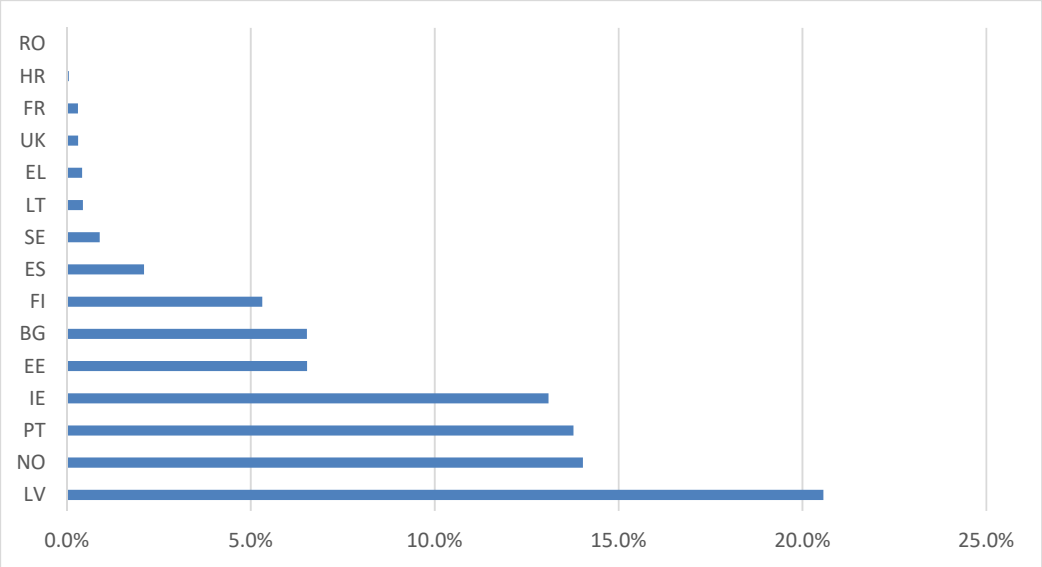
In Slovakia, 85% of the mountain populations lives in protected areas. At least half the mountain population lives in protected areas in a number of other ESPON countries (Spain Greece, Austria, Czech Republic, Switzerland, Romania) and countries in the Western Balkans (Kosovo and Serbia).

Figure 8-4: Percentage of mountain population living in protected areas



The population of the protected areas in SPAs is relatively low compared to their total population: just over 20% for Latvia, and below 15% for the remaining countries (Figure 8-5).

Figure 8-5: percentage of population of sparsely populated areas living in protected areas in



Overall, across ESPON space, protected landscapes/seascapes tend to be more highly populated than other IUCN designations, particularly in mountain areas. In SPAs, protected landscapes are more populated than other forms of designation. This is also the case for islands e.g. Malta. This type of designation focuses on achieving a balanced interaction between people and nature and includes the protection of cultural management systems.

The variability in the distribution of IUCN designations across countries suggests that TGS have more protection in some countries than others. Overall, strict nature reserves (category Ia) only make up a small area of TGS. While they do not occur in many countries, Norway and Sweden have relatively large areas covered by this category. Wilderness areas (Ib) are also not widely found, except in Finland and Sweden, where the cover relatively large areas of SPA and mountain areas. National Parks (II) are a more widely used form of protection across many of the countries

8.1.4 Transnational approaches

Transnational associations

Certain TGS are represented by transnational associations at the European level (e.g., CPMR, Euromontana, NSPA). In the context of biodiversity conservation and sustainable development, other relevant organisations at the European level include the International Union for the Conservation of Nature (IUCN) and the European Forum on Nature Conservation and Pastoralism (EFNCP). There are also regional and national mountain organisations throughout Europe. The activities of such associations include projects and lobbying on environmental and development issues affecting mountain areas, including activities related to biodiversity.

8.1.5 Networks of Protected Areas

Networks of protected areas are useful structures at both national and transnational scales for providing opportunities for knowledge sharing and learning and a wider territorial approach to biodiversity conservation. This may be particularly relevant for TGS which experience common challenges but are also have diverse features and identities. Networks important at the European level include Natura 2000 and the EUROPARC Federation. This includes national and regional parks, biosphere reserves, marine and landscape protected areas and a large number of Natura 2000 sites. There are also protected area transnational networks in mountain regions, for example The Alpine Network of Protected Areas (Alparc) and the Carpathian Network of Protected Areas (CNPA), initiated with the support of Alparc (Carpathian Network of Protected Areas, n.d.), which contribute to the implementation of the respective Conventions. These networks are important in developing and implementing collaborative projects involving the administrations of protected areas, for example the InnovAlps project, on innovative approaches to regional development in Alpine protected areas, funded by the Swiss Federal Office for the environment (Alparc, n.d.), and the ALPBIONET 2030 project, funded by the Interreg Alpine Space Programme addressing both ecological connectivity and integrated

wildlife management for the Alps and an increased level of defragmentation in sectoral policies (Alparc, n.d.).

Within UNESCO's World Network of Biosphere Reserves, the EuroMAB network is the largest regional structure, holding biennial meetings to facilitate the exchange of knowledge and experience. Biosphere reserves have several models of collaboration including national coordination, 13 transboundary biosphere reserves – mainly in mountain areas (e.g. the East Carpathians and Tatras Biosphere Reserves) but also including the Danube Delta and the Intercontinental Biosphere Reserve of the Mediterranean (UNESCO, n.d.) – and twinning arrangements between different countries. As the network consists of sites within many countries, it provides opportunities for collaborative projects. Two examples are: the Sustainable Heritage Areas: Partnerships for Ecotourism (SHAPE) project, funded by the Interreg Northern Periphery and Arctic Programme and involving biosphere reserves and regional parks in areas that are coastal, mountainous and SPA (Northern Periphery and Arctic Programme, n.d.); and the BioCultural Heritage Tourism project, funded by the Interreg V-A Channel Programme and including the four biosphere reserves in this coastal area. Transboundary Biosphere Reserves may provide a useful mechanism for developing shared visions and plans for TGS that are influenced by different development scenarios (UNESCO, 2003).

Regional Conventions

Transnational cooperation is essential for the protection of biodiversity. There are four regional conventions relevant to biodiversity conservation, all directly relevant for TGS. Those for mountain regions are the Alpine and Carpathian Conventions. The objective of the former is to protect the natural environment of the Alps while promoting its development. The Parties implement this framework convention particularly through measures under thematic protocols, of which the most relevant here is that on Conservation of Nature and Landscape Protection. There are also a number of Platforms, of which the Ecological Network and Large Carnivores, Ungulates and Society Platforms are particularly relevant in bringing together stakeholders from multiple levels of governance (Alpine Convention, n.d.). The aim of the Carpathian Convention is to foster the sustainable development and the protection of the Carpathian region (Secretariat of the Carpathian Convention, n.d.). This includes an article on the conservation and sustainable use of biological and landscape diversity, and one of the protocols is on the same topic – work on this is taken forward through a working group. Linking both mountain and coastal areas, the Danube River Protection Convention addresses co-operation on transboundary water management in the Danube River Basin. It is relevant in the context of biodiversity inasmuch as it focuses on the sustainable use of the waters in the river basin. For coastal and island areas, three of the main objectives of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean are to: protect the natural and cultural heritage; ensure sustainable management of natural marine and coastal resources; and integrate the environment in social and economic development (European Commission, n.d.). Finally, the Convention on the Protection of the Marine

Environment of the Baltic Sea Area (Helsinki Convention, implemented through the Baltic Marine Environment Protection Commission or Helsinki Commission, HELCOM) has a working group on the state and conservation of the environment and nature conservation and has produced a Baltic Sea Action Plan, with a set of goals and objectives relating to biodiversity. This has been described as “the first attempt by a regional seas convention to incorporate the ecosystem-based approach to the management of human activities into the protection of the marine environment (Pyhala, 2012) (p. 50).

Macro-regional strategies

Biodiversity conservation is considered in the macro-regional strategies that the EU and the Member States have developed since 2009. These seek to combine the community’s territorial cooperation and cohesion policy with intergovernmental regional cooperation involving EU Member States and partner countries (Gänzle et al., 2018). It is yet uncertain how these strategies may contribute to improve the implementation of EU global legislative acts, but for environmental issues which are often relevant at macro regional scales, this scale of approach may be more effective than those at EU or national level. The strategies contain multiple areas of cooperation. Gänzle et al. (2018) raise the question of whether macro-regional strategies will provide an entry point for territorially differentiated policy or whether they will rather deliver ‘well-controlled regional differentiation’.

The Action Plan for the European Union Strategy for the Danube Region (EUSDR) (European Commission, 2010a), relevant for both mountains and coasts, primarily considers biodiversity under Priority Area 6 ‘To preserve biodiversity, landscapes and the quality of air and soils’. The document also mentions both challenges, such as transport infrastructure development deforestation, and population losses, for natural heritage and the need for greater awareness and valorisation.

The Action Plan for the European Union Strategy for the Adriatic and Ionian Region (EUSAIR) (European Commission, 2014c) is of relevance for coastal, island and mountain areas and has a strong emphasis on maritime spatial planning and Integrated Coastal Zone Management. Pillar 3 ‘Environmental quality; addresses both marine and terrestrial biodiversity. This stresses strong links to the Europe 2020 Strategy and the importance of capacity building and communication and **“**adequate legislative and institutional conditions at the national level” (p. 38).

The Action Plan concerning the European Union Strategy for the Alpine Region (EUSALP) (European Commission, 2015a) is of relevance for this mountain region. Within the plan, Action 7 is to ‘develop ecological connectivity in the whole EUSALP territory’ (p. 34), and the plan also mentions connections between traditional land uses, protected areas and the maintenance of biodiversity; the challenges posed by climate change and of habitat fragmentation, which are being addressed, for example through Alparc’s ALPBIONET2030 project, mentioned above; and the need for “an integrated trans-sectoral landscape vision for the Alps" (p. 36). There is now an active Action Group taking forward Action 7 (EUSALP, n.d.).

The Action Plan for the EUSBSR, relevant for coasts, island and northern SPAs, was originally published in 2009 and was updated in 2017, following extensive consultations (European Commission, 2017d). While most references to biodiversity are in the context of the section on biodiversity and nature conservation in the HELCOM Baltic Sea Action Plan, the need for "an appropriate mix of policy instruments to effectively tackle pending challenges, such as conflicting demands towards various ecosystem services, fragmentation of forest estates and a lack of knowledge of how to adapt the current forest management to tackle climate change and, at the same time, maintain or enhance biodiversity" is also mentioned (p. 66).

8.2 Biodiversity in TGS: Policies and issues

At regional and local levels, constraints to the conservation of biodiversity in TGS result from geographic specificities, social, political and economic drivers. 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 (Interreg Europe, 2016).

Furthering the integration of natural capital and ecosystem services with economic goals as part of a more holistic accounting process is expected to lead to a broader set of desired outcomes. A range of policy measures show promising advances towards such integration e.g Payments for ecosystem services (PES), environmental taxes, product certification (Guerry et al., 2015).

Previous studies and the information for the BRIDGES Module 4.1. case study synthesis suggest that more integrated approaches are required to address biodiversity issues in TGS. In mountain and coastal areas, as well as the arctic where most SPAs are located, protection of biodiversity is tightly linked to climate change, so that a holistic approach is required to jointly address these issues (European Environment Agency, 2017b). The case studies illustrate that tourism is significant and increasing, and an important driver of economic development, in TGS but, without effective planning, can have negative impacts on biodiversity on which many aspects of tourism arguably depend. Consequently, integration between biodiversity and sustainable tourism strategies is required at local, regional and national levels.

National strategies for biodiversity conservation refer to both international conventions and EU policies. These strategies tend to describe the main threats to biodiversity and outline general directions for tacking these threats. While these are applicable to TGS, specific measures that cover areas considering their context as TGS are less common. The extent to which national biodiversity strategies are integrated with wider national sustainable development objectives is variable. For example, Scotland has both a biodiversity strategy and a national Land Use Strategy which works across a range of Scottish policy priorities (biodiversity protection, climate change, sustainable development and community engagement) and is based on principles of sustainable land use (Scottish Government, 2016).

At the local or regional level, biodiversity conservation goals frequently come into conflict with other priorities, such as local economic development – which is often regarded as a high political priority. 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 (European Environment Agency, 2011). A second, particularly in mountain areas and SPAs, is conflicts between large carnivores (e.g., wolves, bears) and livestock, which are now being addressed at European scale through the EU Platform on Coexistence between People and Large Carnivores (European Commission, n.d.). Land use conflicts may be exacerbated in island areas because of limited space. Consequently, when local public authorities draft local plans and strategies, these must take the TGS context into consideration, due to the localized nature of their action. This also applies to the drafting of protected area management plans. Here, more collaborative approaches, such as those of regional parks and biosphere reserves, may have particular relevance (Hammer T and Siegrist D, 2016b). Many biosphere Reserves are located in TGS, and the case study synthesis showed that they play important roles in delivering biodiversity conservation alongside local community development. For example, regional government and local authorities are working towards a Biosphere Reserve designation in the Alto Turia area of Spain and viewing this as a local development strategy based on valorising natural assets. There is consensus among local actors that this is a promising system of cooperative governance in which public, private and community actors may contribute to protection of landscapes and biodiversity while pursing development goals. The concept of wildness or wilderness is also important[63]. This is particularly relevant for mountain and sparsely populated TGS in which much land is perceived to have wildness qualities. Wildness qualities are protected in different ways in different EU Member States e.g. National Parks, nature reserves. There is also a gradient of human activities permitted, from prohibition of all activities, besides walking on marked trails to much less restrictive approaches where harvesting, hunting, infrastructure development and recreation etc. are allowed under certain conditions (European Commission, 2013c). Wildness and wilderness areas can be an important means of protecting biodiversity and also species and landscapes of significance for local communities. It is generally agreed that wilderness areas that have high levels of structural and functional diversity provide a wide set of ecosystem services and therefore provide social, cultural and economic benefits (European Commission, 2013c).

The case study synthesis revealed a lack of connection between approaches to biodiversity in regional and local policies. This disconnect can have negative impacts on biodiversity measures actually implemented. In the case of local level strategies, the view of environmental protection can become quite narrow. For example, in the Polish Tatras, counties and cities tend

[63] Wilderness is a multi-faceted concept shaped by environmental and cultural nuances which does not have a universal definition. The term wilderness tends to be applied to large areas with minimal human influence in North American and Europe The terms ‘willd land’, ‘wildness and ‘natural areas’ are commonly applied to areas that have wilderness-like characteristics but are not necessarily considered ‘pristine’ or ‘untouched’ (McMorran et al., 2008)

to perceive that the reason for environmental protection is to maintain the value of the area for tourism and residential attractiveness. There is an apparent lack of recognition of the importance of natural heritage in underpinning the area's cultural identity and development.

One of the most common barriers to effective biodiversity conservation in TGS revealed by the case studies was the lack of management plans for protected areas at the local level. Where these do exist, lack of resources or limited information/monitoring may prevent full implementation. It is these documents that are most oriented toward TGS due to the detail in which local specificities are considered. While management plans and local regulations can be effective in taking geographic specificities into account, there is generally limited consideration of TGS in the more ubiquitous regional and national policies.

Mountainous TGS are frequently divided between several local public authorities and, in some cases, countries. This can make coordination between local plans and strategies challenging, especially when neighbouring administrations place different values on biodiversity. For example, in the Apuseni Mountains in Romania, only one of five counties has produced a spatial development plan for the section of the Apuseni Natural Park under its jurisdiction. Cooperation between different local authorities is particularly important in more decentralised countries, such as Spain. In such countries, the challenge of compiling comprehensive data sets on ecosystems and species, and developing reliable national assessments is greater.

The case study synthesis highlights the importance of traditional farming systems in TGS. Such systems, for instance those maintained in HNV farmland, underpin biodiversity, as underlined in particular by the (European Forum on Nature Conservation and Pastoralism, n.d.). These systems, as well as protected areas, can also be an important component of landscapes that attract tourists. Conversely, intensification is an issue in some areas pursuing economic development, which can be damaging to both ecological and tourism interests.

TGS that include the marine environment bring their own challenges. Case studies identified that policies and regulation related to the marine and land environment in a particular region are at often very different stages of development. In many areas, biodiversity loss is being caused by unsustainable fishing practices (European Environment Agency, 2015b).

Table 8-2: Case study overview: Biodiversity conservation and sustainable development in TGS

	Issue / Theme 1 Governance and stakeholders	**Issue / Theme 2 Use of Land and Sea**	**Issue / Theme 3 Tourism**	**Issue / Theme 4 Innovative approaches**
Middle Dalmatian archipelago HR)	Biodiversity conservation is mainly top-down. Lack of local people with appropriate skills is a barrier to bottom-up conservation	Intensification of agriculture damaging agro-ecosystems Cultural landscapes and traditional cultivation provide important habitats Uncontrolled fishing and degradation of fish feeding and spawning areas	Increase in marine tourism causing environmental damage	Labelling of high quality and sustainable island products
Wester Ross (UK)	Biosphere Reserve viewed as important for sustainable development but funding limited	Scotland's Integrated Land Use Strategy promotes an Ecosystem Approach	Large increase in tourism putting pressure on infrastructure and communities	Local Biodiversity Group where volunteers carry out local projects
Alto Turia (ES)	Need for policy that is better adapted for specific territorial challenges	Sectoral integration necessary for biodiversity conservation e.g. agroforesty	Interest in developing tourism based on natural and cultural heritage	Biosphere Reserve nomination process has been valuable in development of network and goals
Saarema (EE)	Limited public participation in conservation	Conflict between farming and conservation designations	Development of tourism activities based on traditional agriculture and conservation	Regional origin label for food products
Apuseni mountains (RO)	Lack of approved management plans for protected areas and coordination between areas	Pollution from mining, deforestation and grazing are damaging biodiversity	Balance needed between conservation measures and local infrastructure needs	
Tatra Mountains (PL)	Lack of biodiversity measures at the local level; need for connection between national, regional and local action Lack of public awareness of environmental issues	Proximity of cities and poor public transport have caused pollution and waste problems.	Natural ecosystems damaged by high visitor numbers	'Smart City' project to develop integrated approach to regional development, tourism and the environment

	Issue / Theme 1 Governance and stakeholders	Issue / Theme 2 Use of Land and Sea	Issue / Theme 3 Tourism	Issue / Theme 4 Innovative approaches
South Tyrol (IT)	National Park lacks accepted management model Cooperative working between farmers and conservationists	Intensification of cultivation is a driver of biodiversity loss	Infrastructure required for tourism that causes environmental damage e.g. skiing	Potential for including results of ecosystem service assessment in management plans
Danube Delta (RO)	Lack of communication and cooperation	No specific institution for managing natural resources	Large increases in tourism have impacted environmental quality and led to infrastructure growth	Ecotourism initiatives that promote sustainable development

8.3 Policy support tools

In the field of biodiversity conservation, a major focus is on reporting outcomes (e.g., the status of habitats and species in Natura sites) at the national level, in relation to targets set under the EU biodiversity Strategy and the CBD. However, these approaches have a relatively narrow scope and do not address the wider aspects of how biodiversity conservation, and ecosystem services more widely, can be considered within the context of sustainable development. There have been some studies in this direction, e.g., (Nesshover et al., 2014). In the future, reporting under the SDGs may be more comprehensive.

For application at regional (sub-national) and local scales, various initiatives and projects have been designed specifically to support the development and implementation of biodiversity policy, recognising that high-quality science is needed to underpin evaluation of alternative policy options to ensure optimal strategies are put in place. Going beyond the limited timeframe of projects, virtual platforms that allow the international sharing of discussion of data and evidence can provide positive contributions to informed decision making at a more local level. This allows best practices to be developed from projects and conveyed to policy makers and other stakeholders in engaging formats.

At the global scale, IPBES has a role in supporting policy formulation and implementation for the conservation and sustainable use of biodiversity and ecosystems, and is developing a Policy Support Portal which will collates policy support tools and policy instruments relevant to different regions and general habitat type. For example, the online database includes examples of decision-making tools used in coastal areas (IPBES, n.d.).

At the European scale, the Interreg Europe Policy Learning Platform (Interreg Europe, n.d.) stimulates knowledge exchange through links to experts and a searchable database of case studies, which include a number on coastal areas. This platform is targeted at policy makers; specific target groups are managing authorities of Structural Funds programmes, regional and

local authorities, and agencies, institutes, and private and non-profit organisations. In addition, the European Commission is developing a web-based platform to bring together research, information and practical experiences on results-based agri-environment schemes, which includes some case studies from coastal and mountain areas (European Commission, n.d.).

Horizon 2020 and LIFE projects have also led to the creation of relevant web-based resource portals. One of these is OPPLA, which contains all the tools, instruments and case studies from the OPERAs and OpenNESS projects. The case studies, including many from coastal, island and mountain areas, which continue to be added to, are included in a searchable database (oppla, n.d.). This portal also houses the webpages of Ecosystem Services Scotland (ESCOM), an inclusive and open community with members from across national government, local authorities, government agencies, research organisations and universities, NGOs and private sector companies, including SMEs. Such initiatives are important in linking a very wide range of stakeholders.

Another project, specifically related to TGS, is 'Integrated planning tool to ensure viability of grasslands (Viva Grass), funded by the LIFE Programme, which aims to prevent the loss of HNV grasslands and increase the effectiveness of semi-natural grassland management by developing a integrated planning tool. This should help the decision-making process for sustainable grassland management by strengthening linkages between social, economic, environmental, agricultural fields and policies (LIFE Viva Grass, n.d.).

Tools have also been developed by organisations with a concern for biodiversity conservation and sustainable development. One example is the toolbox developed by the EuroPARC Federation, with a searchable database of case studies from protected areas (EuroPARC Federation, n.d.). One of the themes is 'marine and coastal'.

8.4 Recommendations

As presented above, there are a range of policy mechanisms for enhancing the conservation of biodiversity in the context of sustainable development, and these play a significant role in TGS. The findings of the case studies have relevance for the future development of these policies and their successors. Some key policy areas that BRIDGES may inform are discussed below.

Common Agricultural Policy

In addition to the proposed 'eco-schemes', discussion of CAP reform includes the possibility of providing payments to farmers using a results-based approach whereby payments are provided per unit of public good provided rather than per hectare. There is also an argument for agri-environment schemes that can be spatially targeted to take account of different needs in different areas, such as ANCs and HNV farmland. This would be of direct relevance to TGS where farmers could be paid to supply locally valuable public goods. This is part of wider set of possibilities related to the Payments for Ecosystem Services (PES) schemes and other ES

financing mechanisms (see below). A further set of opportunities links to the production of high-quality products from TGS, as these often originate in areas with high levels of biodiversity, such as HNV farmland. As well as the many products with quality labels of origin from TGS, both at the EU level (PDO, PGI, TSG) (European Commission, n.d.), the Delegated Act (EU) No 665/2014, which specifies the conditions of use of the optional quality term 'mountain product' should be mentioned. There are also numerous regional labels associated with parks and biosphere reserves. Consideration could be given to targeted funding for the continued production of such products, as this contributes to the maintenance of both biological and cultural diversity – and employment opportunities. In developing and implementing such approaches, effective coordination across multiple sectors, both in government administrations and at the level of businesses (e.g., farmers, tourism providers) and their organisations, will be crucial.

Text Box 8-2: Croatian Island Products

Croatian Island Products is top-down initiative developed by the Ministry of Regional Development and European Union Funds related to the labelling of island products. It was initiated in 2007 to encourage island producers to manufacture original and quality products. The self-employed island producers have been encouraged through this initiative by receiving more visibility for their products, and it has led to the development of innovative approaches in business based on traditional agriculture, mainly with an ecological approach. Products include many types of goods including food, drink, clothing and cosmetics – all produced on a small scale by islanders. The aim of the initiative is to reduce depopulation on the island and promote traditional and innovative island production. As of 2017, the project included 279 island manufacturers from 24 islands and covered 880 products.

Biodiversity Policy

Both the EU Biodiversity Policy and the Strategic Plan for the CBD (with their associated targets) look forward to 2020, but not beyond, although discussion is taking place. The Natura 2000 network has been shown to have both strengths and weaknesses. While Kati et al. (2014) demonstrate good quality network design and a substantial increase in knowledge of the sites, they considered that the main weaknesses were lack of political will from local and national governments toward implementation and lack of knowledge held by local stakeholders. However, Natura 2000 sites are only part of the complex landscape of protected areas across Europe, and different models are being developed and tested. Beyond 2020, a key question is the extent to which biodiversity conservation can be more explicitly and effectively linked to economic development. In TGS, such questions have been addressed on the ground, particularly in biosphere reserves and through Interreg projects, and the experience should be brought together in order to identify the most effective policies and approaches and then explore

these through targeted actions – which also need to consider the implications of climate change, as discussed in the report for module 4.3.

Monitoring and assessment of Ecosystem Services (ES)

This issue is related to the result-based approach that could be used for CAP/Rural Development Regulation but would depend on the implementation of a systematic monitoring system for ES, which could also contribute to the implementation of the EU Biodiversity Strategy post-2020. As noted above, the EEA has developed CICES, but few countries have undertaken national ecosystem assessments based on ecosystem services. Bouwma et al. (2018) highlight the opportunities that the ES concept provides for understanding the influence of EU policies on trade-offs of ES across sectors. This could address to some extent the importance of system inter-dependence which is central to the ES concept and is a challenge for the sectoral approach of EU policy making. One challenge to effective biodiversity conservation across different spatial scales is that of harmonised data collection and compilation. Greater use of the ES approach at local and regional scales may contribute to more systematic monitoring programmes that can be implemented at multiple scales. Recent Horizon 2020 projects, for example, have provided some tools for this purpose; but further development, including the many concerned stakeholders in transdisciplinary projects and then in policy development, is required.

Integrated policies for the use of land and sea

These should provide approaches to overcoming sectoral barriers in sustainable development. There may be scope for BRIDGES to suggest how to specifically consider TGS in national integrated policy documents. For example, there could be more focus on understanding, communicating and building on the sets of opportunities and challenges presented by TGS. For mountain areas post-2020, Gløersen et al. (2016) recommend that Structural Funds should encourage better cooperation between programmes that operate in particular mountain ranges and inter-sectoral policy coordination to address demographic, economic and ecological challenges, and advocate a ‘place-based’ approach to policy development. Such approaches are also relevant for other TGS. Equally, the EC spending review describes the scope to better integrate the European Maritime Fisheries Fund with other EU funds. This is particularly relevant for supporting communities in coastal TGS (European Commission, 2018g).

Tourism

The case studies illustrate the great importance of tourism in TGS. However, tourism is often treated as a separate sector, both within the European Commission and in national, regional and local administrations. The current EU Strategy and Action Plan (European Commission, 2010d) states that one action should be to ‘encourage the integration into tourism strategies of 'natural' heritage, which will also benefit from labelling initiatives’ (p. 8) and underlines the importance of sustainable, high-quality destinations. BRIDGES is in a position to offer guidance on the synergies and trade-offs that exist between biodiversity conservation and tourism

activities. Tourism based on the sustainable use and maintenance of valuable natural and cultural assets can be positive for biodiversity conservation. Conversely, however, unsustainable tourism practices that do not take proper account of natural and cultural features that attract tourists can lead to extensive damage to both biodiversity as well as erosion of local community identity. The BRIDGES case studies offer specific examples of practices that can contribute to biodiversity conservation, such as tourism initiatives centred on local and traditional products, wildlife watching, and education centres. The sparsely populated nature of some TGS means that local communities are often not aware of biodiversity issues. The case studies showed that traditional management practices e.g historic farming in the Middle Dalmatian Archipelago were based on strong ecological awareness. Declining populations and reduced connection of communities to the land and traditional land management practices means that local ecological knowledge is lost. Particular approaches are required to convey the importance of biodiversity conservation in sparsely populated areas where are competing priorities for basic infrastructure and services. Local priorities are often based upon fulfilling current economic needs due to a lack of local development opportunities, without due cognisance of the importance of protecting natural resources for longer term sustainable development.

Networking and communication

As noted previously, a significant number of organisations and networks are concerned with the issues addressed in this module: some more sectoral, some more multi-sectoral, and some – including the macro-regions and the regional conventions - focussing on specific TGS at different scales. As Mace (2014) has noted, the framing of conservation is now predominantly 'people and nature', and there are many examples of how biodiversity conservation can be explicitly considered as part of sustainable development e.g., Hammer T and Siegrist D (2016b). Nevertheless, there is still a long way to go in reconciling what are often regarded as contradictory goals, especially in cases of conflict. This implies an urgent need not only for cross-sectoral working within administrations at all levels, but also for the different networks, and their component stakeholders, to work together – and with the respective administrations – and to share experience and knowledge in structured ways, including meetings, field visits, publications, and the internet. Both CAP/Rural Development and Interreg funding may be particularly relevant in such contexts. However, while portals and other tools do exist, as described above, these are principally in English – yet this is not a language that a large proportion of key stakeholders in many TGS are comfortable with. Thus, as in the field of climate change adaptation (see corresponding section), means of communication in Europe's various languages are important: a role for national governments and, where these exist, national sections of international organisations (e.g., EuroPARC Federation, IUCN, EuroMAB).

9 Module 4.2: Energy provision and production in TGS

This module explores the relevance of the development of renewable energy in TGS for policy debates around energy security, sustainable growth, and energy governance.

The European Union is aiming to become the world leader in the development of the renewable energy sector (European Commission, 2018c). As the development of energy from renewable sources a spatial activity, geographical specificities are an important component of energy debates, due to the varied opportunities and challenges that the different types of territories might present.

Energy systems are geographically-located but also shaped by spatial processes (Bridge, 2018; Bridge et al., 2013). For a start, renewable energy resources are embedded in specific territorial settings that significantly condition the potential development and deployment of the different types of renewable energy. For instance, ocean energy cannot be developed in inland territories. However, energy-related challenges also depend on the respective socio-economic systems and energy governance of each territory, and different configurations of power relations and interest in the territory might shape the renewable energy sector development in different ways (Castrán Broto and Baker, 2018). In addition, infrastructure for the capture, production, distribution, consumption of energy from renewable sources impact the territories where this infrastructure is located, and the communities in them, through physical impacts on the landscape (Bridge et al., 2013), e.g. through lands flooded by reservoirs behind dams or the location of windfarms or large solar farms. Beyond these physical impacts, the production of energy from renewable sources also impacts the configuration of the local and regional economies and even the organisation of social and political power relationships (Bridge et al., 2013). Generally, the positive and negative effects of energy from renewable sources are unequally distributed in space (Bridge, 2018; Castrán Broto and Baker, 2018). This raises issues of territorial differentiation, connection, and separation (Bridge, 2018) and the contribution of benefiting actors and territories to the compensating negatively affected actors and territories.

This spatial dimension also links European and national goals and decisions with the assets and activities in specific territories. Thus, renewable energy can be explored from the perspective of multi-level territorial governance, taking into account that both public and private actors are involved in those processes.

Some TGS have great potential for renewable energy production. The geographical and climatic characteristics of mountain areas give them great potential for renewable energy production (Katsoulakos and Kaliampakos, 2016). This applies to solar energy, wind energy, agricultural and forest biomass (Hastik et al, 2016), and hydropower which is particularly interesting in terms of storage (Gurung et al., 2016; Scholten and Bosman, 2016). Islands and

coastal areas may have great renewable energy potential related to marine energy (tidal, wave, currents, or thermal) (Scholten and Bosman, 2016) and coastal areas have great potential for offshore wind energy (Scholten & Bosman, 2016). However, the actual potential also depends on other physical characteristics of the territories linked to weather conditions, as well as their geographical location.

The production of energy from renewable sources is seen as one of the most important instruments for advancing in the clean transition, contributing to reducing carbon footprints and climate change mitigation. In addition, it contributes to advancing other important societal objectives of the EU, such as achieving energy security and inclusive growth, and to securing stable, sustainable and affordable energy provision, which is essential as the basis for sustainable growth for Europe as a whole. Assuring energy security is particularly critical for islands and other remote and isolated systems in mountains. In addition, developing the effective exploitation of energy sources contributes to the development of TGS through the creation of new employment and the provision of energy to develop other economic activities. This is particularly relevant for remote areas with a low economy, such as some SPAs and mountain areas. Furthermore, the EC works on the assumption that the deployment of renewables could bring other social benefits even contributing to the reduction of energy poverty (European Commission and IRENA, 2018).

The deployment of Renewable Energy Sources (RES) in TGS has a high potential for decentralised energy production, whose desirability was already contemplated in the Renewable Energy Directive (RED) of 2009[64] in terms of benefits in increasing local security of energy supply, shorter transport distances, and reduced energy transmission losses, fostering community development and cohesion by providing income sources and creating jobs locally.

The development of RES in TGS contributes to the long-term decarbonisation objectives. Tackling CO_2 emissions and climate change is a global target included in the SDGs (Sustainable Development Goal 13) and a top priority for the EU (Juncker, 2014), aiming for at least 32% for the share of renewable energy consumed in 2030 as agreed in June 2018 (European Commission, 2018c). At the European level, the green economy is one of the priorities of the EU agenda and is translated into many EU policies aiming to achieve a clear and fair energy transition – the Clean Energy for All Europeans Package – that affect all EU citizens. The EU has wanted to highlight this inclusive dimension: the package is ‘for all Europeans’. The specific EU programme dedicated to environment and climate (LIFE) also includes measures to support energy efficiency and small-scale renewables. Finally, promoting the clean and fair energy transition and supporting low carbon economy transition strategies

[64] Renewable Energy Directive. 2009/28/EC.
Available at: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028.

are among the objectives of the Structural and Cohesion Funds for the next period 2021-2027[65] - which are very important for TGS as they aimed for the cohesion of the Union and to ensure the application of policies and funds to all territories.

On one hand, these policies impose a mandate to the European territories to move the deployment of renewable energy forward. The EU set binding goals to achieve an increase in the share of renewable energy to at least 20% of consumption by 2020 (European Commission, 2009) and an updated renewable energy target of 32% by 2030, to revised upwards by 2023 (European Commission, 2018c). On the other hand, the EU articulates programmes and financial instruments, such as the LIFE programme LIFE and the Structural and Cohesion Fund, which provide resources and guidelines for advancing the development of renewable energy production and provision.

With regard to the clean and fair energy transition, the aim is that no territory in Europe is left behind. TGS should be in the same position to adopt renewable energy in terms of both production and distribution and consumption, according to their potential. The Clean Energy for Islands (European Commission, 2017e) initiative is a clear example, but specific considerations on the challenges and opportunities of RES in coastal areas, mountain areas, and SPAs are also advisable. Other particular policies important for TGS include the Circular Economy Package[66] considering the potential of biomass in forested areas, for instance in mountains and other SPAs; and the general waste to energy strategy. Islands in outermost regions have also shown good practices linking energy experiences to the circular economy[67].

The sections in this chapter explore the key European policies affecting the development and deployment of energy from renewable sources and explore three different types of TGS scenarios characterised according to the predominance of different issues in the production and provision of energy from renewable sources. These are: disconnectedness, particularly in relation to islands and remote TGS; great potential for renewable sources in relation to specific types of energy and TGS (e.g. hydropower in mountains in the Alpine region or Norway, marine energy in coastal areas around the North Sea); and decentralisation as a strategy for the development of renewable energy in territories with a modest potential of renewable sources. The case studies have informed the different scenarios as seen in Table 11-1.

[65] Proposal for a Regulation of the European Parliament and of the Council on the European Regional Development Fund and on the Cohesion Fund. COM(2018) 372 final.

[66] Circular Economy Package.

[67] A stronger and renewed strategic partnership with the EU's outermost regions. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank. *COM(2017) 623 final*.

Table 9-1: Case study overview

	Disconnectedness	Decentralisation	Great potential
Algarve (PT)		Small-scale examples on photovoltaic initiatives	Role of technological transference and innovation
Alto Turia (ES)		Small-scale renewable energy projects Management of bureaucratic complexity for small-scale projects	Compensation Funds of Eolic installations (regional policy)
Malta and Gozo (MT)	Dependency on imported sources of energy Lead of the Clean Islands Initiative		
Norfolk –Suffolk (UK)			Offshore wind energy in coastal areas Contribution to economic growth and job creation
East Iceland (IS)			Contribution to economic growth and job creation
Tenerife (ES)	Dependence on imported sources of energy Small and weak independent electric networks		

9.1 European policy context in the development of renewable energy

From the policy point of view, the development of renewable energy is multifaceted – the relevant policy fields include climate change, security, competitiveness, environment conservation, and territorial cohesion – and multilevel, from European goals to local actions. Considering geographical specificities in the broader territorial and economic contexts is critical to formulate adequate development strategies in any of those policy fields (ESPON, 2018). Adequate governance underpinning decisions on clean energy transitions and energy security is vital to ensure the optimal balance between the production of energy from renewable sources and the conservation of resources, the investments needed, and the distribution of benefits between the markets and the local communities.

A multiscalar approach is essential when approaching the spatial dimensions of renewable energy production and consumption. Each locality is directly impacted by regulatory frameworks and incentives defined at the European and national levels; and European and national policies depend on concrete initiatives in each locality or region to reach their objectives.

The EU and its Member States share competences in the energy arena. Energy policy entered the EU treaties as a policy area with its own title – title XXI – in 2009 in the Lisbon Treaty (Ringel and Knodt, 2018) with the objective of promoting the development of new and renewable forms of energy (article 194.1, TFEU), while the Member States retain the right to determine the conditions for exploiting their energy resources, their choice between different energy sources and the general structure of their energy supply (article 194.2, TFEU).

Since then, the EU has developed a general policy for the promotion of RES in Europe. In 2009, the EC established a general goal to achieve a share of 20% of renewables in the EU's total energy needs and the individual national binding targets included in the Renewable Energy Directive (European Commission, 2009). In 2016, to further the decarbonisation objectives and deployment of RES, the Commission presented the 'Clean Energy for All Europeans' package, which aimed to constitute a new regulatory framework in the field of energy (European Commission, 2016c); work on that package has been ongoing since then. Among the eight different legislative proposals included in this package are the proposal for a revised Renewable Energy Directive (RED II) and a new Regulation on the Governance of the Energy Union. Political agreements on both of them were reached during June 2018 and will mean a new target of 32% on renewables for 2030 and new coordination mechanisms without binding national targets (European Commission, 2018c, 2018h).

The Clean Energy for All Europeans package also included new legislative proposals on the design of the electricity market: the Electricity Directive, the Electricity Regulation and the Risk-Preparedness Regulation. A political agreement on the Electricity Regulation and Electricity Directive, which are aims to adapt the design of the electricity market, putting more emphasis on the growth of RES, decentralised generation and empower consumers, and a better management of the energy flows through technological advancement towards smarter grids (Pereira et al., 2018), was reached in December 2018. The process of approval of the texts of the Directive and Regulation are, at the moment of writing of this report, still ongoing.[68].

Increasing the share of RES has important impacts on the electricity market. According to the European Commission, the share of electricity produced by renewables is expected to grow to 50% in 2030 (European Commission and IRENA, 2018). The increase in the share of supply from intermittent and variable RES – wind and solar in particular – will change the nature of the system (De Vries and Verzijlbergh, 2018) with a range of reliability challenges, and changes in energy sales (E3G, 2013). For instance, the number of prosumers is expected to grow, which could mean that traditional consumers may face higher energy costs (Erbach, 2016). A key challenge is enhance flexibility in all parts of the electricity infrastructure: 'a*s more variable renewable energy is produced, and more flexibility options are developed at all system levels,*

[68] http://europa.eu/rapid/press-release_IP-18-6870_en.htm.

trade needs to be better integrated at the same time across borders and between system levels, while trade closer to real time also needs to be facilitated' (De Vries and Verzijlbergh, 2018).

From the territorial point of view, distributed generation and the integration of the energy market are critical. In particular, the integration of the electricity markets faces the challenges of distribution to all parts of the EU and of managing variations in level of production and consumption through storage solutions such as pumped plants and batteries (Newbery et al., 2018). Pumped storage plants represent the most widespread form of electrical energy storage, particularly in mountain areas (Gurung et al., 2016; Soha et al., 2017). In 2011, there was an estimated capacity of pumped storage of 45 GW from about 170 units. This corresponds to less than 5% of Europe's total electric production capacity: 919 GW in 2011[69]. Projections estimated around 60 new pumped storage units with a total capacity of some 27 GW (Erbach, 2016).

In this context, local and regional renewable energy strategies are heavily dependent on national and European market dynamics and policies. As a result, the development of energy policies at all scales considers not only the energy trilemma of climate change mitigation, energy security and economic growth[70], but also market design and governance issues.

The EU addresses energy security and decarbonisation. However, while the clean energy transition and fighting climate change are global targets, energy security has a strong national sovereignty component, which implies that the EU and national actors may have different roles in agenda setting and the formulation of policies. While decarbonisation goals and regulations are negotiated at European level, and the Member States adopt them and implement them through the national plans, energy security policy is formulated at the national level. In energy security, even if the integration of the energy markets positions the EU in an important role in agenda setting, for instance, with the European Energy Security Strategy (European Commission, 2014d), the formulation of the policy is still heavily played out in national arenas. Regional and local actors position themselves within these different fields, with strategies to contribute to associated broad objectives, while ensuring that their needs in terms of economically, socially and territorially cohesive development are met. As a result, multi-level territorial governance in the field of energy is particularly complex. Ideally, the combination of top-down approaches from the objectives, rules, and markets designed at European level, the RES planning and support schemes decided at national level, and bottom-up initiatives from local stakeholders, will be complementary and, in the best possible scenario, configure effective policy exchanges that help to reach the objectives of the Energy Union (de Jong et al., 2015)

The EC has an important interest in all of these fields, which are included among its top priorities. However, the focus of the EC is on decision making on the clean energy targets and procedures (Clean Energy for All Europeans Package). Its role in implementation is more

[69] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_113a&lang=en

[70] See the World Energy Council's Energy Trilemma Index at the World Energy Council website.

'limited' – although still very important – to financing projects through different funds and programmes (i.e. Cohesion Funds, Horizon 2020, Life), as the market alone still does not deliver sufficient energy from RES to meet the targets, usually requiring significant upfront capital investments (Wishlade and Michie, 2017). In the programming period 2007-2013, the cohesion policy support for funds for investment in renewable energy and energy efficiency amounted to EUR 730.43 million of operational programmes contributions and EUR 460.37 million of Structural Funds in only 9 Member States (Germany, Denmark, Estonia, Greece, France, Italy, Netherlands, Slovakia and United Kingdom). Of these, EUR 460.37 million were from ERDF and 270.06 million from operational programmes national co-financing resources (DG for Regional and Urban Policy, 2017). In the current period 2014-2020, the role of financial instruments is being reinforced. The European Commission encourages the Member States to double the use of financial instruments in European Structural and Investment Funds, and renewable energy is one of the sectors that can benefit most from financial instruments (Wishlade and Michie, 2017). The Investment Plan for Europe[71] also supports investments in the expansion of the use and supply of renewable energy, and the EC estimates that at least 40% of infrastructure and innovation projects under the European Fund for Strategic Investments will contribute to climate action[72]. For the next programming period, the enabling conditions planned in the proposal for the cohesion funds include the 'effective promotion of the use of renewable energy across sectors and across the EU' and good governance for the energy sector in general and for the national / regional smart specialisation strategies[73].

The national governments (or regional governments in the case of decentralized countries and depending on the decentralisation arrangements in the energy field) have a strong say on setting national goals within the framework set by the EU, and on planning the development of RES. They also have a central role in designing the mechanisms that allow the development of RES projects, e.g. setting mechanisms and subsidies that devise new investments (Newbery et al., 2018).

National governments are responsible for planning the deployment of renewable energy in their countries according to their pathways. Currently, the Member States are bound by the targets negotiated at EU level for the share of energy from renewable sources in the final gross consumption of energy in 2020, included in the RED and ranging from 10% in Malta to 49% in

[71] Regulation 2015/1017 on the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 — the European Fund for Strategic Investment.

[72] Regulation (EU) 2015/1017 of the European Parliament and of the Council of 25 June 2015 on the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 — the European Fund for Strategic Investments.

[73] Proposal for a regulation of the European Parliament and of the Council laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, and the European Maritime and Fisheries Fund and financial rules for those and for the Asylum and Migration Fund, the Internal Security Fund and the Border Management and Visa Instrument. 2018/0196 (COD).

Sweden (European Commission, 2009). The work towards those targets for the period 2011-2020 was designed in the National Energy Action Plans that the Member States prepared in 2010, and has been monitored since then every two years by progress reports. In the last report available, corresponding to the period 2015-2017, the Commission was optimistic about the deployment of renewable energy in the majority of Member States, but noted that the projections for Luxembourg, the Netherlands and France indicated that those countries had to increase their shares in order to meet the goals (European Commission, 2017f). From 2020 onwards, with the new arrangements resulted from the negotiations on the RED II and the Energy Union, the Member States will not be bound by a fixed national target set by the EU. Instead, they will decide on their national goals according to their conditions and needs, in coherence with the EU target of a minimum of 32% renewables in the energy mix.

Member States have diverging views on the deployment of RES and on which are the most appropriate instruments to use. This partly reflects the variable extents to which their resources are aligned with their electricity needs (Newbery et al., 2018). In any case, to achieve long-term decarbonisation goals, a shift is needed in the role of the national governments from being regulators, that monitor and enforce the market rules, to meta-coordinators facilitating and supporting stakeholders (Peng and Poudineh, 2017).

For TGS, goal setting and plan setting will depend on whether the administrative units are characterised as TGS or not, and the level of autonomy. In general, the deployment of renewable energy sources in TGS will depend on the targets and procedures decided at the EU level and bounded by national goals and plans. However, some countries are identified as a whole as a TGS, e.g. some islands and largely mountainous countries. In these cases, targets on the deployment of renewables are directly set to TGS. This is, for instance, the case of Malta, one of the BRIDGES case studies. As an island, Malta is currently bound to meet the target set by the EU for 2020 and will have to set its national target and renewable planning for 2030. The level of autonomy of the TGS is relevant because, as the ESPON Locate project found, there is a statistical relationship between the level of regional autonomy and progress towards a low carbon economy, with greater progress towards decarbonisation in territories with greater degrees of regional autonomy (Schremmer et al., 2017).

Investment in RES is expected to be driven in the long term by the market (Peng and Poudineh, 2017) and, apart from regulators, the role of private actors as the transmission system operators (TSOs) and distribution network operators (DSOs) is already key in the electricity market. In particular, ongoing debates have focused on DSOs and TSOs, with a strong expert consensus on the need for defining a common vision in Europe for DSO role (Pereira et al., 2018).

The multilevel complexity of these issues needs enhanced governance arrangements to ensure the adequate coordination of policy-makers and adequate feedback from and to stakeholders at all levels, that ensure that demands from TGS are considered.

Table 9-2: Overview of relevant policies

	Policies
High level strategies	- Initiative Clean Energy for Islands - Investment Plan for Europe - European Energy Security Strategy - European Strategic Energy Technology Plan (SET-Plan) - Europe 2020 Strategy

Regulations – directives – legal instruments	- Renewable Energy Directive (RED) 2009
	- Clean Energy for All Europeans Package 2016:
	  - Renewable Energy Directive (RED II)
	  - Regulation on the Governance of the Energy Union
	  - Electricity Directive
	  - Electricity Regulation
	  - Risk-Preparedness Regulation
	- Circular Economy Package 2018

Financial incentives and associated governance arrangements	- Trans-European Networks for Energy - Connecting Europe Facility funding instrument - ERDF programmes, with proposed Policy Objective 2 for 2021-2027: "a greener, low-carbon Europe by promoting clean and fair energy transition" - Programme LIFE energy projects - Horizon 2020

9.2 Diversity of TGS situations

The BRIDGES case studies have highlighted a range of scenarios in terms of challenges and potentials around the development and deployment of energy from renewable sources. These may affect different territories in Europe in different ways, depending on their geographical specificities and other socioeconomic features. The sections below explore policy issues affecting TGS in terms of disconnectedness, decentralisation and dynamics to incentivise the development of RES in territories with high potential for renewable energy.

9.2.1 Disconnected territories

Ensuring energy security is a crucial priority in isolated systems, especially relevant for TGSs with constraints on infrastructure related to connectivity. It is crucial to islands due to their isolation (European Commission, 2017e; González et al., 2017) and limited capacity of inter-connections (Chatzimpiros et al., 2015), higher costs due to limited economies of scale, and variable energy production, which is highly dependent on weather conditions (European Commission, 2017e; González et al., 2017). For instance, amongst the disconnected islands are Crete and the Aegean islands in Greece (Kielichowska et al., 2017), Cyprus and the French, Portuguese and Spanish outermost regions.

Disconnection from the grid can also be a challenge for some remote locations in mountain areas (Katsoulakos and Kaliampakos, 2016), SPAs, and some coastal areas (e.g. along the Norwegian north coast in exposed areas in Nord-Troms/Vest-Finnmark (Stattnet, 2017).

Territories disconnected from the European energy grid tend to be highly dependent on fuel imports and, as a consequence, vulnerable to increases in the fuel costs. In Greece, for instance, where approximately the 10% of the population lives in disconnected islands (Kielichowska et al., 2017), the cost of the supply of disconnected islands is calculated to be 600-800 million euros per year (*Energy World*, 2018). At the same time, territories depending on fossil fuels do not contribute to the reduction of CO_2 emissions.

The situation of disconnected territories has been explored in the BRIDGES case studies in Malta and Tenerife. Both of these islands are almost entirely dependent on imported sources of energy, apart from a small but increasing component of energy from renewables, particularly from photovoltaic sources in the case of Malta, and a combination of sources in the Canary Islands. In the Canary Islands, the remoteness from the continent and the fragmentation of the territory have generated an energy landscape where the islands have independent island electrical systems, with small and weak internal grid networks. Malta's electricity grid was isolated from the rest of Europe until recently when an interconnector with Sicily (Italy) with a 200MW capacity was commissioned in 2015, providing around two-thirds of its electricity needs. Despite this connection, security of supply considerations remain a critical issue in Malta, as it remains almost entirely dependent on energy imports to satisfy its energy needs.

The challenge for disconnected TGS is to identify renewable energy sources that can be exploited in an economically viable way (see Text Box 9-1). While islands are often presumed to be in a favourable position to exploit wind energy and marine energy (i.e. waves, tides), significant obstacles often need to be overcome.

Text Box 9-1: Available sources of renewable energy in Malta CS

Although the climatic conditions in Malta are conducive to the use of solar energy sources, its small land area and high population density make the implementation of large solar installations difficult. Furthermore, the costs of energy produced from solar PV generation are relatively high due to limited availability and fragmentation of land and space, which limit scale economies, and the absence of solar rights. Importantly, the intermittency of energy from renewable sources poses relatively high costs in terms of maintaining the spinning reserve capacity in a small and relatively isolated network. As for alternative sources of renewable energy, to date there are no commercially viable RES sea/marine technologies that could be used in Malta's marine conditions, according to the National Energy Efficiency Action Plan (NEEAP). Wind energy possibilities are limited by lack of land, the absence of shallow waters, intermittent wind sources, the high costs of offshore farms, and competing uses of marine space and its environmental fragility. Thus, wind generation has been removed from the National Renewable Action Plan (2015-2020). Land space and environmental management also limit the potential of renewable energy production through waste and agricultural biomass.

However, there are factors that can act as barriers for the development of certain types of RES development, such as land constraints and high prices, which are s particularly challenging in areas with a large tourism-based industry. As the land on islands is limited, competing land uses tend to increase land prices, which limits the development of RES technologies that need a considerable amount of surface, as solar photovoltaic. In those cases, alternatives such as the installation of solar panels on buildings can be considered.

Policy context

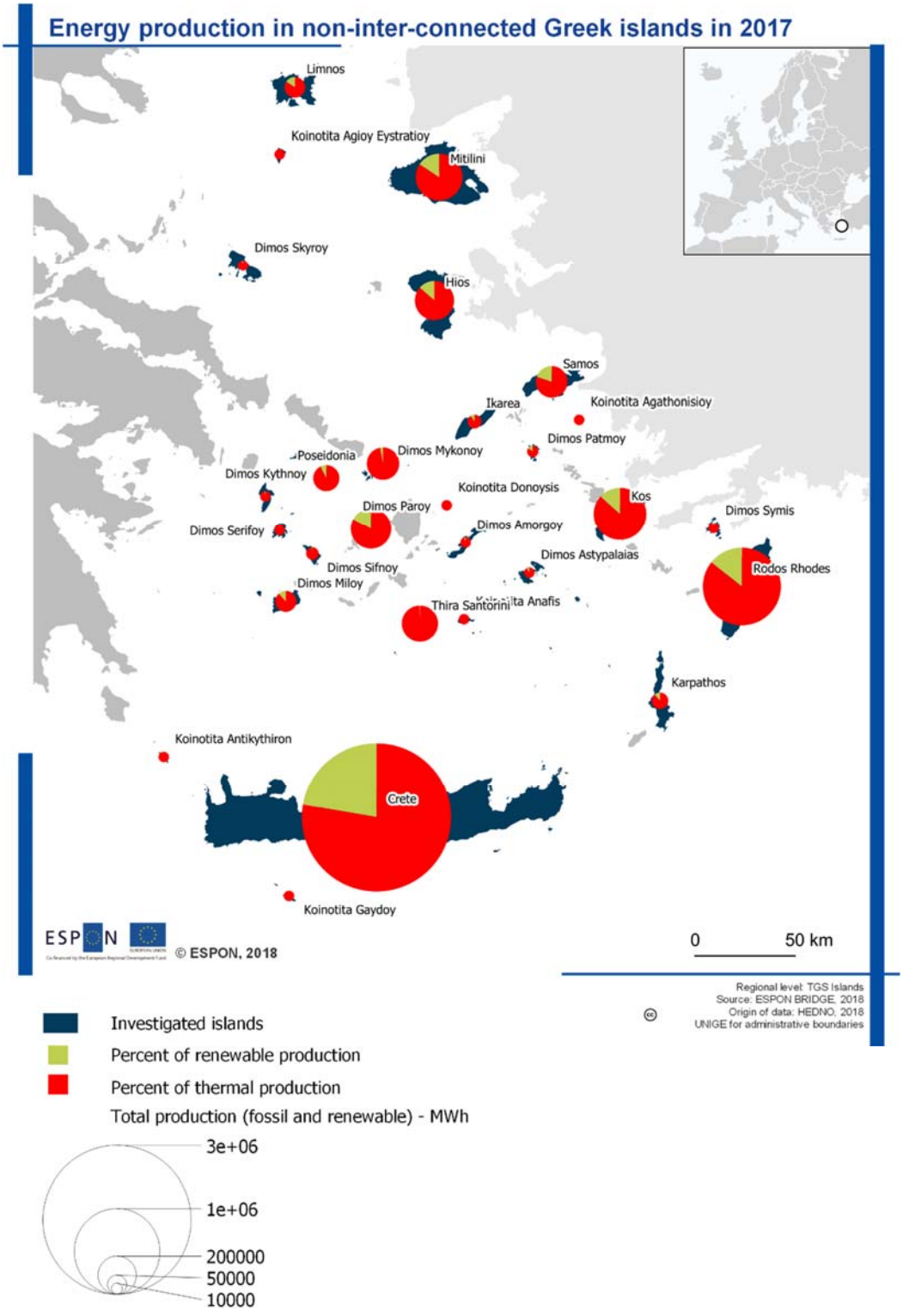
Strengthening energy security is the focus of the *European Energy Security Strategy* (European Commission, 2014d) and one of the objectives of the *Clean Energy for All Europeans* package (European Commission, 2016c). Some European regions are heavily dependent on fossil fuel imports, facing challenges of security in energy supply that make them vulnerable to economic or political instability increases that might affect prices and supply (TAEU, 2011).

Security of supply is of concern to the national security strategies and the conditions of every country. Some are more vulnerable than others, particularly in less integrated and connected regions such as the Baltic and Eastern Europe (European Commission, 2014d) and remote territories not connected to the continent, i.e. outermost regions.

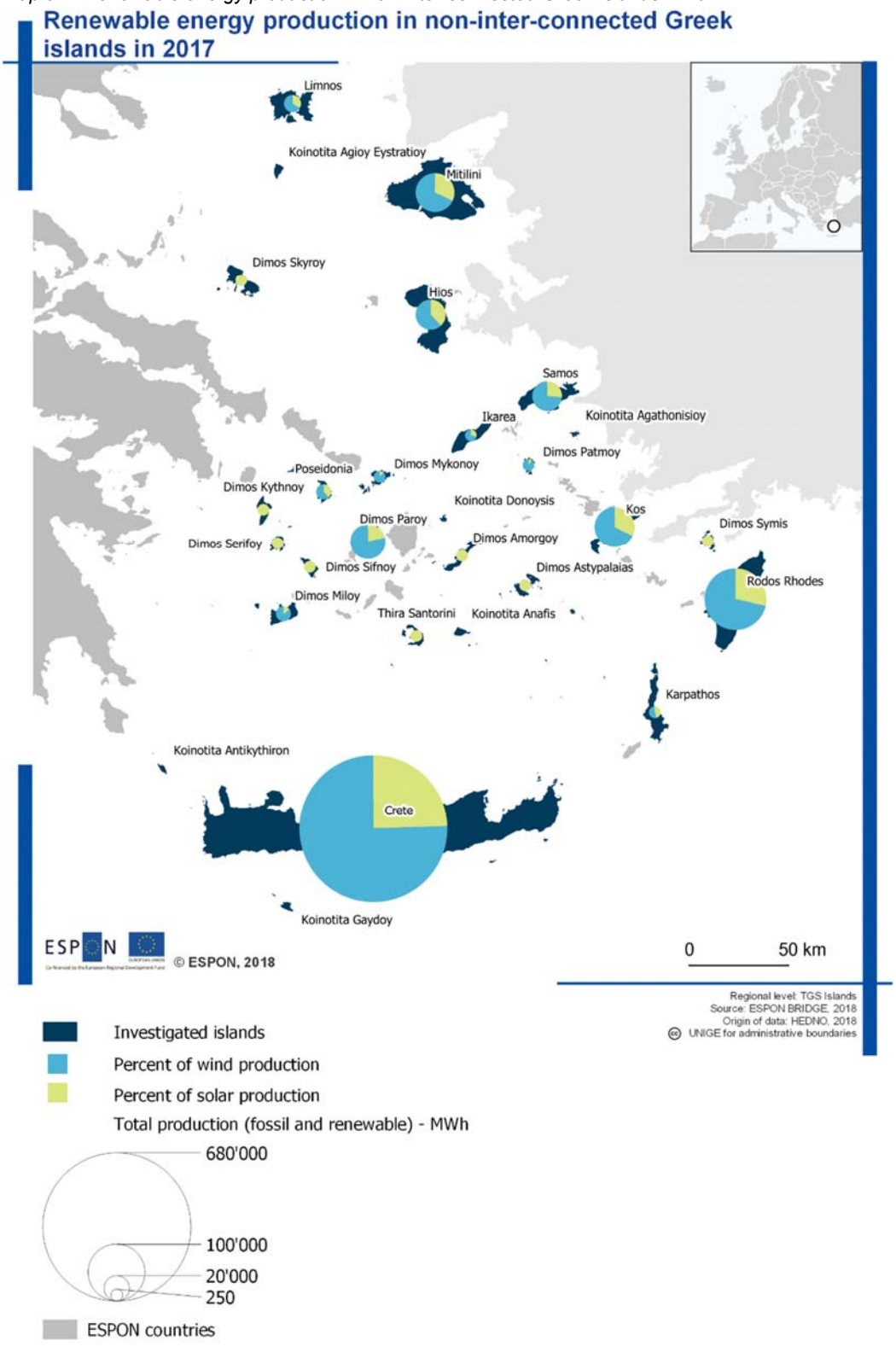
The *European Energy Security Strategy* affects all countries and territories, so it is relevant for TGS as well, particularly territories with national status. The energy security target has been included in the *Clean Energy for All Europeans* package, which also covers security of energy supply. The deployment of RES contributes to ensuring the continuous and adequate supply of energy from all sources to all users (European Commission, 2014b) In 2015, the deployment of renewable energy had cut 16 billion Euro from fossil fuel imports in Europe, compared with the 2005 baseline, and is projected to be around 60 billion in 2030 (European Commission, 2017f).

The European Commission has proposed that the energy component of the Connecting Europe Facility funding instrument should focus on ‘completing priority sections of the energy networks essential for the internal market and deliver smart and digitised energy grids to achieve interconnection targets and improve security of supply’ in the 2021-2027 programming period (European Commission, 2018g). This could improve the connectivity of territories isolated from the general grid, such as islands and remote mountain areas.

Map 9-1: Energy production in non-inter-connected Greek islands in 2017



Map 9-2: Renewable energy production in non-inter-connected Greek islands in 2017



Text Box 9-2: Energy production in non-inter-connected Greek islands in 2017

A substantial number of Greek islands in the Aegean Sea are not connected to the mainland electric grid. These islands must therefore rely on thire own capacities for the production of electricity. This is particularly critical during the summer season, as the presence of tourists contributes heavily to the total demand for electricity. The long-term reliability of these autonomous electric systems is reached through production that is mostly based on non-renewable thermal production using various types of fuels (petroleum, coal, waste). While large islands such as Crete, Rhodes, Mytilene, or Chios produce 10-20% of their electricity from renewable sources, most small islands rely exclusively on non-renewable thermal production (e.g. Santorini, Mykonos, Skyros) (Map 9-1 above).

It is in these islands that electricity production based on renewable sources, wind and solar production is most widespread (Map 9-2). The stronger renewable capacities on larger islands mostly rely on wind energy production. More than two-thirds of the production based on renewable sources in Crete, Mytilene, and Rhodes is based on wind power. In contrast, small islands with under-developed endogenous renewable production only rely on dispersed solar production infrastructure.

In 2017, 14 Member States and the European Commission adopted the Clean Energy for EU Islands Initiative (European Commission, 2017e) to support the deployment of RES to promote energy self-reliance in islands. The strategy acknowledges that tailor-made solutions for each island are needed. For instance, while ocean energy has been already strongly developed in Northern Europe around the North Sea, with an important focus of development around the European Marine Energy Centre in the Orkney islands of Scotland (OES, 2017), the development of ocean energy in the Mediterranean is still in first stages (Soukissian et al., 2017). Malta, for instance, considers solar energy as the technology which best fits its situation (see Text Box 9-3).

Text Box 9-3: Policy approach to the development of renewable energy in Malta

The first draft of the National Energy Policy for the Maltese islands was initially launched for consultation in 2006 and again in 2009, to take into account the different energy options to attain the 2020 targets (Ministry for Resources and Rural Affairs, 2009). The National Energy Policy, published in December 2012, aims at diversifying the energy mix while accelerating a shift in the energy culture. The Policy stresses the importance of the efficient use of energy in households and industry and in other sectors of the economy. Given Malta's significant land constraints, the Strategic Plan for Environment and Development (SPED), published in July 2015, promoted large-scale renewable energy infrastructure within the 12 nautical miles of the Territorial Waters that constitute the seaward boundary of the Coastal Zone (Government of Malta, Planning Authority, 2015). Due to several major technology-related developments, Malta revised the originally planned RES mix presented in its 2010 National Renewable Energy Action Plan (NREAP), removing wind energy. The NREAP 2015-2020

sets out the revised RES mix, which is expected to deliver the 2020 target through a strong focus on solar energy.

National and local authorities have an important say in energy transition-related issues. Energy security has a strong national component, being part of the national security strategies. The role of regional/islands authorities or communities is also very significant for the deployment of renewable energy projects, by planning the development of renewable energy adapted to their needs and resources (see for instance the regional energy planning in Tenerife in Text Box 9-4) and fostering the development of decentralised small-scale projects.

Text Box 9-4: Regional energy planning in Tenerife

In 2017, the Canarian government published a draft version of its 2025 Energy strategy (Estrategia Energética de Canarias 2015-2025, Documento preliminar). This notes that **the archipelago's energy model** is not aligned with the objectives of the Europe 2020 strategy. In order to trigger change, a more flexible and vision-oriented 'strategic' approach was chosen as an alternative to previous 'planning' measures. Concerning renewable energy production, the strategy suggests the following objectives:

- Increase the contribution of renewable energy in the final energy demand from 2% in 2015 to 15% in 2025;
- Increase the contribution of renewable energy to electricity production from 8% in 2015 to 45% in 2025;
- Increase wind power installed capacity from 164 MW in 2015 to 1025 MW in 2025;
- Reach 310 MW of installed offshore wind capacity by 2025;
- Increase installed solar capacity from 180 MW in 2015 to 300 MW in 2025;
- Bring biogas capacity from 4 MW in 2015 to 25 MW in 2025;
- Promote the use of renewable energies to meet the heating needs of the sectors with the highest demand (e.g. hotels, swimming pool heating systems, and housing), especially through the promotion of the use of thermal solar panels, biogas and low enthalpy geothermal energy, to increase the percentage of heat demand covered by renewable energies from 6% in 2014 to 22% in 2025.

Overall, many islands and other territories disconnected from European electricity grids are still struggling to design and implement RES-based solutions that are cheaper than importing fuel. So far, 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.

9.2.2 Decentralisation as possible strategy for modest energy projects

Decentralisation of energy production involves the development of geographically dispersed and small-scale plants located close to consumers (Bauwens et al., 2016) and the mobilisation of local communities in the production of renewable energy (van der Schoor et al., 2016). Maroš

Šefčovič, Vice-President of the European Commission in charge of the Energy Union, recently identified decentralisation as one of the six 'D megatrends' in the new energy landscape, alongside with decarbonisation, democratisation, innovative disruption, digitisation and diversification. He also reaffirmed the EU's commitment with decentralisation by "putting in place rules to democratise and decentralise the production, storage, transport and use of energy" (Šefčovič, 2018).

Some TGS have a modest or limited renewable energy potential due to their natural resources and geographical location. In these TGS, developing decentralised energy production solutions can improve economic, social, and environmental resilience. Small-scale projects in thsse areas could contribute to the desirable decentralisation of energy production contemplated by the Renewable Energy Directive and proposals on the Electricity Regulation and Electricity Directive.

In disconnected territories, small-scale renewable energy projects can also solve problems of disconnection, as decentralisation contributes to energy autonomy and security of supply. (Prasad Koirala et al., 2016). Decentralised energy production can also deliver other benefitsm such as incomes and new employment opportunities in the operation and maintenance of installations, as exemplified in Text Box 9-5. As a factor of empowerment of communities and local stakeholders, decentralised energy production can also be a driver of economic development, e.g. in lagging and rural areas – for example, when energy production leads to collective distribution of benefits, or is used to help solve issues on energy poverty (European Commission and IRENA, 2018; Prasad Koirala et al., 2016). The advantages of decentralised energy production include reduced costs for transmission and distribution systems, reduced grid power losses, more efficient data management systems when developed with smart grids, and a larger share of zero-carbon technologies (Bauwens et al., 2016).

Text Box 9-5: Decentralised Photovoltaic initiatives in the Algarve case study

Enercoutim is a business association that aims to attract investment and innovation in the area of renewable energy (photovoltaic panels). It started with a focus on solar energy, but now emphasises **digitalization** in the energy sector and **new decentralized models**, based on energy flexibility. The association cooperates with the University of Algarve to develop solutions for **technology transfers** that support the existing strong network of enterprises, concentrated near the border with Spain, in Alcoutim municipality. Enercoutim has been developing **innovation projects in the energy sector**, considering European directives, and focusing on specific technologies. In this way, it develops innovation projects, becoming a type of incubator through the spin-offs created by innovation projects. Enercoutim and its spin-offs will act in the energy market, introducing new decentralized, clean, and digitized energy solutions, thereby helping the region become zero-carbon, and eventually an exporter of technology knowledge and solutions in the sector power.

Coopérnico involves citizens and companies in the promotion of the new energy paradigm – renewable and decentralized – for the benefit of society and the environment. "The

objective of the company is to work towards a renewable, fair and responsible energy model that contributes to a socially, environmentally and energetically sustainable future". Coopérnico has three main areas of activity: production, commercialization and energy efficiency. Coopérnico's already has three photovoltaic projects in operation in Algarve. The strategy adopted was to find partners in the social economy that would enter into a **partnership** with Coopérnico. The partners are a rural tourism enterprise and two social institutions. The owners of the roofs are social institutions from which Coopérnico leases the space for 15 years and to which it will donate the equipment for their own exploitation at the end of that time; the sun has no owner; the equipment is owned by Coopérnico.

Collective purchasing and financing, as well as innovative business models, help to overcome the high initial cost of renewable energy projects (Prasad Koirala et al., 2016). Technological issues include intermittency of local renewable energy generation and demand response, cost and duration of storage, local balancing of supply and demand, local flexibility and impact on larger energy system, and load and grid defection (Prasad Koirala et al., 2016). Technology transfers are key, linked to innovation systems and innovation territorial strategies. The case study in Algarve illustrates the innovation dimension of renewable energy decentralisation (see Text Box 9-5).

Focus on governance

Decentralisation of energy production raises a series of multi-level territorial governance issues. On one hand, there is a push towards more centralisation at the European level; on the other, there is a pull towards more decentralisation on the national level. In addition, individual or community-led decentralised energy production initiatives add complexity to already complex governance arrangements in the liberalized energy sector of the EU (Hoppe et al., 2018)

From the market point of view, while the dominant model of energy infrastructure has traditionally been very centralized, with limited citizen involvement in energy production (Bauwens et al., 2016), decentralisation means bi-directional commodity flows and disruptions in the monetary flow, as customers can produce their own energy and trade it on the market (Hoppe et al., 2018).

From a policy perspective, decentralisation is usually linked to greater community involvement in energy production (van der Schoor et al., 2016) and the deliberative and inclusive participation of consumers in the energy system (Prasad Koirala et al., 2016). Thus, a decentralised energy landscape becomes diverse in terms of actors, with prosumers emerging as stakeholders, novel community energy services, cooperative organisations, share-owners and related investment projects (Hoppe et al., 2018). Decentralised energy projects may take on a variety of forms of organisation and ownership (Becker et al., 2017) and reconfiguration of social practices with the creation of new partnerships (see for instance the second Portuguese

example in Text Box 9-5). This links to the social innovation module, as community energy initiatives may be seen as forms of social entrepreneurship (Becker et al., 2017).

Decentralisation of energy means a multi-actor complex scenario (Hoppe et al., 2018) with "interacting and overlapping networks" linking prosumers, providers, lobbyists and regulators at different scales (van der Schoor et al., 2016), which can be seen as a governance challenge. To cope with this complexity, commentators observe that it is important to make regulatory frameworks adaptive (Hoppe et al., 2018).

From a territorial point of view, governance arrangements in the renewable energy field include the multilevel coordination of public policies and private activities while taking into account the geographical specificities and the development of decentralised energy systems in the territories.

- A decentralisation of energy through the development of micro-scale renewable energy projects and self-consumption projects can be a relevant option for some islands, mountains and SPAs. However, this presupposes that adequate mechanisms empowering TGS communities to take advantage of renewable energy sources are in place. Some studies have shown that the governance environment tend to be hostile for decentralised energy initiatives such as energy cooperatives, which would be at a disadvantage compared to traditional developers (Bauwens et al., 2016). Thus, fostering decentralisation would be desirable to correct such tendencies.
- International and national initiatives aimed at facilitating exchanges of information and best practices on renewable energy deployment at the local level could benefit stakeholders aiming to develop decentralised energy projects in TGS. Also, lightening national administrative processes – or regional processes in the case of decentralised countries – can help local stakeholders trying to develop decentralised micro-scale energy projects in TGS.
- Transparency, clarity and stability of rules are needed to attract investments in energy and also to simplify processes and secure the inclusiveness of a system that aims for a clean transition for all Europeans. Communities in TGS aiming to develop decentralised energy projects would benefit from the development of adapted platforms that may facilitate the exchanges of information and best practices (de Jong et al., 2015) and lighten administrative processes.
- Administrative burdens in the deployment of renewable energy projects could be reduced. The new proposal on the Governance of the Energy Union suggests the reduction of the administrative burdens in the planning and reporting on renewable energy (European Commission, 2018h), but only from the point of view of the relations between the Member States and the EU. A report of the European Court of Auditors highlighted in 2014 that existing 'complex authorisation and permitting procedures for planning, building and operating RES installations together with environmental requirements' work as barriers to the deployment of renewable energy (European Court of Auditors, 2014). Sectoral regulations have a vast impact on decentralised governance, particularly in the implementation of permit systems and other regulatory requirements, causing institutional inertia and a lack of adaptive capacity in the energy sector (Hoppe et al., 2018). Such barriers can be particularly discouraging for local stakeholders trying to develop decentralised micro-scale energy projects in remote and isolated TGS. As these types of procedures are mainly set at national levels, Member

States can work to simplify them and reduce the administrative burdens in order to ease the energy decentralisation in their territories.

Many projects financed by Cohesion Funds under different Interreg programmes are already developing toolkits, roadmaps and other types of services to help communities in TGS to develop RES projects. For instance, the IMEAS project, funded by the Interreg Alpine Space Programme, 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[74]. Another example is the PRISMI project, funded by the Interreg Mediterranean Programme. This aimed to develop an integrated approach to support local stakeholders for developing Sustainable Energy & Climate Action Plans in Mediterranean Islands[75]. The extension of these types of projects and/or the transference of their results to similar territories would be useful for other communities in TGS to advance towards the clean transition.

Text Box 9-6: Issues of energy decentralisation in Alto Turia

Local stakeholders seem to be more interested in smaller projects connected to the local development of the area. From the policy point of view, two ideas have to be highlighted as necessary for developing the full potential of the RES in Alto Turia, particularly with regard to small renewable energy projects. First, technical and legal support, particularly with bureaucratic procedures, seems to be critical. The high degree of compartmentalisation of the Spanish national and regional governments makes it difficult to develop a RES project, particularly for small community-based projects aiming for self-sufficiency. In a dispersed and compartmentalised decision-making landscape, such as the energy arena in Spain, the adoption of clear, stable, and easy procedures on this matter would not disincentive the development of small projects. Second, an updated and stable framework regulating and helping the development of self-consumption projects is needed.

9.2.3 TGS with high potential for renewable energy: The diversity of dynamics

Some TGS play, or might play in the future, an important role in the production and provision of energy from renewable sources. These TGS have a substantial potential for renewable energy production, e.g. hydropower in the Norwegian mountains (IHA, 2017) and the Alpine region (Chomat et al., 2017), tidal energy around the British Isles and English Channel (World Energy Council, 2016), and offshore wind energy in the islands and coastal areas of the North Sea (Hundleby and Freeman, 2017),

Among these, some TGS are already hot spots and flagships of the development of concrete renewable energy sources and provide a significant proportion of European energy production.

[74] You may find more information on the IMEAS project website.

[75] You may find more information on the PRISMI project website.

In these cases, it is crucial to ensure good connections to the European grid in order to secure the supply of electricity at national, regional and European levels. Supporting established projects to improve their efficiency could contribute to increasing their contribution to the decarbonisation goals while being a source of green growth. Good practices in territories where the production of renewable energy is well consolidated can be a source of inspiration in the development of renewable energy sources in other territories which are starting to develop similar types of energy production.

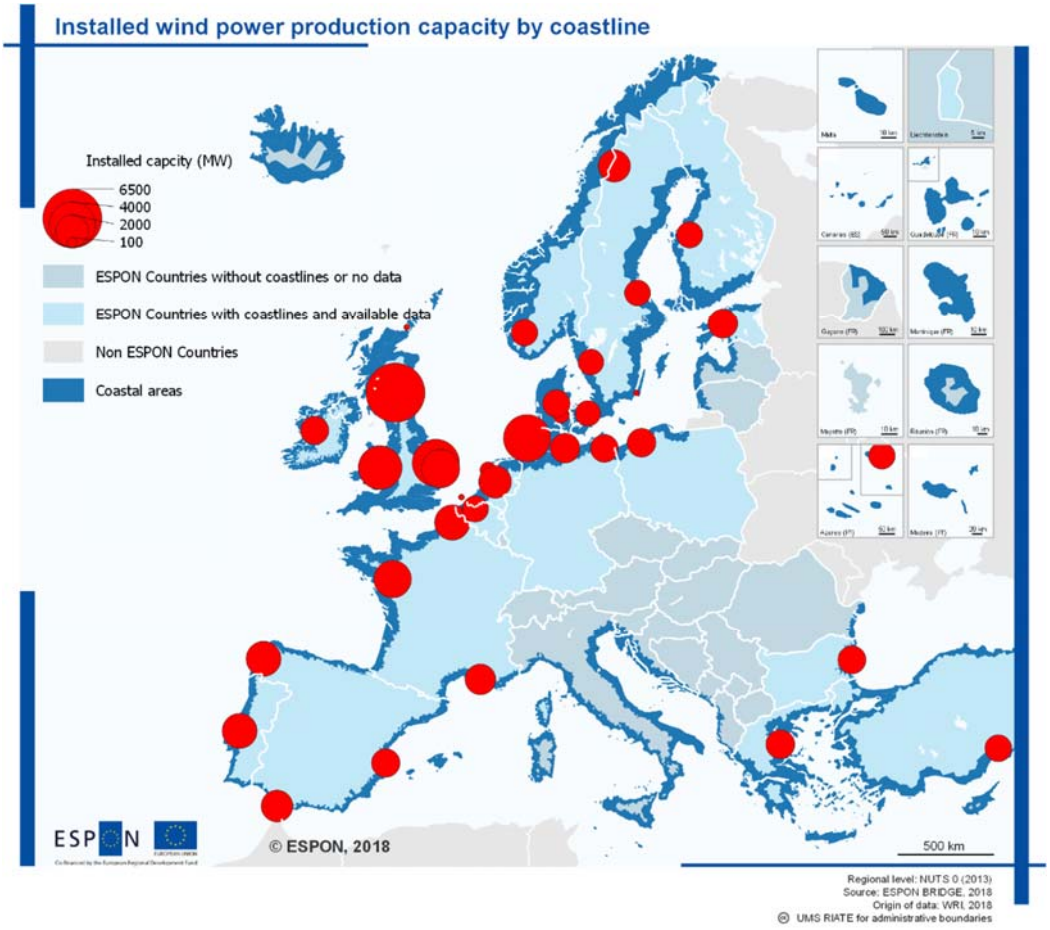
In territories with great renewable energy potential, the key objective is to ensure that the development of energy from renewable sources contributes to both the objective of decarbonisation and regional economic growth. It also contributes to local development if the concerned TGS communities benefit from the development of renewable energy, especially there are negative impacts on other aspects of their social and economic development (e.g. flooding of valleys by reservoirs behind dams, landscapes affected by windmills).

Diversity of situations

There a high degree of diversity of situations in TGS with great potential, depending on the type of sector and technology and trajectory, and environmental and socio-economic, and policy contexts. The morphology and natural resources of TGS imply that some have special potential for the development of specific renewable energy sources as for instance, hydropower and forest biomass in mountains, or wind and marine energy in islands and coastal areas.

In some TGS, the link between the geographical specificity and the existence of the renewable energy resources is obvious: e.g. the potential of marine energy for coastal areas. However, this potential does not imply that it is a viable energy source for all coastal areas, as it depends on the existing wind and the power of the waves and tides. Wind power is currently most developed in Northern Europe (see Map 9-3). Hydropower is mainly developed in mountain areas, as the quantity of energy that can be harnessed largely depends on the difference of altitude between the headwater level in the reservoir upstream of the dam and the tailwater level below the hydroelectric dam.

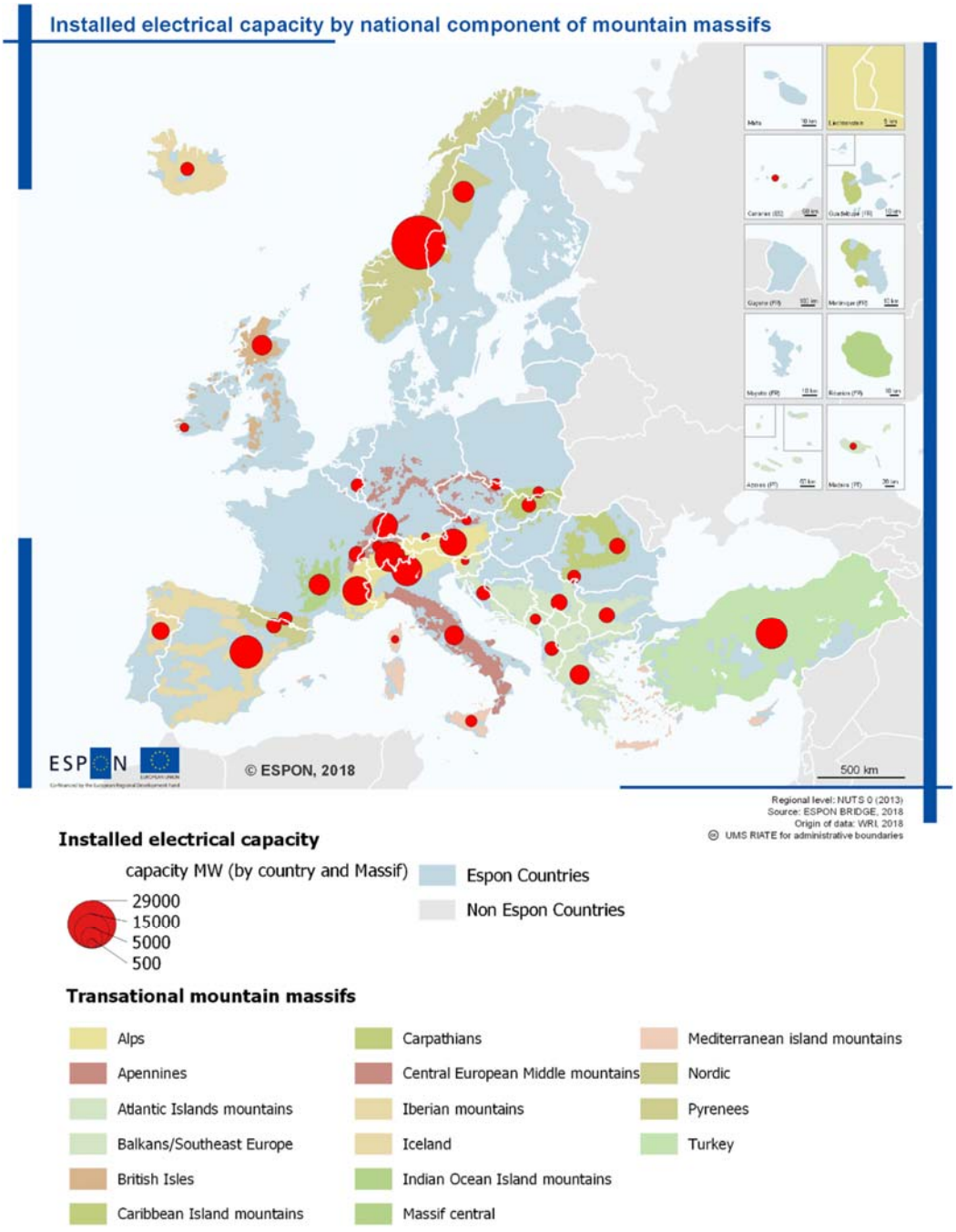
Map 9-3: Installed wind power production capacity by coastline



Since the end of the 19th century, mountain valleys have been used to produce hydro-electricity. However, mountains vary in their potential for hydro-electric production. The largest hydro-electric capacity is found in Norway, where a large number of small plants provide for a total capacity of 29 GW (see Map 9-4). Biomass also has a high potential in mountain areas, linked to the existence of forests. Wind energy has the potential to be spread out as the source is available everywhere. However, winds are faster and steadier at high altitudes than at surface level, and also offshore than on land. This is why mountain areas and coastal areas have more potential to develop this type of renewable energy.

Many TGS have valued landscapes; they may be biodiversity hotspots or have particularly fragile ecosystems. The selection of RES to be developed needs to take into account their variable impact on the natural environment. For example, hydropower has a greater impact on nature and generates greater potential for land use conflicts than rooftop photovoltaic systems (Chomat et al., 2017).

Map 9-4: Installed electrical capacity by national component of mountain massifs



Adequate territorial planning, which is usually at the regional or local level, that makes the development of renewable energy sources compatible with other uses of the territory or the marine area is key to prevent potential detrimental environmental impacts. This is particularly relevant for the development of hydropower projects in mountain areas (Hastik et al., 2016) or of biomass energy in mountains and forested SPAs, as biomass has a poor greenhouse gas

performance and higher impacts on air quality, biodiversity, soil and water than other renewable energy sources (VITO et al., 2017). Concerns have been raised around the potential impact of biomass production on forests. More than 770 scientists wrote to the European Parliament in early 2018 to raise this concern, asking for eligible forest biomass to be restricted to forest residues and waste (Beddington et al., 2018). According to the agreement of June 2018, the REDII will only count forest biomass that meets greenhouse gas emission saving and sustainability production criteria towards the overall renewable energy targets (Voegele, 2018).

From the socio-economic point of view, the large-scale development of renewable energy in TGS with great potential can contribute to the economic growth and development of those territories. The European Commission considers that renewable energy sources have an important role as a driver of inclusive economic growth by creating jobs and economic activity[76]. According to the Europe 2020 Strategy, the EU's objective of 20% of renewable energy sources for 2020 had the potential to create more than 600,000 jobs in the EU[77].

While the renewable energy industry creates jobs at the global level (IRENA, 2017), the different types of renewable energy create different types of jobs that contribute differently to regional development (Dvořák et al., 2017; Sooriyaarachchi et al., 2015). The development of activities from the research and development of a renewable energy technology to its operation and maintenance creates jobs along all the value chain, but the deployment of renewable energy creates jobs only in the construction, operation and maintenance sectors (Sooriyaarachchi et al., 2015). At the local level, the deployment of renewable energy directly creates stable jobs in operation and maintenance, but only temporary jobs during construction (Llera Sastresa et al., 2010; Sooriyaarachchi et al., 2015).

Text Box 9-7: Job creation in Norfolk-Suffolk from wind energy production

Offshore wind energy production is one of the fastest growing economies in East Anglia, particularly Norfolk and Suffolk. Many jobs in the region, especially in Lowestoft, already depend on offshore wind, with current estimates of £3 billion for the local value of offshore wind farm construction and maintenance. Within Suffolk, around 2,300 direct operation and maintenance jobs, as well as a further 1,500 supply chain jobs should be created by 2030. As of 2017, the East of England has 3 operational wind farms, 3 under construction and a further 5 being planned. The region is home to companies across the supply chain, e.g. in a specialist innovation and incubation centre at Ness Point in Lowestoft. Larger companies such as Seajacks and CWind have their headquarters in the East of England. The port of

[76] Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast). 2016/0382 (COD). Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:151772eb-b7e9-11e6-9e3c-01aa75ed71a1.0001.02/DOC_1&format=PDF.

[77] Europe 2020. A strategy for smart, sustainable and inclusive growth. Communication from the Commission. COM (2010) 2020. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF.

Lowestoft acts as the offshore construction coordination base for new wind farms, such as Galloper. Considering these activities, wind energy is and will be an important source of energy production and jobs in the East of England in the coming years.

The UK government developed a Great Yarmouth and Lowestoft (New Anglia) Enterprise Zone, which designates the area as a national *Centre for Offshore Engineering*. The enterprise zone focuses on supporting the growth of energy-related businesses and creating high skilled jobs. The zone comprises six locations.(UK Government Enterprise Zone, n.d.) The Local Enterprise Partnership claims that the setting up of the zone has attracted 39 companies and £30.6 million of private sector capital investment (UK Government Enterprise Zone, n.d.).

The construction of the Galloper wind farm brings 600 jobs to Norfolk, Suffolk and Essex during the construction and will bring around 90 long-term jobs to Suffolk and the operations and maintenance base in Harwich in Essex (Galloper Wind Farm Ltd, 2017). During the construction of the base itself, around 125 full-time-equivalent jobs will be created. Once in operation, there will be 75 FTE jobs. In general, the maintenance of 10-20 wind turbines produces 1 to 2 long-term jobs (Galloper Wind Farm Ltd, 2017).

If a TGS with a high potential of renewable energy sources specialises in the development and deployment of a concrete RES technology, this can contribute to creating direct and indirect economic development, jobs and inclusion in the region. However, in most cases, when the activity related to renewables in an area is limited to the deployment of renewable energy sources, the number of jobs created will be lower, and limited to operational positions. However, this can be important in territories with low economic activity, such as some rural mountain areas and SPAs.

The development of RES also induces the development of other economic sectors in the territory through the multiplier effect of job creation (IRENA, 2016; Sooriyaarachchi et al., 2015). The case study in Iceland illustrates how the development of RES may provide energy to support the development of other industrial activities (see Text Box 9-8Text Box 9-8). The case studies in Norfolk-Suffolk (see Text Box 9-7

Adequate territorial planning, which is usually at the regional or local level, that makes the development of renewable energy sources compatible with other uses of the territory or the marine area is key to prevent potential detrimental environmental impacts. This is particularly relevant for the development of hydropower projects in mountain areas (Hastik et al., 2016) or of biomass energy in mountains and forested SPAs, as biomass has a poor greenhouse gas performance and higher impacts on air quality, biodiversity, soil and water than other renewable energy sources (VITO et al., 2017). Concerns have been raised around the potential impact of biomass production on forests. More than 770 scientists wrote to the European Parliament in early 2018 to raise this concern, asking for eligible forest biomass to be restricted to forest

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Text Box 9-7) and Algarve show how this can also mean the development or strengthening of other industries in the value chain and the development of a smart cluster in the field, developing a niche export industry.

Nevertheless, an important part of the value generated from the renewable energy production can have little impact in the region. For instance, in the Alpine region it has been calculated that less than the 25% of the gross added value generated by large hydropower plants remains in the region (Björnsen Gurung et al., 2016) .

Text Box 9-8: Job creation and local development in East Iceland

The main purpose behind the large Kárahnjúkar hydro power plant and the reason for the interest on behalf of the state authorities in Iceland were that it should produce power for a large aluminium smelter plant in the town of Reyðarfjörður on the east coast. This was a part of the government plan which was to have positive impacts on regional development in East Iceland by creating hundreds of jobs in the smelter plant and related industries.

Most of the electricity is used for the Alcoa Fjarðaál aluminium plant, built during the same period, 2003-2008. It is the biggest aluminium plant in the country. This was an important change for the region, as it created over 800 new jobs and changed the economic structure of the region (Jóhannesson et al., 2010). Alcoa Fjarðaál is located near Reyðarfjörður, which now has around 1,200 inhabitants; it has doubled in size since the megaproject started.

The East Iceland region had suffered from continuous downturn in the economy with losses of jobs and losses of people to other parts of the country. The aluminium smelter also increased exports from Iceland, which historically had primarily relied only on fish. Due to this intended regional and local socio-economic impact, the municipalities in the region and their association had a great interest in the project and played a significant role in it. This example of a huge power plant and industry project is, however, not typical; smaller power projects in Iceland and the east region have had much more limited socio-economic impact.

The development and deployment of a concrete type of renewable energy technology brings socio-economic trade-offs to consider. For instance, investment in renewable energy sources could limit the development of other economic activities that could be developed; produce changes in the local stakeholder landscape, with new companies, investors, etc. influencing decision-making; or result in the loss of importance and economic benefit of carbon-based energy activities that may be located in the territory.

Governance and policy arrangements

From the governance point of view, large private investors and national decision makers could play a key role for the development of energy production in TGS that have abundant RES.

Member States are responsible for planning the deployment of the RES in their countries; they produce national renewable energy action plans according to their own pathways, according to the Renewable Energy Directive. From 2020 onwards, with the new arrangements resulting from the negotiations on the RED II and the Energy Union, the Member States will decide on their national goals according to their conditions and needs, in coherence with the EU target of a minimum of 32% renewables in the energy mix (European Commission, 2018c). So that the development of the renewable energy sources can be tailored to the features of each particular TGS, flexibility can be taken into account when setting territorial objectives and measures. This is particularly important for national and/or regional plans, as they are key policy instruments in the implementation of the renewable energy targets. A possibility to ensure this would be through the adoption of mechanisms of territorial proofing at the early stages of the policy design process, to consider the possible impacts of the policy in different types of TGS at European level or the relevant types of TGS in each country.

Current regulatory frameworks in Europe promote the production of energy from renewable sources through a number of support schemes, mostly through financial measures aimed to make renewable energy projects economically viable. Hydropower, wind power and biomass are mainly supported by feed-in tariffs and feed-in premiums in EU countries. Some countries combine these mechanisms with other support schemes such as green bonuses (Italy), renewables obligations on electricity suppliers for hydro-plants (UK); quotas (Italy and UK) and tenders or auction schemes to allocate financial support (Denmark, Germany, Ireland, Spain, Croatia, Netherlands, Poland, Portugal and Slovenia) in the case of wind energy; and green bonuses paid to the producers (Italy and Austria) for biomass (Banja et al., 2017). Belgium, Romania and Sweden apply quotas and certificates to support the three types of renewable energy sources, and Spain uses subsidies to support hydro-plants (Banja et al., 2017). The support to heat pump technology follows a different path, as this technology is supported by tax exemptions and investments grants (Banja et al., 2017) There are fewer mechanisms to promote ocean energy. Feed-in tariffs are the most widely adopted support mechanism to promote ocean energy (UK, Netherlands, Denmark, France, Italy, Ireland), and some countries are using tradable green certificates (Belgium, Norway and Sweden) (OES, 2017).

Large private investors are actively looking for areas where they could develop renewable energy projects when the regulation and market conditions are favourable (OECD, 2016). National decision-makers influence these conditions through support mechanisms and fiscal arrangements for renewable energy projects. For instance, although Alpine countries have favourable conditions for the production and storage of hydropower, there has been a general reluctance to invest because of uncertainties about the liberalization of the electricity market

and other issues, such as fees for the grid usage. This has led to several projects in Switzerland and Austria being abandoned (Björnsen Gurung et al., 2016).

In addition, the prevailing tax systems differ among territories, creating different patterns of distribution of resource rents at the local and regional scale. Models for the distribution of tax revenue stemming from renewable energy sources also vary significantly between countries: e.g. the differences between the Swedish and Norwegian models for hydropower taxation (see Text Box 9-9). As a result, decisions on the fiscal treatment of the renewable energy activities may have a significant impacts on local economies. The regulation of the deployment of other technologies, such as wind power, tends to secure the distribution of funds in the area, for instance, in the Alto Turia case study. Here, a compensation fund of the Eolic Plan, created in 2006 for the municipalities included in the areas affected by the zones included in the Eolic Plan, aimed to redistribute the income generated by the companies owning the wind farms among the entities in the territories where this infrastructure was located.

The role of support schemes and systems of distribution of the revenue from renewable energy projects highlights the importance of the existence of stable and transparent national frameworks regarding support mechanisms for renewable energy projects, as well as taxation, in order to attract, or at least not discourage, private investment.

Text Box 9-9: Differences in the taxation of hydropower revenue in Sweden and Norway

In Norway, municipalities have the right to keep a certain share of the revenues generated by hydropower facilities on their territory (LVK, 2016). Most of the country's 428 municipal authorities thus have revenues from hydropower (LVK, 2016). The issue is such a critical issue for municipal authorities that an association of municipalities, *Landssamanslutninga av Vasskraftkommunar*, has been set up to ensure the continuation of this taxation system. This model has attracted a lot of attention in Sweden from municipalities and regions that are heavy hydropower producers, and a similar association has been established recently, *Föreningen Sveriges Vattenkraftskommuner och -regioner* (FSV, 2018). In Sweden, there is no direct taxation of the hydropower revenues generated on an authority's territory, whether it is a municipality or a region. Hydropower municipalities may receive a financial envelope aiming at compensating for the negative effects and damages resulting from the construction of these plants. However, this system is not based on the actual revenues generated locally, which prevents these municipalities from sourcing a stable income (FSV, 2018). Moreover, territorial authorities argue that the construction of dams has limited the possibility to exploit other natural assets through agriculture, forestry or tourism (FSV, 2018). In the Norwegian model, according to media reports, territorial authorities seem to have more control over the exploitation and valorisation of their natural assets (SVT, 2016).

Accessing and/or developing the renewable energy potential of TGS requires investment in grid connections and innovation. The development of smart grids, for instance, has been recognised

as essential in the Alps (Permanent Secretariat of the Alpine Convention, 2017), but is also critical for the connection of other mountain areas and other types of territories, and particularly relevant for islands.

Regarding the needs of investment for the development of the sector, situations may differ across TGS, depending on the current status and trajectory of the development and deployment of a specific technology. For instance, hydropower is already well-consolidated in some mountain areas. Continuing the support for technological innovation in the territories and sectors already consolidated is important for optimising the current installations and maximising the construction of new ones. In Germany and Norway, which both have mature and highly developed hydropower sectors, investment is focused on refurbishment and upgrades, to increase the lifespan and efficiency of existing plants and minimise ecological impacts (IHA, 2017). In other TGS with great renewable energy potential, the exploitation of their renewable energy resources has started more recently, e.g. marine energy and wind energy in some coastal areas.

Aiming to seek the full development of the potential in the different TGS, it is essential that they can attract innovation and investment in renewables. One possibility for fostering this is the promotion of tailor-made specialisation strategies for those areas. Fostering the development of smart specialisation platforms in TGS focused on research and technology development efforts relating to the clean transition (ESPON, 2018) could be ideal at the regional level at which some TGS operate. There cannot be one-size-fits-all solutions, as different territories have different regional strengths and potentials, national frameworks differ, and different types of renewable energy sources follow different logics, involve different actors, and need specific knowledge – these all have to be considered in tailoring implementation strategies for different TGS (ESPON, 2018).

At the EU level, there are funds and resources for the development and deployment of renewable energy sources that the TGS can potentially use. However, as the issues around low-carbon economies are multifaceted, there is a high degree of fragmentation of the available funds (ESPON, 2018) among different programmes. For example, the Connecting Europe Facility finances projects in the energy sector oriented to increasing the integration of energy from renewable energy sources, as well as improving the energy market and enhancing the security of the energy supply[78]. The Europe 2020 strategy supports the development of research and innovation activities in the energy sector. Horizon 2020 included three programmes to tackle the societal challenges on secure, clean and efficient energy, and the research and innovation actions under Horizon Europe will include energy (European Commission, 2018a) . Although they are not particularly aimed at TGS, the projects developed

[78] Commission implementing decision of 26.3.2014 establishing a Multi-Annual Work Programme 2014 for financial assistance in the field of Connecting Europe Facility (CEF) – Transport sector for the period 2014-2020.

under these programmes are sometimes directly linked to geographical specificities. For instance, a search in the CORDIS database on the projects financed by the Horizon 2020 Programme under the Societal Challenge 3.3 Energy identified than 440 projects related to renewable energy, mostly dedicated to innovations in the fields of marine and offshore wind energy, and so, to be developed or with expected impacts in coastal areas.

The EU has encouraged the elaboration of research and innovation strategies for smart specialisation (RIS3). While these strategies have a high potential for local development, geographical specificities may present particular challenges. For instance, there may be limitations in the development of smart specialisation strategies in SPAs in terms of, for instance, the lack of a critical mass of actors and networks, and poor connectivity issues (Teras et al., 2015b). A recurring issue in this respect is the asymmetry between large renewable energy sources investors and small TGS communities. When such asymmetry occurs, local authorities and interest groups are not necessarily in a position to preserve the general interest.

9.3 Conclusions. Different scenarios and priorities on the deployment of renewable energy in TGS

Geographical specificities, being key to adequately understanding the potentials of renewable energy across Europe, need to be taken into account in both European and national decision-making processes, to secure an optimal deployment of renewable energy. The sections above have highlighted a range of issues in the development and deployment of energy from renewable sources that may affect different territories in Europe in different ways, depending on their geographical specificities and other socioeconomic features.

The multilevel governance shows a complex landscape of relevant actors for TGS, ranging from EU level actors to local authorities and public bodies, SMEs and projects implemented by national and regional authorities and experts and practitioners. In this context, it is important to understand the extent to which geographical specificities are taken into account in decision-making processes. Each TGS has a different situation in this respect. In some countries and regions, insularity (i.e. Malta, Canary Islands) or mountainousness (i.e. Switzerland) is a central component of territorial identity. Geographical specificities are then at the core of their energy policies. However, in most cases ,the geographical specificities only concern only part of the national or regional territories. Some TGS also extend across national or regional borders. In these situations, TGS tend to play a more peripheral role in energy policies.

There are no one-size-fits-all solutions for TGS in Europe. Thus, seeking the optimisation of the strategies for developing and deploying RES means that they must be tailored to different territories according to their assets, needs and priorities, national frameworks and stakeholders. However, three groups of TGS have been identified with respect to energy-related issues, challenges and opportunities: disconnected islands, and territories with both great renewable energy potential and limited renewable energy potential.

Disconnected islands

Some islands face an important challenge of energy security as they are disconnected from the European energy grid and are highly dependent on fuel imports and, as a consequence, vulnerable to increases in the fuel costs. At the same time, fossil-fuel-based territories do not contribute to the reduction of CO_2 emissions. Some islands could have a significant renewable energy potential from marine energy, but the development of ocean energy is geographically heterogeneous so far, being for instance more developed around the North Sea than in the Mediterranean.

In the case of disconnected islands, the key objectives are to avoid insufficient or too costly energy provision becoming a development bottleneck, and to help these territories to reduce their dependence on fossil fuels. The development of renewable energy in disconnected TGS can be seen as an asset for securing the energy supply. However, in the short term, it does not necessarily become a straightforward solution for the TGS due to higher costs and other constraints (e.g. grid development). Options to foster the development of renewable energy-based solutions in these TGS may look into specific support mechanisms oriented to make them financially attractive and cheaper than imported fuel.

TGS with a substantial renewable energy potential

Some TGS have a substantial potential for renewable energy production (e.g. hydropower in mountains in Norway and the Alpine region; marine energy in the islands and coastal areas in the North Sea), with a wide range of situations.

Some TGS are already hot spots and flagships of the development of RES and provide a significant proportion of European energy production. Reinforcing them could contribute to furthering their contribution to the decarbonisation goals and being a source for green growth. These territories can be seen as a reference to exemplify good practices and challenges in the development of RES in other territories developing their full renewable energy potential. In these cases, it is crucial to ensure good connections to the European grid for securing the supply of electricity at national, regional and European levels. Continuing support for technological innovation in these sectors is important to optimise the current installations and maximise the construction of new ones.

In other TGS with great RES potential, the exploitation of their renewable energy resources has started more recently. Fostering the development of smart specialisation in these territories, focused on research and technology development efforts, will contribute to the clean energy transition. The Horizon 2020 programme and the future Horizon Europe programme can help to further innovation in such areas. The development of research and innovation strategies for smart specialisation as, for example, the RIS3 fostered during the recession, could have high potential for local development.

In territories with great RES potential, the key objective is to ensure that the development of RES contributes to the decarbonisation of the EU, and also leads to economic growth in the regions. This implies that concerned TGS communities benefit from the development of RES, especially when this may have a negative impact on other aspects of their social and economic development (e.g. flooding of valleys by reservoirs behind dams, landscapes affected by windmills).

TGS with limited RES potential

Some TGS have a more 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.

In these areas, smaller-scale projects could contribute to the desirable decentralisation of energy production contemplated by the Renewable Energy Directive and the proposals on the Electricity Regulation and Electricity Directive. Decentralised energy can generate a range of benefits at the local level, e.g. increasing the local security of energy supply, providing income sources, and creating jobs in the operation and maintenance of the installations while empowering communities and local stakeholders.

International and national Initiatives aimed at facilitating the exchanges of information and best practices on RES deployment at the local level could benefit stakeholders aiming to develop decentralised energy projects in TGS. In addition, lightening administrative processes can help local stakeholders to develop decentralised micro-scale energy projects in TGS.

10 Module 4.3: Climate change in TGS

10.1 Presentation of module theme

For European citizens, climate change in TGS has many implications, as explored in many studies including the ESPON Climate Study (ESPON and IRPUD, 2011). 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. This combination of driving forces is therefore of vital 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 that rely on transport infrastructure that is 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.

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 (European Environment Agency, 2017b). In mountain areas, changes in temperature, precipitation, and the frequency of extreme events have many implications. Increasing numbers of natural hazards (landslides, avalanches, rockfalls, etc.) 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. Mountains are also major destinations for tourism, a key element of many mountain economies. While mountains 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. 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. Finally, in SPAs, while increasing temperatures in Nordic countries may have some benefits, they can also lead to the loss of permafrost, thus making transportation more difficult and endangering indigenous lifestyles. Conversely, in southern SPAs, climates are expected to become hotter and drier. Such north-south contrasts also apply to other types of TGS.

These are only some of the recorded and likely impacts of climate change of relevance to the citizens of not only TGS, but Europe as a whole. Further detail regarding observed and projected changes in climate (including extreme events) and potential impacts is provided in the complementary synthesis of the six case studies for this module and elsewhere, more generally (European Environment Agency, 2017b) and for natural hazards, including those mainly affecting mountains (landslides and avalanches) and storm surges and extreme sea levels, affecting coasts and islands (European Environment Agency, 2017a). Nevertheless, it must be stressed that, even though our knowledge of historical and recent changes in 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 about extreme events.

While it is recognised that mitigation and adaptation actions related to climate change are closely connected and are underpinned by common enabling factors (IPCC, 2014), the primary focus of this module is on adaptation, recognising in particular that actions to mitigate climate change are largely linked to the energy sector, considered within module 4.2.

The synthesis of the six case studies for this module (Table 12-1) also presents: 1) governance structures; 2) EU, transnational, and/or national climate change adaptation strategies and the extent to which they take account of specific challenges and opportunities in TGS; 3) local/regional (sub-national) adaptation strategies, and how these relate to wider-scale strategies; 4) conclusions on the extent to which stakeholders at different levels are involved and interact. It should be noted that Table 12-1 does not mention increasing air temperatures and increases in extreme events *per se* as an issue/theme, as these are common to all case studies.

This section focuses on the policy context for adaptation activities to address the impacts of climate change, recent actions and studies, and potential developments in policy to increase the resilience of governance, economic and environmental systems in TGS to climate change.

Table 10-1: Case study overview: Climate change in TGS

Case study	Issue / Theme 1	Issue / Theme 2	Issue / Theme 3	Issue / Theme 4
East Iceland	Higher windspeeds	Shrinking/loss of glaciers	Changes in fish stocks	Impacts on tourism
Western Lapland	Increased annual precipitation, but decreased length of snow season	Uncertainty for reindeer herding, new opportunities for agriculture	Extreme events: Challenges for energy production and access to basic services	Impacts on tourism (especially in winter)
Wadden Islands	Sea level rise, storm surges	Coastal damage, compounded by insufficient supply of sand	Decreased summer water availability, compounded by saltwater intrusion	Changes in terrestrial and marine biodiversity
South Tyrol	Less summer precipitation, winter shift from snow to rain, with negative impacts on the ski industry	Shrinking/loss of glaciers	Positive and negative impacts on agriculture and forestry	Increased vulnerability of transport systems
Danube Delta	Sea level rise, with increased flooding	Negative impacts on agriculture from increasing droughts	Negative impacts on biodiversity, including changes in fish stocks	Increasing number of summer tourists, with impacts on biodiversity
North Aegean	Sea level rise, with increased flooding	Negative impacts on agriculture from increased aridity	Increasing sea temperatures allowing influx of exotic fish species	Water shortages affecting local populations, tourism and agriculture

10.2 Policy context

10.2.1 Global context

Climate change has been an issue of global concern since the 1992 United Nations Conference on Environment and Development (UNCED, Rio Earth Summit) in 1992, where the United Nations Framework Convention on Climate Change (UNFCCC) was signed. In December 2015, the signatories to the UNFCCC, including the EU and its Member States, adopted the Paris Agreement (United Nations, 2015), which includes not only the long-term goals of limiting emissions of greenhouse gases (GHGs) and therefore the continued increase in global temperatures, but also the goal of "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development" (Article 7). Under this adaptation goal are many statements about the need to strengthen institutional arrangements and scientific knowledge and to engage in national adaptation planning processes.

This global policy document therefore explicitly links to another: Agenda 2030 (United Nations General Assembly, 2015), which refers directly to two TGS: mountains (in relation to water resources, goal 6; and conservation, restoration and sustainable use of mountain ecosystems and their services, goal 15) and coasts (sustainable management and protection of ecosystems, goal 14). Linked to this global agenda are the Sustainable Development Goals (SDGs). One of these (SDG 13) is on Climate Action, but many other SDGs, either directly or through their targets, explicitly consider means to address the impacts of climate change. Of particular relevance to TGS, given the many natural hazards that are increasingly likely to affect mountains and coasts, the Sendai Framework for Disaster Risk Reduction recognises climate change as a driver of disaster risk (UNISDR, 2015). Equally, the Convention on Biological Diversity (CBD) recognises the many complex linkages between climate change and threats to biodiversity, for instance in the Lima Declaration on Biodiversity and Climate Change (Secretariat of the Convention on Biological Diversity, 2017) and has established programmes of work for island, mountain, and coastal and marine biodiversity, all of which mention climate change[79]. Clearly, climate change is a global multisectoral issue.

10.2.2 EU context

The EU is a signatory to, and has ratified, the 2015 Paris Agreement, and the 2014-2020 MFF makes two commitments related to climate change: that it should be mainstreamed into all relevant EU programmes; and that EU expenditure on climate objectives should be at least 20% of the total EU budget (Ricardo Energy & Environment et al., 2017). The European Commission has defined three strategies relating explicitly to climate change: the 2020 climate and energy package (European Commission, 2016a), the 2030 climate and energy framework (European Commission, 2014a), and the 2050 low-carbon economy roadmap (European

[79] More information on these programmes of work may be found on the website of the CBD.

Commission, 2011a). In addition, under the proposed regulation for the Energy Union, Member States will be required to develop Integrated National Energy and Climate Plans (NECPs) for 2021-2030 and every subsequent ten-year period[80]. These instruments are of relevance to TGS; however, they focus primarily on emissions of greenhouse gases and efficient uses of technologies, which are largely mitigation measures. Up to 2020, EU Member States are also committed under the Kyoto Protocol to ensure that GHG emissions from land use are compensated by an equivalent absorption of CO_2, and the European Commission aims to enshrine this principle in EU law for the period 2021-2030, by incorporating land use and forestry into the EU's emission-reduction efforts for the first time (European Commission, 2018d). This is particularly relevant to two types of TGS: mountains and SPAs, as large proportions of their area are forested or covered with peatland. However, again, such measures primarily relate to mitigation and will therefore not be considered further.

The principal EU policy relating to adaptation is the Strategy on Adaptation to Climate Change (European Comission, 2013). Through this, the Commission encourages Member States to adopt comprehensive national climate change adaptation strategies (CCAS), and most have now done so (European Environment Agency, 2018a). The Strategy also emphasizes '**climate-proofing' action** by promoting adaptation through mainstreaming climate change into the main EU funds, particularly the European Maritime and Fisheries Fund (EMFF), the Common Agricultural Policy (CAP), Horizon 2020, and the European Maritime and Fisheries Fund (EMFF), as well as the Programme for the Environment and Climate Action (LIFE), which includes a climate change sub-programme (for mitigation, adaptation, and governance/information) with 25% of the total budget (European Commission, 2018g; Ricardo Energy & Environment et al., 2017). Overall, mainstreaming focuses on vulnerable sectors such as agriculture, fisheries, water management, biodiversity, and health, ensuring that Europe's infrastructure is made more resilient, and promoting the use of insurance against natural and man-made disasters (European Commission, n.d.). However, during the 2014-2020 programming period, higher proportions of programme budgets are allocated to mitigation compared to adaptation (e.g., Cohesion Fund 21.1% vs. 4.7%; ERDF 15.9% vs. 1.6%; ETC 11.2% vs. 4.7%) (Ricardo Energy & Environment et al., 2017). Examples of mainstreaming noted in the draft budget proposal for the 2021-2027 MFF (European Commission, 2018g) include:

- the need for major projects funded by the ERDF and Cohesion Fund to be subject to climate proofing, including resilience to current and future climate;
- the LIFE Programme;

[80] Proposal for a Regulation of the European Parliament and of the Council on the Governance of the Energy Union, amending Directive 94/22/EC, Directive 98/70/EC, Directive 2009/31/EC, Regulation (EC) No 663/2009, Regulation (EC) No 715/2009, Directive 2009/73/EC, Council Directive 2009/119/EC, Directive 2010/31/EU, Directive 2012/27/EU, Directive 2013/30/EU and Council Directive (EU) 2015/652 and repealing Regulation (EU) No 525/2013. COM(2016) 759 final/2.

- the specific objective of the CAP for Rural Development Plans to 'pursue climate change mitigation and adaptation'.

The Strategy also aims to address gaps in knowledge about adaptation, to improve decision-making, particularly through the European climate adaptation platform, Climate-ADAPT, which includes case studies, an adaptation tool, and information on specific sectors (including on coasts, marine and fisheries, and disaster risk reduction, all relevant to TGS) and funding instruments (European Environment Agency, 2018b). A related context is that of research, with at least 35% of the spending under Horizon 2020 dedicated to climate action related to both mitigation and adaptation[81].

Furthermore, the European Commission explicitly requires climate change to be taken into consideration during Strategic Environmental Assessment (SEA) of major public plans and programmes conducted under the 2001 SEA Directive (European Commission, 2001). In the guidance for this, examples of key issues relevant for TGS include those relating to sea level rise, coastal erosion, hydrological regimes and saline intrusion (coasts and islands), landslides and migration corridors (mountains) and, more generally, flood regimes, extreme rainfall events, storms, and high winds (European Commission, 2013b). Similarly, climate change resilience is mentioned in the regulations for the Connecting Europe Facility (CEF), Trans-European Transport Network (TEN-T) and Trans-European Networks for Energy (TEN-E) (Milieu, 2015). The two former programmes are relevant to all types of TGS given the common challenge of accessibility. Finally, while the EU Civil Defence Mechanism does not consider climate change, the concept of resilience is being increasing recognised by the European Commission[82], and the Action Plan on Disaster Risk Reduction (DRR) explicitly mentions the need to strengthen and reinforce links between DRR and climate change adaptation (and biodiversity) strategies and actions (European Commission, 2016b). Nevertheless, despite the very diverse range of EU policies and instruments that consider adaptation to climate change either directly or indirectly (Table 12-2), none specifically refers to the territorial dimensions in regard to TGS.

Table 10-2: Overview of relevant policies for climate change in TGS

Categories	**Policies**
High-level strategies	SDG 13 (Climate action), Kyoto Protocol, Paris Agreement
Regulations – directives – legal instruments	2020 Climate and Energy Package, 2030 Climate and Energy Framework, 2050 Low-carbon Energy Roadmap; Strategy on Adaptation to Climate Change
Legal instruments for governance	National Climate Change Adaptation Strategies, National Energy and Climate Plans (from 2021)
Financial incentives and associated governance arrangements	ESIF (Thematic Objective 5), LIFE, Horizon 2020 (Societal Challenge 3.5)

[81] Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions. Horizon 2020 - The Framework Programme for Research and Innovation. COM(2011) 808 final.
[82] See this webpage.

10.3 Recent studies and documents

A number of studies have considered the extent of mainstreaming during the current programming period. Findings are briefly summarised below, with particular attention on relevance for TGS. With regard to agriculture, certain greening measures under Pillar I of the CAP have relevance for adaptation. These include the designation of Ecological Focus Areas (EFA) and Ecological Focus Areas (EFA) outside Natura 2000 areas. (Alliance Environnement and Thunen Institute, 2017) identify a number of positive impacts of these measures. Some are particularly relevant to mountain areas, for instance the construction of terraces and stone walls as well as afforestation and silvo-pastoral agroforestry, which can reduce the risks of flooding and soil erosion; the latter measure also provides shelter for livestock. In addition, ESPG are important because they retain water and resist erosion from extreme weather events. It may be mentioned that overall, the study concludes that grasslands provide the most significant benefits not only for adaptation but also mitigation, as well as for biodiversity, soils and water – thus contributing also to the implementation of the Water Framework Directive and the Floods Directive.

A second study (COWI, 2017) considers mainstreaming in the ESIF, for which Thematic Objective 5 is 'Promoting climate change adaptation, risk prevention and management', under which the Member States allocated €29 billion (European Environment Agency, 2017a). The study notes that, while the allocations for the EAFRD and ERDF/CF/ETC, respectively, were €50.9 and €11.2 billion, no funds were specifically targeted for climate action under either the EMFF or the ESF (pp. 13-14). Equally, it is notable that, under European Territorial Cooperation (ETC), while €333.7 and €94.9 million are allocated for adaptation under cross-border and transnational programmes, respectively, there is no allocation under inter-regional cooperation programmes (p. 51). The majority of identified actions that relate clearly to TGS are for coastal areas and islands. The adaptation measures most commonly included in Partnership Agreements, the ERDF, and the Cohesion Fund relate to sea level rise, flooding (including of power plants), water scarcity and drought. Actions aimed at increasing disaster resilience (of relevance to mountains, coasts and islands) are included in many Partnership Agreements. However, specifically for mountains, the study finds there is little dedicated adaptation action under Measure 13, whose objective is to compensate farmers for the additional costs related to the constraints for agricultural production in mountain areas, and concludes that the "adaptation benefits of this mostly concern maintaining lands that would otherwise be abandoned" (p. 82). In addition, six Operational Programmes (OPs) in Italy specifically mention skills upgrading, training and/or education in risk management and other topics directly related to mountain areas. Finally, the study states that "A focus on shared resources (such as land or waters – examples include mountains, rivers, lakes or sea basins) and shared risks and interdependency concerning climate change adaptation provides a good framework for addressing adaptation issues jointly" (p. 51). The study makes a number of recommendations for the next MFF (see section 12.5).

A further study (Milieu, 2015) considers mainstreaming in three centrally-managed EU funding programmes: Horizon 2020, CEF, and the programme for Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME); for the latter, article 4 of the regulation states that enterprises should adapt to a climate-resilient economy. All of these are relevant to TGS in terms of, respectively, increasing knowledge and understanding of climate change, accessibility, and the large proportion of SMEs in TGS. With regard to Horizon 2020, the study notes that, while targeted calls have been made under Societal Challenge 3.5 (Climate Action, Environment, Resource Efficiency and Raw Materials), many other projects could be designed to consider climate change adaptation (and mitigation) in both implementation and dissemination, but this is rarely done. The study makes a number of recommendations for the next programming period (see section 5). For COSME, the study notes that most climate action is undertaken within the Green Action Plan (GAP) for SMEs and makes a number of proposals presented below.

The study with the widest scope is Ricardo Energy & Environment et al. (2017). It notes that it is difficult to identify the impact of the MFF commitments on expenditure decisions. At the widest level, the study concludes that the Commission has found it easier to ensure mainstreaming for programmes under shared management, as the delegation of responsibility to Member States is accompanied by explicit mechanisms that detail how mainstreaming objectives should be addressed. At the same time, the level of detail varies from substantial (ESIF, Horizon 2020) to rather limited (e.g., CEF, Copernicus). While noting the high proportion of minimum climate spend requirements in Horizon 2020, climate and environment spending in RDPs, and the LIFE programme, the study comments that "these seem to have been equally a response to political pressures in the policymaking communities concerned with these programmes (lead European Parliament Committee; relevant Council formation; sectoral stakeholders)" (p. 87). With regard to climate-proofing of major projects supported by the ERDF and the Cohesion Fund, a vulnerability and risk assessment is required during project development (European Commission, 2016d). The study suggests that this requirement could be extended to all investments funded by EU programmes. Similarly, the study notes that the Commission provides extensive guidance on mainstreaming, including for adaptation, risk prevention and management (European Commission, 2016e)[83]. It suggests that the better use of good practice examples should be considered as an option for the post-2020 MFF. The study also makes other proposals for the next MFF, Programme priorities and the development of national policies and strategies (see section 5).

10.4 Transnational approaches

Climate change is an inherently transnational issue (Bulkeley et al., 2014), addressed at many scales from that of the Earth (i.e., the UNFCCC, Paris Agreement) to joint actions between neighbouring countries. Within Europe, apart from the strategies and other policies and

[83] see also https://ec.europa.eu/clima/publications_en#Mainstreaming

programmes of the EU, the largest scales at which climate change adaptation is addressed are Europe-wide Interreg projects (currently Interreg Europe, previously Interreg IVC), transnational Interreg VB programmes, and macro-regional strategies.

10.4.1 Interreg

The Interreg 4C Programme (2007-13), included a sub-theme on 'natural and technological risks, climate change', and a number of projects focused on both mitigation of, and adaptation to, climate change. In 2013-14, a capitalisation project identified good practices from these projects, explored synergies both between the projects and with other initiatives, and made recommendations for local and regional authorities, the EU and future ETC programmes (McGuinn et al., 2014). Seven of the projects addressed adaptation; while some focused mainly on urban areas and are not directly relevant to TGS, others were more clearly relevant, focussing on capacity for territorial approaches to adaptation (F:ACTS!), regional cooperation towards avoiding risk and benefitting from a changing climate (REGIOCLIMA), regional policies for DRR (CivPro), the roles of forests in adapting to climate change and reducing risks (FUTUREforest), mitigation plans for disasters (MiSRaR), and a knowledge exchange platform for water scarcity and drought (WATER CoRe). Good practices specifically relating to TGS included:

- Coastal: Early warning system for flooding (Estonia: REGIOCLIMA); Regional climate change strategy (Spain: REGIOCLIMA);
- Islands: Seawater desalination plants to reduce dependency on rainfall (Cyprus: REGIOCLIMA); Coastal Flooding Decision Support System (Bulgaria: REGIOCLIMA); plans to increase resilience of forests to natural hazards (Greece: F:ACTS!);
- Mountains: flood protection infrastructure (Greece, Slovakia: REGIOCLIMA); improved management of forest fires through improved institutional coordination, planning and financing (Spain: FUTUREforest, REGIOCLIMA; Portugal: MiSRaR); reduction of risks of extreme snowfalls (Bulgaria: MiSRaR).

The study also identified a number of adaptation projects from ETC programmes (Alpine Space, Atlantic Area, Baltic Sea, Central Europe, North Sea, Northern Periphery, North West Europe, SouthEast Europe) of relevance to all four types of TGS. The recommendations resulting from the study will be considered below. Additional projects in the previous programming period that were not identified in this study included:

- coastal areas and islands: the BALTADAPT project (2010-13), a flagship project of the European Strategy for the Baltic Sea Region (EUSBSR), which prepared an adaptation strategy and action plan for the Baltic Sea region (Altvater and Stuke, 2013; Andersson, 2013) ;
- mountain areas: 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[84].

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

- coastal areas and SPAs: the CoastAdapt project (2009-12), funded by the Northern Periphery Programme (NPP), which created a web-based knowledge and information resource for the use of North Atlantic coastal communities and authorities[85].

Unfortunately, the web-based outputs of the latter two projects no longer appear to be functioning; a common issue with such platforms funded through fixed-term projects. A more fortunate example is that of the Clim-ATIC project, also funded by the NPP, which has had a significant legacy in the form of an online training resource for adaptation[86] and a Master's degree in climate change management[87].

In the current Interreg Programme, each transnational and cross-border cooperation programme focuses at least 80% of its ERDF allocation on up to four of the ESIF thematic objectives. Thematic Objective 5a is to "promote climate change adaptation, risk prevention and management by supporting investment for adaptation to climate change, including ecosystem-based approaches" (European Parliament and European Council, 2013 Article 5). In the Interreg Europe programme, while mitigation ('low carbon economy') is one of the four priorities, with 41 projects currently funded[88], no projects explicitly focus on adaptation, though some are doubtless of relevance. Nevertheless, Interact established a thematic network on climate change and risks in 2017 (http://www.italy-croatia.eu/content/climate); this has since held a number of meetings. Similarly, among the 15 transnational Interreg V-B programmes[89], while some have a priority on low-carbon economies, only a few have priorities that relate to adaptation:

- Balkan-Mediterranean: 'Sustainable territories – fostering transnational cooperation for resource efficiency and climate change resilience': projects relating to TGS consider forest monitoring for early fire detection and assessment (SFEDA), drought and fire observatory and early warning (DISARM), and mitigation of coastal erosion (HERMES);
- Danube: 'Improved preparedness for disaster reduction management including management of climate change-related risks'; projects relating to TGS consider flood management and climate change in the Danube Basin, a transnational catchment-based Land Use Development Plan for the Danube River Basin (CAMARO-D);
- North Sea: 'Demonstrate new and/or improved methods for improving the climate resilience of target sites': seven projects (Forfang, 2017).

In addition, projects under other Interreg V-B programmes do consider adaptation, for instance:

- Alpine Space: Multidimensional governance of climate change adaptation in poloicy making and practice (GoApply);

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[85] A brief description of the project may be found here, as the project website is no longer functioning.

[86] https://prosjekt.vestforsk.no/trainingforadaptation/

[87] See https://www.hvl.no/en/studies-at-hvl/study-programmes/2018h/maccm/

[88] Information about Interreg Europe projects may be found on the programme website.

[89] Information about Interreg projects may be found at https://www.keep.eu/keep/

- Atlantic Arc: Predicting Risk and Impact of Harmful Events on the Aquaculture Sector (PRIMROSE);
- Mediterranean: Guiding Mediterranean MPAs through the climate change era: Building resilience and adaptation (MPA-ADAPT)
- Northern Periphery and Arctic: Collaborative learning initiative managing and adapting to the environment (C.L.I.M.A.T.E.)

Some Interreg V-A programmes also pay particular attention to climate change, particularly those concerning coastal areas (e.g., Two seas; Ireland-Wales; Italy-France, Maritime), with projects focusing on water management, DRR (floods, coastal erosion), and marine resources (fish, shellfish, reefs); and mountains (e.g., France-Italy, Alcotra: high mountain risks).

10.4.2 EU macro-regional strategies

A further scale of trans-national cooperation is that of the four macro-regional strategies. The extent to which these have considered adaptation has generally increased over time. The Action Plan for the European Strategy for the Danube Region (EUSDR) (European Commission, 2010a), relevant for both mountains and coasts, primarily considers the need to respond to climate change with regard to DRR, under Priority Area 5 'To manage environmental risks', and states that "It will be essential that there is a full cross-cutting integrated approach to climate change, as it can impact on a large number of sectors (drinking water, navigation, agriculture, tourism, etc.)" (pp. 40-41). In addition, the document mentions impacts on hydro-electric energy, a particular issue for mountain areas. While a 'full cross-cutting integrated approach' has not yet been developed, a report on the implementation of macro-regional strategies (European Commission, 2016g) mentions that common methodologies for natural risk assessment and management under climate change have been developed; these are being further developed through Danube Interreg V-B projects.

The Action Plan for the European Strategy for the Adriatic and Ionian Region (EUSAIR) (European Commission, 2014c) is of relevance for coastal, island and mountain areas. Under Pillar 3 'Environmental quality', it states the need to develop a regional strategy on adaptation to climate change and to bolster the general resilience of ecosystems to increase their ability to adapt to the effects of climate change. The plan also mentions the impacts of climate change on transport, energy, and tourism. However, it has not been possible to identify specific actions on such themes.

The Action Plan concerning the European Strategy for the Alpine Region (EUSALP) (European Commission, 2015a) is of relevance for this mountain region. Within the plan, Action 8 is to 'Improve risk management and better manage climate change' (p. 38), and the need to adapt to climate change is also mentioned in other parts of the plan with regard to agriculture, energy, rural development, tourism and water. There is now an active Action Group taking forward

Action 8[90]; like other Action Groups, it is supported by the Interreg V-B Alpine Space AlpGov project[91].

The Action Plan for the EUSBSR was originally published in 2009 and was updated in 2017, following extensive consultation (European Commission, 2017d). The plan states that the member states of the Council of Baltic Sea States (CBSS) "have prioritised climate change as one of the main challenges for the region" (p. 25). Under the Objective 'Increase prosperity' is the sub-objective 'Climate change adaptation, risk prevention and management'; and there is also a Horizontal Action Climate coordinated by the CBSS, including an Action on climate change adaptation, which mentions the implementation of the strategy and action plan developed in the Baltadapt project. The impacts of climate change are also mentioned in relation to various topics in the plan: agriculture, biodiversity, ecosystem services, forestry, health, high-quality water, and the increased likelihood of extreme weather events.

In November 2017, macro-regional coordinators on climate and disaster risk reduction held a meeting (Liepa and Martynenko, 2017). Three key conclusions from this meeting were that:

- it could be beneficial for the macro-regional strategies to define adaptation as a separate priority in their action plans;
- As "Real implementation" of climate change adaptation happens at the local level, it is crucial to include city councils and municipalities (p.3);
- "Climate change adaptation is not as relevant to the funding programme, especially Interreg transnational programmes, as mitigation, which creates problems in stakeholder engagement in implementation of macro-regional strategies. Climate change should become a funding priority in programmes post 2020" (p. 5).

10.4.3 Other transnational initiatives

In addition to the many strategies, plans and projects mentioned above, a number of other transnational initiatives relating to adaptation should be mentioned. For mountain areas, these have taken place under the two range-wide conventions. For the Alps, although the Alpine Convention does not mention climate change, the Contracting Parties adopted an Action Plan on Climate Change in the Alps in 2009, and guidelines a) on local adaptation for water management and natural hazards and b) for adaptation at the local level have been published (Alpine Convention Platform "Water Management in the Alps", 2014) (Alpine Convention, n.d.). For the Carpathians, an article of climate change was added to the Convention in 2017, and there is a working group on adaptation (http://www.carpathianconvention.org/climate-change.html). For coastal (and island) areas, two examples were identified in the case studies for the present project. For the Waddensee, the Danish, Dutch and German governments adopted a trinational CCAS in 2014, which aims to achieve resilience to climate change (WSS,

[90] https://www.alpine-region.eu/action-group-8

[91] http://www.alpine-space.eu/projects/alpgov/en/home

2014). The actions in the CCAS are being implemented at various levels, as described in more detail in the case study report. For the Danube Delta, a CCAS was adopted in 2012, under the EUSDR (ICPDR, 2012). Subsequently, with 'climate proofing' financing from the European Commission, the WWF Danube Carpathian Programme (Romania), Danube Biosphere Reserve (Ukraine), Centre for Regional Studies (Ukraine) and Ecospectr Moldova developed a CCAS for the parts of the delta in Romania, Ukraine and Republic of Moldova in 2014 (Nesterenko et al., 2014). However, its implementation has been limited because the legal instruments are largely lacking. In addition, in 2016, the Contracting Parties to the Barcelona Convention adopted a Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas (UNEP Coordinating Unit for the Mediterranean Action Plan, 2016).

Finally, many projects funded by Horizon 2020 are transnational and address adaptation in TGS. Many of these, but not all, are under Societal Challenges 3.2 (Food security, sustainable agriculture and forestry etc.) or 3.5 (Climate action, environment, resource efficiency and raw materials), particularly H2020-EU 3.5.1 (fighting and adapting to climate change). A search of CORDIS showed that the majority of these projects concerned coastal and island issues, e.g., developing an understanding of, and evaluating, the impacts of climate change on islands (SOCLIMPACT); sustainable fish production (CERES, ClimeFish); and climate services for olive, grape and durum wheat systems (MED-GOLD). Other projects consider the impacts of climate change on the Arctic and how to adapt to these (APPLICATE, INTAROS, Nunataryuk) and the Alps (PROSNOW, on the management of snow in ski resorts). There are also many other Horizon 2020 projects on various aspects of adaptation that could be of relevance for TGS.

10.5 Conclusions and suggestions

In 2011, the ESPON Climate Study (ESPON and IRPUD, 2011) made a number of recommendations regarding climate change adaptation in all four types of TGS. While adaptation to climate change was already recognised as an imperative at that time in certain parts of Europe, including some TGS, it is now an objective of diverse European, transnational, national, regional and local policies and actions and also the subject of targeted research. However, the extent to which strategies to foster adaptation have been developed and/or implemented varies greatly at every scale, as shown by the examples cited previously in this report and in the case studies.

Climate change 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, while the focus of this report is on adaptation, many actions taken to mitigate climate change also have consequences for adaptation and resilience. However, 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. This is not least because, as the CPMR (2017b) notes, political attention has focussed more on mitigation, as "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.). In this context, the findings of McGuinn et al. (2014) are particularly relevant: that "national, regional and local authorities with competence in adaptation to climate change should set up a core team with high-level political commitments and support" (p.55).

At present, an evaluation of the EU Strategy on Adaptation to Climate Change is ongoing[92]. A number of organisations with specific interests in TGS responded to the public consultation, notably CPMR (for islands and coasts) (CPMR, 2017b) and Euromontana, for mountains (Euromontana, 2018b). The suggestions below refer to statements from these responses, and are also based on the conclusions in the synthesis of case studies and on recommendations in recent reports (European Environment Agency, 2017a) (Milieu, 2015) (COWI, 2017) (Ricardo Energy & Environment et al., 2017) (McGuinn et al., 2014).

At the widest scale of the next MFF, various documents have proposed:

- the establishment of separate mitigation and adaptation targets, and the introduction of indicative mainstreaming targets that reflect on the EU's long-term commitments and targets (2030, 2050) (Ricardo Energy & Environment et al., 2017);
- strengthening synergies between strategic framework and adaptation actions, and clear earmarking of funding for adaptation (COWI, 2017);
- a coherent EU policy framework that avoids policy conflicts and fosters an integrated approach to climate action, including both mitigation and adaptation, so that territories can simultaneously adapt to climate change while promoting the transition to green and circular economy growth (CPMR, 2017b).

The latter proposal recognises that most governance structures and funding instruments are still sectoral, despite the potential for both positive and negative interactions between sectors both with respect to climate change and more widely. Only some EU programmes require ex ante evaluation of how proposed projects and measures may either exacerbate, or be used to contribute to adapt or ensure resilience to, climate change. Consequently, additional opportunities to ensure more integrated approaches include:

- extended use of climate mitigation and adaptation relative to ex ante conditionalities, and of CBA, SEA and vulnerability and risk assessments across all funds (Ricardo Energy & Environment et al., 2017) (McGuinn et al., 2014);
- best practice examples and guidance on mainstreaming and how to put the horizontal principles into use and to select projects and investments (COWI, 2017; Ricardo Energy & Environment et al., 2017). Climate-ADAPT may be an appropriate mechanism for this purpose, but needs to be continually updated (e.g., various web links during the production of this report lead to inactive websites) and, to some extent, re-designed in consultation with stakeholders – and also effectively linked to other thematic and national adaptation portals (European Environment Agency, 2018b).

[92] Information about the process is available at https://ec.europa.eu/clima/events/articles/0119_en

At the level of specific funds and programmes, COWI (2017) suggest: ring-fencing for climate change adaptation in the ERDF; enhanced incentives for explicitly covering Thematic Objective 5 in education, training, guidance and employment (ETG) programmes; climate change adaptation and climate change mitigation treated on par with each other in the ESF; and setting out the EMFF contribution to climate change adaptation more clearly. While only the last of these relates explicitly to TGS, the relevance of the other recommendations to TGS will be discussed further below. For CEF, Milieu (2015) suggest that European Coordinators need to better understand, and act on, the need to consider climate change in infrastructure planning, and proposes that grants could be used to study climate change impacts on projects and to improve their design in order to increase resilience: a key issue for transportation infrastructure in TGS.

With regard to Programme priorities, Ricardo Energy & Environment et al. (2017) suggest: establishing a closer link between climate-related spending in the EU budget and future NECPs; establishing a requirement to link adaptation allocations and National Adaptation Strategies; and outlining the potential for mainstreaming in ESIF Partnership Agreements (with more specific contributions in detailed programme documentation). At the national level, the study suggests that CCASs and/or NECPs should place a clear emphasis on the better integration of the use of EU funds into national adaptation policies; and also that Member States mainstream climate objectives into their domestic public budgets, using the EU's approach as a good practice example.

Nevertheless, all policies and actions should be based on the best evidence possible, and this is particularly problematic with regard to climate change, especially at the regional (sub-national) or local scales at which most adaptation actions need to be planned and implemented. Thus, a first set of challenges relates to the reality that, 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 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. A number of the case studies have shown that institutions regard these uncertainties as a constraint to developing adaptation plans and actions; yet paradoxically, to increase resilience means that it is essential to recognise the realities of uncertainty.

This issue has been recognised particularly in the context of the need to continue research on likely trajectories of climate change and its impacts, especially in the new Horizon Europe Programme, and to make this widely and easily accessible. The draft Regulation for Horizon Europe (European Commission, 2018e) includes a cluster on 'climate, energy and mobility'

under the second Pillar on Global Challenges and Industrial Competitiveness. It is to be hoped that there will be a number of calls that specifically address adaptation in TGS, and that priority will be given to projects in other calls that explicitly consider adaptation. It is essential that such projects also explicitly consider the dissemination of their results; these need to be made easily accessible through portals, both national (and therefore in national languages) and European, such as Climate-ADAPT, which needs a more effective dissemination strategy, particularly to reach stakeholder groups that have not been sufficiently reached (European Environment Agency, 2018b). Trans-national approaches, recognising common issues at this scale, should also be considered, whether at the scale of conventions for mountain ranges or seas, or through the EU's macro-regional strategies. In addition, the capacities of Horizon Europe National Focal Points could be raised, for instance through DG RTD and DG GROW working more closely with the Executive Agency for SMEs (EASME) (Milieu, 2015).

A second set of challenges relates to the need for effective multi-level governance, with coordination across both sectors and governance levels, in developing and implementing strategies and plans for adaptation. As described in the previous sections, very many of these already exist, and often overlap. Transnational strategies and plans relevant to TGS exist for the Alps, Baltic, Danube Delta, Mediterranean, and Waddensee. These need to be aligned with the national CCASs that all Member States are encouraged to produce under the EU Strategy on Adaptation to Climate Change and also, in the future, the Integrated National Energy and Climate Plans (NECPs) under the Energy Union regulation. In turn, these need to be implemented through regional and local CCASs – and, critically, actions to adapt, and increase resilience, to climate change. This has been explored particularly in relation to coherence with DRR (European Environment Agency, 2017a) – but almost all other sectors are likely to be affected by climate change. This implies effective multi-level governance with coordination across both sectors and governance levels. Yet, while there are some good examples of this (e.g., from the Wadden Islands and in a number of CPMR regions: (CPMR, 2017a)), such coordination is generally limited and may be non-existent. This is despite the fact that many regional governments have competences in areas where adaptation is required, and the capacity to coordinate and mobilise cooperation. However, (CPMR, 2017b) state that the EU Adaptation Strategy does not take the regional level sufficiently into account and that, when the Strategy is reviewed, the Commission should: better reflect the role of regions and coordinators and intermediaries between Member States and local authorities; develop the right institutional framework for involving regional governments in defining and reviewing EU and national adaptation strategies; and encourage stronger cooperation between all government levels, including across national boundaries (p.6). At a wider scale, regional adaptation strategies for the four EU macro-regional strategies should be prepared (or in the case of the EUSBSR, further developed from the outcomes of the Baltadapt project), as called for in their Action Plans – and implemented. For EUSALP, this should be aligned with the existing Action Plan under the Alpine Convention; and for EUSDR, with actions under the Carpathian Convention. To be effective, such process must involve stakeholders from different governance levels and sectors.

The experience the tri-national CCAS for the Waddensee (Text Box 10-1Text Box 9-2) may provide a useful model.

Text Box 10-1: The Wadden Sea Trinational Climate Change Adaptation Strategy

The entire Wadden Sea area is covered by the Trinational Climate Change Adaptation Strategy (CCAS) (WSS, 2014), adopted in 2014 by the Danish, Dutch and German Governments. This aims to achieve resilience to climate change through:

- Safeguarding and promoting the natural qualities of the area while ensuring the safety of the inhabitants and tourists, the cultural heritage and landscape assets;
- Enhancing and promoting measures to increase the resilience of both the adjacent offshore and mainland areas of the Wadden Sea area;
- Achieving optimal added value by focusing on activities of joint relevance, e.g. exchange of knowledge, experts and best practice, joint studies and pilot projects.

The strategy focuses on the climate change impact related to the sea's environment. The stakeholders deliberately chose to continue their cooperation on environmental issues, which started in the 1970s, rather than formulating an integrated CCAS covering a wider spectrum of policy fields and territories (Wadden islands and mainland coastal regions). The guiding principles of the CCAS are: 1) natural dynamics of the Wadden Sea ecosystem; 2) interconnectivity of marine and terrestrial habitats; 3) integration across borders, administrative levels and policy sectors; 4) flexibility; 5) a long-term approach; 6) a site-specific approach; 7) a participatory approach and active involvement. All initiatives are assessed against these principles. Representatives of the three national governments set the agenda and thus the thematic focus of the CCAS every four years. Day-to-day implementation is by the Climate Task Group and guided by the Wadden Sea board, which has representation from national, regional and local authorities, NGOs, interest groups, research and education.

A third set of challenges relates to the availability of sufficient capacity in regional and local administrations, and the need for capacity-building. 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: "For the vast majority of CPMR regions adaptation is institutionally an entirely new subject. This poses enormous challenges on regional administrations and underlines the important of knowledge sharing" (CPMR, 2017b) (p. 6). Here, networks at various levels, from the European (e.g., CPMR, Euromontana, NSPA, Covenant of Mayors) to the regional (e.g., through LEADER and other CLLD initiatives) have particular roles to play, as do other types of stakeholders, such as environmental NGOs; for example, WWF played a key role in the development of the CCASs for both the Waddensee and the Danube Delta. In addition to involving key stakeholders, many of whom may not be those that authorities are accustomed to working with, another means to enhance expertise is through Interreg projects; as noted above, many have contributed to increasing the relevant

knowledge and developing innovative tools. However, in the current programming period, adaptation has only been a focus of a few transnational and cross-border Interreg programmes, as few chose Thematic Objective 5a as one of their four priorities. For the next programming period, a key response to these challenges would be greater political attention to adaptation when defining the priorities and budgets of Interreg programmes at all levels, from cross-border to Europe, and that these will lead to a large number of projects focusing on adaptation. As much as possible, these should aim to integrate adaptation and mitigation in the search for win-win solutions.

A fourth set of challenges relates to the fact that suitable information is not always easily accessible through portals such as Climate ADAPT, especially for those who are not proficient in English. This emphasises the need for national platforms, which are available in 16 EEA member countries and are under development in two others (European Environment Agency, 2018b). However, even when suitable information is available, inadequate expertise at regional and local levels often hinders its use in designing and implementing effective adaptation policies. Consequently (CPMR, 2017b) recommends that regions report on the implementation of adaptation measures, and that the Commission:

- continues to gather good practices, make these accessible (e.g., through Climate ADAPT) and use them as a basis on how to develop CCASs and obtain climate data and services;
- facilitates, promotes and finances peer-to-peer activities among regions, to enhance capacity building and stress the added value of the future Adaptation Strategy;
- through the EEA, develop a European network of experts and scientists to support regions in assessing climate-related risks and vulnerabilities. This links back to the first set of challenges, related to the availability of useful information about climate change and its likely impacts.

While the combined challenges of access to information and expertise can be addressed to some extent through including more comprehensive and targeted information on national, European and other portals, this must be complemented by capacity-building. This could be fostered through Interreg projects, the EU macro-regional strategies, and regional conventions, as well as through education and training programmes such as those in the new programming period that follow Education and Training 2020 (ET 2020), including the successor to Erasmus+. In addition, recognising that stakeholders undertaking adaptation actions include not only officials of administrations at various levels, but also SMEs, Milieu (2015) proposes that: DG GROW and the EIF should provide financial intermediaries and SMEs with targeted information on how COSME can support climate action; the business support services and events of the Enterprise Europe Network (EEN) should provide more targeted information on how to undertake resilience and adaptation activities, the EEN should be expanded to link with local climate networks (such as the Covenant of Mayors); and that the Erasmus for Young Entrepreneurs programme could promote exchanges between new and experienced entrepreneurs working on such activities. This could be relevant for many actors in TGS, from

farmers to those developing new products and services for tourism, or those involved in preventing risks and alerting citizens when these occur (Euromontana, 2018b).

A fifth set of challenges, as noted in nearly all of the case studies is lack of not only human, but financial, resources for both planning and action, especially at lower levels of governance, as exemplified by the case study from Western Lapland (Text Box 10-2Text Box 9-2). Although the urgency of climate change should call for easier access to finance, regions have a lack of information and capacity in doing so (CPMR, 2017b). This is also true for municipalities in many TGS. The challenge of funding is central to effective adaptation and, although it can be challenging and expensive, innovative solutions can provide new economic opportunities. Consequently, (CPMR, 2017b) (p. 4) calls for the future Adaptation Strategy to include measures that, in parallel, boost job creation and economic growth, supporting regional adaptation efforts while promoting the transition to green and circular economies. Similarly, other documents refer to the need for identifying and implementing low- or no-regret or win-win solutions that maximise co-benefits, for instance nature-based solutions that also have benefits for DRR or biodiversity (European Environment Agency, 2017a) (McGuinn et al., 2014). As suggested above, this could include the explicit inclusion of adaptation as an objective of programmes under all funds under ESIF, CAP, CEF, and Horizon Europe, with a dedicated budget to be allocated to activities that promote both adaptation and other goals.

Text Box 10-2: Challenges and solutions for climate change adaptation in Western Lapland

Municipalities in Western Lapland, and also individual Sami communities (sameby), are expected to implement climate change adaptation activities, defined in larger-scale CCAS, within their current budgets. One solution may be to find additional funding for projects (e.g., through CAP, EMFF, Interreg, LIFE and national programmes) that allow new experts to be employed and, if possible, develop or strengthen links to other administrations facing similar challenges. Another solution may be for municipalities to pool resources in order to hire dedicated staff, first, to allow local stakeholders access relevant knowledge and, second, to coordinate CCAS activities and find funding for projects across all the involved municipalities. This issue relates directly to the reality that Western Lapland is a SPA comprising municipalities that are large in area, but small in terms of population and administrative capacity.

To conclude, while this module has focused on adaptation to climate change, as this 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) p. 1). This approach recognises a gap between mitigation and adaptation, which often focuses on gradual changes resulting from climate change, but often

not the extreme events which are often of particular relevance in TGS. As noted above, the need to strengthen resilience to climate change is explicitly called for in the Paris Agreement, and the concept of resilience is being increasingly used in Europe in relation to disaster risk reduction (and also in some projects funded by the European Commission in TGS and elsewhere). The framework and 15 principles proposed by the (Union of Concerned Scientists, 2016) are therefore relevant for Europe as a whole, but particularly in TGS.

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