

SPINOFF PROJECT

**Cohesion Policy
design and implementation
in an island context:**

**Evidence and policy perspectives
from the North Aegean in Greece**

ESPON BRIDGES spinoff

Final Report // September 2022

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Disclaimer

This document is a final report.

The information contained herein is subject to change and does not commit the ESPON EGTC and the countries participating in the ESPON 2020 Cooperation Programme.

The final version of the report will be published as soon as approved.

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Abbreviations

CLLD	Community-led Local Development
CPR	Common Provisions Regulations
EAFRD	European Agricultural Fund for Rural Development
EMFF	European Maritime and Fisheries Fund
ERDF	European Regional and Development Fund
GDP	Gross Domestic Product
ITI	Integrated Territorial Investment
LAG	Local Action Group
OP	Operational Programme
PPS	Purchasing Power Standards
R&D	Research & Development
ROP	Regional Operational Programme
SME	Small and Medium-sized Enterprises
SUD	Sustainable Urban Development

1 Executive summary

This study analyses the implementation of an Integrated Territorial Investment (ITI) targeting small islands of the North Aegean Region in the 2014-2020 programming period, considering observed patterns of development in recent years and in the broader context of Cohesion Policy implementation. Outputs of this analysis serve as basis for recommendations for the design and implementation of a corresponding ITI in the 2021-2027 programming period. The study is a spin-off of the ESPON BRIDGES project, which explored opportunities and challenges linked to geographic specificities.

The analytical frameworks for the analysis of how insularity may affect territorial development is therefore applied to the specific situation of an archipelago region. The North Aegean region includes three large islands (Lesvos, Chios and Samos), each of which belongs to a different NUTS 3 region. There are also two intermediate size islands, Lemnos and Ikaria. All these large and intermediate islands have airports. The region also includes four smaller inhabited islands: Agios Efstratios south of Lemnos, Psara and Oinousses respectively west and east of Chios and Fourni and Thimena between Samos and Ikaria. The North Aegean region is therefore characterised by situations of double insularity, i.e. with smaller islands whose “mainland” is a larger island.

The ITI is a territorial tool for the implementation of a Cohesion Policy Programme. An ITI shifts parts of the management and implementation of a programme to a level that is appropriate for an integrated territorial development approach. This is done by setting up an intermediate body to which the Managing Authority delegates certain programme implementation tasks, e.g. the dialogues with potential beneficiaries, elaboration of call texts, selection of projects to be funded, compilation of data for progress monitoring. An ITI is also meant to help coordinate the use of ERDF (European Regional and Development Fund) and ESF (European Social Fund) allocations from the Regional Operational Programme with other sources of funding. This can for example be national cohesion policy programmes (e.g. the Transport Infrastructure, Environment and Sustainable Development OP in Greece), other EU programmes (e.g. European Maritime and Fisheries Fund, Life+, Horizon 2020), European Investment Bank funding instruments. This makes it possible for increase the leverage of individual sources of funding, and to increase to total funding available in the targeted territory. ITIs are usually set up in a top-down way, but are designed and implemented on the basis of a multi-stakeholder approach.

In the case of the North Aegean Region, the ITI set up in the 2014-2020 programming period did not meet the initial expectations. According to regional stakeholders, this is linked to the ITI design. In the absence of a coordinated, joint strategy for all islands, the ITI was perceived as an earmarking of funds to smaller islands rather than as a mechanism for integrated and strategic development. They also highlight the lack of knowledge of ITI principles and objectives among local authorities and stakeholders, the understaffed regional authorities, the insufficient administrative capacities and the lack of technical expertise.

Regional context

Contrary to most Greek regions, the North Aegean islands have experienced significant population increase between 2014 and 2021 (Figure 1). During this period, population increased by almost 17% in Lesvos and Samos NUTS 3 regions, and more than 11% in Chios region. This population growth is solely due to positive net migration, as natural population growth has consistently been weakly negative. The overall population of the North Aegean Region went from 198,000 in 2014 to 229,000 in 2021, with a strong increase in the number of young men. This is a result of the refugee crisis.

Since 2011, The North Aegean Region has experienced downward trends both with respect to GDP and household income per inhabitant (measured in PPS). The evolution is less favourable than in the rest of Greece.

Employment rates are well below the Europe 2020 objective of 75%. However, they increased considerably between 2014 and 2019, from 49% to almost 61% in the North Aegean Region. Employment rates have grown more in this region than in Greece as a whole. In parallel unemployment rates have fallen but remain at a high level. Female unemployment is an almost 10 percentage points higher than for men.

Major tourism related activities such as accommodation and restaurants, provided work for respectively 2 % and 7 % of the North Aegean workforce in employment in 2015. Corresponding rates in 2020 were 2 % and

10 %, suggesting a growth in the relative importance of this sector. However, the frequentation of hotels has dropped by almost 80 % between 2019 and 2020 as a result of the COVID crisis.

Innovation and Sustainable Development Perspectives

The North Aegean region is characterised by large tertiary and primary sectors, limited industrial production, low productivity compared to national and European average values. Although the innovation performance in the North Aegean region has increased over time, the region remains an emerging innovator. In fact, the R&D expenditures in the region can be observed in the business sector, the public sector, the tertiary education and in the business and private non-profit organisations. The highest spending is to be seen in the tertiary education, followed by the public sector, highlighting that the innovation in the business and private sectors is very low. Furthermore, business innovation is recognised as an important innovation element that needs to be further exploited and capitalised. Innovation in an archipelago region may have its own opportunities and challenges. The insularity of the region has largely affected the innovation development of North Aegean. Innovation is hampered by isolation from the mainland and other urban centres, the high transport costs and the remote local markets, lack of qualified staff, lack of satisfactory quadruple-helix interaction, i.e. interaction between local private sector actors, academia and local / national authorities and civil society representatives for innovation.

Some observations are made for each of the key sectors:

- The agri-food sector is one of the sectors targeted by the North Aegean regional innovation strategy (Περιφέρεια Βορείου Αιγαίου / Region of North Aegean, 2015). The region is home to several unique products while each island has a product specification for which it is famous for. Several good practices on those regional products showcase the efforts to link innovation with agri-food. Nevertheless, they seem isolated from any coordinated effort of promotion and branding of the region, but rather individual efforts of the respective companies or cooperatives in specific islands. This lack of coordination is accompanied by a lack of extroversion, promotion and marketing of the agri-food sector, isolating those efforts further.
- Tourism is an important sector for the national GDP. The North Aegean region has a number of assets, including a pristine natural habitat with rare flora and fauna, important biotopes, ecotopes and natural ecosystems. However, the tourism industry is considered to be relatively less developed than in other parts of Greece. It is therefore a sector with a significant growth potential (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2014). The key question is what types of tourism to be promoted to maximise benefits for individual islands and local communities and for the region. Sustainable tourism strategies need to be adapted to a variety of local contexts.
- Although the region is rich in natural energy sources, such as geothermal energy, solar energy and wind energy, the islands are to a large extent dependent on fossil fuels and a limited capitalisation of sustainable energy resources. The absence of an interconnection with the mainland has been an obstacle to investments in energy production from renewable sources. As such an interconnection is now foreseen, major offshore wind farms may be built in coming years. This could change the energy landscape of the region, the country and beyond.

When considering innovation in a more cross-cutting way, across sectors, one observes that there is a lack of innovation in each of the three sectors, and that there are few links between them. Implications of green and digital transitions are insufficiently addressed, e.g. when it comes to implications of foreseen investments in offshore energy production. More strategic thinking is needed, building on cross-sectoral and multilevel dialogues.

Cohesion Policy in the 2014-2020 programming period

A large proportion of major projects financed under the Regional Operational Programme of the North Aegean region compensate for inadequate infrastructure endowment. Although they undoubtedly contribute to strengthen perspectives for economic growth, sustainable development and citizen's quality of life, they tend to be guided by immediate needs, rather than a strategy for medium to long-term change.

For example, more than half of cohesion policy project volumes in Samos region, and just under 20% in Chios and Lesvos regions, sort under thematic objective 7 ("Sustainable transport"). In all three regions, this funding has primarily gone to investments in new roads, despite the Operational Programme's insistence on the importance of improving the connectivity of the islands with the mainland.

Across the North Aegean region, small proportions of cohesion policy funding are dedicated to Research and Innovation activities and ICT access and usage (mostly less than 2%) for each. Cohesion Policy project volumes for SME mainly concerns the construction or renovation of tourist accommodation or car rental. SME support has therefore not contributed to the development of new activities.

The review of measures implemented as part of the small islands ITI shows that only water provision, wastewater treatment and, to a lesser extent solid waste treatment have been addressed systematically. These are recurring challenges of small islands across Europe. However, this is only a small component of the initial ITI strategy's 3 strategic objectives and 11 specific objectives. Stakeholders agree that the small islands ITI in the 2014-2020 programming period did meet expectations. It primarily functioned as an earmarking mechanisms. This is mainly because basic preconditions for ITI design and implementation were not in place: limited institutional capacities, weakly developed civil society structures, lack of technical expertise.

Concluding reflections

The initial working hypothesis of the study was that a small islands ITI could help promote a more innovative and knowledge-intensive economy and address challenges and opportunities in three key sectors (agri-food, tourism and energy). The analysis suggest that this is not a realistic objective on the short term, for different reasons:

- Strategies in this field at the level of the larger islands and the North Aegean region are either inexistent or insufficiently precise. Smaller islands therefore do not have "mainland" strategies in relation to which they can position themselves.
- The institutional capacity of island is insufficient to be actively involved in ITI elaboration and implementation, and to facilitate the participative elaboration of strategies in each island.
- Civil society structures are weakly developed. This makes it difficult to identify representatives of different groups and interests with which a dialogue on strategic options may be organised. It also limits possibilities of organising collaborative processes.
- The technical expertise in each island, and the possibilities offered to mobilising external expertise, are insufficient. As a result, island authorities and stakeholders may have difficulties to develop high quality projects proposals in the framework of ITI calls.
- Limited evidence is available on social and economic patterns and trends on the different islands. It is therefore difficult to have evidence informed discussions on policy options.

The priority is to address these issues and to establish necessary preconditions for more participative approaches to small island development. Concrete proposals are made on how the ROP could contribute to this end: implement community-building initiatives on the different islands, provide technical and practical support to local authorities on the different island and organise a permanent monitoring of small islands.

Results of such measures could benefit the elaboration and implementation of a future ITI. To take better account of the fact that the North Aegean includes multiple functional dissociated small islands, one could consider combining it with CLLDs targeting each of the islands. Local Action Groups could help bring together public and private actors in individual islands and mobilise all relevant actors around a local development plan. These local development plans then feed into to ITI strategy.

The future ITI may then build on visions, and strategic plans designed to make their achievement possible. They may be approached as collaborative processes, in which vectors of change to be targeted by policy measures are identified as part of dialogues between relevant stakeholders. This may be insufficient capacity in specific fields, e.g. financial capacities, collaboration capacities, adaptation capacities and leadership capacities. It is also important to ensure that skilled, entrepreneurial individuals with a community perspective are given favourable framework conditions and encouraged to develop their activities. Individual small islands cannot address their challenges alone. An ITI targeting these territories needs to be coordinated with strategies targeting the region as a whole.

2 Introduction

This study analyses the implementation of an Integrated Territorial Investment (ITI) targeting small islands of the North Aegean Region in the 2014-2020 programming period, considering observed patterns of development in recent years and in the broader context of Cohesion Policy implementation. Outputs of this analysis serve as basis for recommendations for the design and implementation of a corresponding ITI in the 2021-2027 programming period.

The present introduction sets the scene for this analysis from two different points of view:

- First, considering the purpose and regulatory requirements of an ITI,
- Second, considering the wide range of implications of insularity, which need to be taken into account when pursuing a balanced and sustainable territorial development and improved quality of life for inhabitants.

The working hypothesis of the study is that an ITI could help promote a more innovative and knowledge-intensive economy and address challenges and opportunities in three key sectors (agri-food, tourism and energy). These three sectors are therefore focused on specifically.

Chapter 2 gives an overall introduction to territorial tools and insularity. Chapter 3 focuses on understanding the context and giving an overview of the North Aegean region. Chapter 4 goes through the innovation aspects in the region, in relation to the three key sectors mentioned above. These sectors have either been in focus of the regional innovation strategy in the 2014-2020 period, or will be focused on in the forthcoming programming period. Chapter 5 discusses the Cohesion Policy design and implementation, going through the thematic focus of the regional operational programme, the cohesion policy intensities in the region and the implementation of the ITI. The report concludes with some overall concluding reflections, relevant for future implementation.

For the development of the report, eleven interviews were carried out. These are presented anonymously in the report, represented by an interviewee code, which corresponds to their organisation. The organisation and corresponding code are presented below. Interviewees represent some of the most important public authorities and agencies, institutions and businesses of the North Aegean Region. However, they are not representative of the diversity of perspectives of stakeholders based on the different islands.

Organisation	Interviewee code
Aegean Innovation Network	I1
Chamber of Commerce of Lesbos	I2
DAFNI - Network of Sustainable Greek Islands	I3
Directorate of Development Planning of the North Aegean Region	I4
Special Managing Authority of the North Aegean Operational Programme	I5
Mediterra S.A.	I6
National Coordination Authority for ESIF	I7
Region of North Aegean, unit of planning, industry, energy and ESIF	I8
University of the Aegean	I9
University of the Aegean, Aegean Sustainable Tourism Observatory	I10
United Winemaking Agricultural Cooperative of Samos	I11

In addition to the interviews, a focus group with the Managing Authority and representatives of the small islands of the region was organised on 6th June 2022 to get a broader perspective on the governance and ITI implementation. Besides the research team, in total 9 participants took part in the focus. Four participants each of which representing the islands of Agios Efstratios, Fournoi, Lemnos, Oinousses, two participants were representing the special managing authority of the North Aegean operational programme, one two

participants representing the national coordination authority for ESIF and one participant representing the a consultancy which supported the managing authority.

2.1 Territorial tools in Cohesion Policy

The present section presents a synthesis of territorial tools foreseen in the Common Provisions Regulations (CPR) for the 2014-2020 and 2021-2027 programming periods, with a specific focus on evolving and more stringent requirements for ITI design and implementation. These factual elements help to specify issues that arise when setting up an ITI for a set of small islands in the North Aegean located off the coast of three different “main islands”.

ITIs and Community-led local development (CLLD) were introduced during the 2014-2020 programming period. These territorial tools are designed to enhance the capacity of cohesion policy measures to make a difference, i.e. to make the best possible contribution to economic growth, sustainable development and citizen’s quality of life with available funds. The underlying hypothesis is that measures that are embedded in an integrated strategy that targets a geographic area that makes sense from a functional point of view (a so-called “functional area”), and that has been developed with the active participation of a broad range of stakeholders would have better chances of making a lasting impact.

The functioning of these territorial tools can be summarised in the following way:

- An ITI shifts parts of the management and implementation of a programme to a level that is appropriate for an integrated territorial development approach. This is done by setting up an intermediate body to which the Managing Authority delegates certain programme implementation tasks, e.g. the dialogues with potential beneficiaries, elaboration of call texts, selection of projects to be funded, compilation of data for progress monitoring. An ITI is also meant to help coordinate the use of ERDF (European Regional and Development Fund) and ESF (European Social Fund) allocations from the Regional Operational Programme with other sources of funding. This can for example be national cohesion policy programmes (e.g. the Transport Infrastructure, Environment and Sustainable Development OP in Greece), other EU programmes (e.g. European Maritime and Fisheries Fund, Life+, Horizon 2020), European Investment Bank funding instruments. ITIs are usually set up in a top-down way, but are designed and implemented on the basis of a multi-stakeholder approach.
- CLLDs are bottom-up by nature. The European Commission considers them as “tools to empower local communities”. A CLLD is a “method for involving partners at local level including the civil society and local economic actors in designing and implementing local integrated strategies that help their areas make a transition to a more sustainable future”. CLLDS focus on a sub-regional area which will often be smaller than an area targeted by an ITI. They are led by a Local Action Group (LAG) with representatives of public and private local socio-economic interests. In this LAG, neither public authorities, nor any single interest group has a majority of votes. Actions are therefore based on consensual solutions. CLLDs can be financed by one or multiple funds. The Local Action Group selects operations to be funded, on the basis of selection criteria that have been approved by monitoring committees of contributing Funds¹.

In the 2014-2020 programming period, and contrary to e.g. Portugal and Romania, CLLDs in Greece are implemented primarily with funding from the EAFRD (European Agricultural Fund for Rural Development) and the EMFF (European Maritime and Fisheries Fund); and a small ESF contribution². CLLDs do not receive any support from the ERDF.

¹ In the case of the EAFRD, the monitoring committee only needs to be consulted.

² In the 2014-2020 programming period, CLLDs in Greece received € 303 million from the EAFRD, € 70 million from the EMFF, € 10 million from ESF, and no funding from the ERDF.

By comparison, CLLDs in Portugal received € 223 million from the EAFRD, € 83 million from the EMFF, € 93 million from the ESF, and € 35 million from the ERDF. CLLDs in Romania received € 572 million from the EAFRD, € 37 million from the EMFF, € 201 000 from ESF, and € 83 million the ERDF.

These few examples illustrate the diverse of CLLD implementations.

- SUDs have a longer history. Discussions and meetings during the 1990's resulted in developing an EU perspective on the 'urban acquis', i.e. an EU perspective on urban development. The Leipzig Charter of 2007, the Urban Agenda of 2016, all pointed out to a more integrated urban development. During the 2014-2020 programming period, sustainable urban development was made compulsory with a 5% of ERDF earmarked for SUD in each member state. SUD shall be undertaken through integrated territorial investment, or through a specific programme, or through a specific priority axis and set out integrated actions to address economic, environmental, climate, demographic, and social challenges. The managing authority and the urban authority shall establish the scope of tasks and the management. In the 2021-2027 programming period, the minimum earmarked percentage increased to 8%. Regulations also specify that SUDs shall pay specific attention to environmental and climate change-related challenges and to the green and digital transitions. They must also support the development of functional areas.

2.1.1 Integrated territorial investment (ITI)

In the 2014-2020 programming period, the North Aegean Region implemented an ITI targeting small islands (Lemnos, Agios Efstratios, Oinousses, Psara, Ikaria, Fournoi and Thymena). The objective was to address the fact that these territories are lagging behind other parts of the North Aegean region. A preparatory study was commissioned. However, no strategy was elaborated, and the ITI was managed by the ROP Managing Authority, as no other operational solutions could be found.

For the 2021-2027 programming period, the European Commission has further specified the constitutive elements of an ITI. Each ITI has to include the following compulsory elements:

- A territorial strategy that includes an analysis of the development needs and the potential of the area, including economic, social and environmental interlinkages, a description of an integrated approach to address the identified development needs and the potential of the area and a description of the involvement of the partners in the preparation and in the implementation of the strategy
- A multi-sectoral strategic approach at the relevant sectoral scale: the objective is to elaborate coordinated, cross-sectoral solutions to overcome complex development opportunities and challenges. These solutions must address the economic, social and environmental dimensions of sustainable and resilient development, as specified in Article 29 of the Common Provisions Regulation (CPR)
- A multi-level governance approach: ITIs are designed and implemented under the responsibility of "the relevant territorial authority" (Article 29 of the CPR). However, interventions must be coordinated and aligned among all relevant levels of governance, e.g., regional authorities and national sectoral ministries. Setting up an effective multi-level governance framework presupposes that relevant authorities and actors are identified at an early stage and actively involved in the strategy elaboration.
- A multi-stakeholder approach: relevant actors shall be involved at all stages of the process, from the strategy elaboration to the final evaluation. Relevant actors include public authorities, inhabitants, representatives of the civil society, community organisations, private enterprises and their representatives.

In addition, the European Commission strongly recommends to design ITIs at the level of functional areas. This is meant to help overcome fragmentation and inefficient actions caused by administrative boundaries. The European Commission also recommends that local actors should be involved in the design and implementation of ITIs, e.g. by setting up CLLDs and by developing new forms of participation.

These requirements raise several questions in the specific case of small North Aegean islands:

- Considering that the different islands are functionally dependent on different "main" islands³, and do not form a functional area, is the functional approach meaningful?

³ The "main islands" include the larger islands of Lesbos, Chios and Samos, and the intermediate size island of Lemnos

- Is there a convergence of development objectives, opportunities and challenges across the small islands, making a unique integrated development strategy meaningful?
- Considering the low population figures of the islands (between 200 and 1 300 inhabitants in 2011), and their limited administrative and financial resources, to what extent can island authorities effectively be responsible for the design of an integrated territorial strategy and for the implantation of an ITI?
- What types of multilevel governance arrangements can be set up with North Aegean regional authorities and national sectoral ministries? Is there sufficient interest at these levels to engage in a dialogue on an ITI at this level? Are there parallel initiatives targeting other Greek small islands with similar needs with respect to multi-level governance arrangements?
- How can cross-sectoral approaches be adapted to a context with few actors, many of which may have limited resources? Which forms of participation could be set up, building on already established practices of dialogue and exchange? How could participative approaches incorporate possible specific vulnerabilities of these small communities

These questions that arise in relation to ITI design and implementation echo broader discussions of the implications of insularity that have previously been analysed by the ESPON BRIDGES project, as part of its pan-European analysis of island territories.

2.1.2 Community-led local development (CLLD)

In the 2014-2020 programming period, 4 CLLD initiatives were implemented under the Rural Development Programme, administrated by the Greek Ministry of Rural Development and Food (Περιφέρεια Βορείου Αιγαίου / Region of North Aegean, 2020). These Local Programmes designed and implemented cross-sectoral development strategies. They were funded by the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF). LEADER programmes have been implemented in Greece since the 1990s and are considered to have produced significant results (OECD, 2020: 162). In other parts of Greece, LAGs are also funded by the European Social Fund and by the European Regional Development Fund. 70 LAGs have been funded in the 2014-2020 programming period. Many LAGs have focused on local service provision. In the 2014-2020 programming period, LAG members complained that the administrative burden was excessive. They for example noted that no call for proposals had been published by any Greek LAG in 2018 (Lampropoulos and Elanidou, 2018).

In the North Aegean region, LAGs focused on processing, marketing and development of agricultural products, tourism, crafts, provision of services to the rural population, investment in services and recreational infrastructure for public use, support for cultural events, support for studies, services and investments, culture and cooperation between enterprises. CLLDs targeted the following areas:

- LEADER Lesbos, with an indicative budget allocation of EUR 4.227.500, was implemented by Lesbos Local Development Company S.A.
- LEADER Lemnos and Agios Efstratios, with an indicative budget of EUR 4.650.000 (public expenditure), was implemented by Lemnos Development S.A.
- LEADER Chios, Oinousses and Psara, with indicative budget allocation of EUR 3.915.000 (public expenditure), was implemented by the Chios Local Development Company S.A.
- LEADER Samos, Icaria and Fournoi, with an indicative budget breakdown of EUR 12.060.000 (public expenditure), was implemented by the Centre for Employment and Vocational Training N. Samos S.A.

There were therefore no ITIs specifically targeting the smaller islands. Instead, these smaller islands were included in CLLD strategies covering a larger territory.

2.1.3 Sustainable urban development (SUD)

In the 2014-2020 programming period, two sustainable urban development plans with ERDF funding were implemented in the North Aegean Region:

- The sustainable urban development plan of Chios, with a total budget of € 19 855 000 for a five-year period (2017-2022). The overall aim of the plan were the revelation of the quality elements of the city and the highlighting of the city towards a modern sustainable urban environment. Objectives include the promotion of efficient and accessible transport systems, traffic relief and rational vehicle parking management, the sustainable upgrading of the natural and build environment and the development of high quality public spaces, the improvement of the pedestrian networks and the public buildings' accessibility, the restoration of buildings with historical relevance, the strengthening of economic activities, as well as social cohesion, service provision to vulnerable groups and access to health services.
- The sustainable urban development plan of Mytilene, with a total budget of € 17 648 320 for a five-year period (2017-2022). The key aim was to make Mytilene a sustainable and modern city and an attractive tourism destination. Actions involved the functional interconnection of cultural monuments, infrastructure and landmarks, the promotion of the cultural and urban fabric, making the city more functional and sustainable in terms of traffic and road safety, waste management, urban green, urban entrepreneurship, social inclusion and accessibility for all, as well as an integrated approach of public-private investments.

2.2 Insularity and its many implications

Islands are territories separated from a mainland by a body of water, and of limited extent and populated when compared to this mainland. The term 'insular' is often used in a metaphorical sense, as disconnection from networks of economic, social and cultural networks of interaction. It can in this respect be noted that islands may be more or less insular, depending on the strength of their connections to such networks and island inhabitants' perception of own distinctiveness and disconnection.

The ESPON BRIDGES project has demonstrated that insularity should be approached as a 'specificity' rather than a 'handicap', as suggested by Article 174 of the Treaty on the Functioning of the European Union⁴. The term 'specificity' is better suited because several strengths and assets are associated to insularity. First, a series of advantages may be associated to being "small and isolated":

- Island communities may be mobilised around a collective project more easily than other territories. There may be a stronger sense of belonging to a group confronted to the same daily life challenges, and with shared interests and objectives. Sense of community, trust, mutual awareness of skills and assets, habit of working together, informal exchange of services are all social assets that can be capitalised on to enhance welfare and resilience. Such social assets can be nurtured by targeted policies, e.g. supporting activities of associations and social businesses, encouraging social interaction and wide participation in policy making processes.
- Islands offer possibility to experiment new solutions. Disconnection from the mainland can make it easier to test new solutions without unwanted interference from neighbouring areas. Such initiatives can be initiated and funded by different types of actors:
- Islands are sometimes targeted by corporate interests, both to carry out full-scale tests of new technologies and as a showcasing their innovativeness and corporate social and environmental responsibility policy. The Volkswagen Group has for example decided to test electric mobility solutions on the Island of Astypalea in the South Aegean. (see Text Box 1)

⁴ Article 174 of the TFEU: In order to promote its overall harmonious development, the Union shall develop and pursue its actions leading to the strengthening of its economic, social and territorial cohesion.

In particular, the Union shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions.

Among the regions concerned, particular attention shall be paid to rural areas, areas affected by industrial transition, and regions, which suffer from severe and permanent natural or demographic handicaps such as the northernmost regions with very low population density and island, cross-border and mountain regions.

Text Box 1 Astypalea as a testing ground and showcase for the Volkswagen Group

The small South Aegean island of Astypalea, with a population of about 1,300 inhabitants, in 2021 had a public transportation system consisting of a bus line covering part of the island only and operating during high season by two diesel-driven buses. Mobility of inhabitants and tourists therefore mostly depends on cars with combustion engines (Reichenbach, 2021). The Volkswagen group decided to make this island a testing ground and showcase of sustainable mobility solutions. They have established a smart mobility service. A ridesharing service operating with electric vehicles and taking passengers to almost 30 destinations was put in service in June 2022. It is a component of an integrated mobility solution, which also includes carsharing, electric scooters and bicycles. All of these mobility solutions are made available to locals and visitors using a dedicated smartphone app.

In parallel, island inhabitants are encouraged to switch to electric vehicles. The charging network has been developed.

With the development of electricity production from renewable energy sources will be developed in the North Aegean in the years to come, the different islands will become increasingly attractive for such “showcase” initiatives. A project could be set up to search for companies that could be interested in demonstrating the benefits of their products, and to explore how one or more islands could meet their needs. The objective would be to ensure that such a cooperation also benefits the targeted communities on the medium to long term. It would therefore be important to provide technical and legal support to local and regional bodies that would be involved in such an initiative.

Sources: [Volkswagen Group](#), [ElectricCarsReport.com](#)

- National research organisations can also choose to use islands as test beds for new technologies. This can make it possible to produce scientifically more robust evidence on advantages and drawbacks of different solutions, as one has greater control of external variables that may influence test outcomes. For example, UK Research and Innovation and the European Marine Energy Centre have chosen to test the ability to modify electricity generation and consumption patterns in response to variability using technologies like battery storage, electric vehicles, smart chargers and smart meters on the Orkney Islands. (see Text Box 2)

Text Box 2 Orkney islands, Scotland

The Orkney based [European Marine Energy Centre](#) (EMEC) has developed and tested a system that “interlinks local electricity, transport and heat networks into one controllable, overarching system, digitally connecting distributed and variable renewable generation to flexible demand” on the Orkney Islands. This is part of a plan to decarbonise Orkney, but the objective is to develop solutions that can be replicated in other areas.

The project is funded by [UK Research and Innovation](#). It tests technical solutions to adapt electricity generation and consumption patterns. Technologies use include battery storage, electric vehicles, smart chargers and smart meters. Green hydrogen is also produced for energy storage and transport.

In parallel, the Orkney company [IGTL](#) is developing catalyst technology to produce synthetic gasoline from hydrogen combined with carbon oxide extracted from the air. The company manager notes that the support of the civil society of the island is important for its activities: “Orkney’s combination of existing supply chains, experienced workforce and general enthusiasm for energy innovation had greatly helped development of the fuel”.

Lessons learnt from these Orkney Islands initiative could be particularly useful for the North Aegean Region in the years to come, as electricity produced from renewable energy sources becomes available. It may provide inspiration on how such investments could effectively benefit local and regional economies. Strategies to this end set up at an early stage can first mitigate risks that major investments funded and operated by external actors generate neutral or even negative effects⁵. Second, they define a pathway to generate

⁵ Major industrial investments in or around small community can for example make it more difficult for other companies and local/regional authorities to recruit skilled staff when new actors in the local/regional economy offers higher wages.

local and regional benefits, e.g., by developing activities capitalising on the new resources. This presupposes the identification of competitive advantages over other territories. With the interconnection to the mainland, a wide range of actors will have access to “green energy”. North Aegean authorities and economic actors may therefore jointly explore how they could capitalise on the advantages of becoming “first movers” (or (national) “first followers”) in a specific niche, as Orkney did in the field of gasoline production from hydrogen.

Sources: [Financial Times](#), [ReFLEX Orkney](#)

- A Living lab approach can also be driven and implemented primarily by local actors. It is then typically a component of a shared strategy for the island’s sustainable development. However, island inhabitants may also have the ambition to demonstrate the feasibility of new and innovative solutions, to provide examples of good practice and inspiration for other territories (that are not necessarily insular). In the Dutch Wadden Islands, Vlieland for example ambitions to become an “engine for the transition to circular economy”.

Text Box 3 Lab Vlieland in the Dutch Wadden Island, the Netherlands

Vlieland is the smallest of the inhabited Dutch Wadden Islands, with around 1 000 inhabitants, and significant tourism activities with around 600 000 guest nights in 2015. [Lab Vlieland](#) is a so-called “Public benefit institution” established on the island, and working in cooperation with more than 30 private companies, higher education institutions and other organisations, most of which are based outside of the island.

Lab Vlieland considers the island as an “Experimental Garden for a new world”. It provides practical guidance to local actors involved in green transition processes, and supports product development. It has also established a campus on the island, where scientists, artists, entrepreneurs and other stakeholders of sustainable development can come together. The target audience is national and international.

The promotion of circular economy has been a particular focus area.

Contrary to Vlieland and the Wadden Islands, the North Aegean has its own university campuses. It therefore has a stronger starting point. However, the Lab Vlieland may inspire reflections on how the University could become integrated in local and regional development processes. How could one for example best capitalise on the presence of the University for the elaboration of local and regional tourism strategies? Could the North Aegean become an international reference in the development of sustainable island tourism? The example from the North Aegean suggests that this could be achieved by setting up processes in which researchers play an active role jointly with e.g., entrepreneurs, local authorities and organisations involved in environmental protection.

Sources: [Metabolic](#), [Lab Vlieland](#)

Second, islands have unique assets linked to proximity to the sea and often favourable climatic conditions. Natural amenities such as shorelines, beaches and landscapes can make islands attractive for tourists, for secondary housing and for retirement migration. With the development of remote working and the growing number of “independent professionals” (Nye and Jenkins, 2016), islands may also attract new categories of economically active persons that have the freedom to let quality of life criteria guide their selection of place of abode. In this respect, natural amenities combined with a sense of tranquillity and safety can make islands particularly attractive.

Third, islands have competitive advantages over other territories. Compared to mainland territories of an equivalent size, islands tend to have a stronger brand. They are known to larger domestic and international audience. This can be an advantage when marketing products from an island. Many smaller islands are characterised by relatively short distances on land, and settlements concentrated along the coastline, offering possibilities to develop public transportation. Islands also tend to have specific development opportunities in the fields of tourism, “blue economy”, access to marine natural resources and renewable energy production.

Fourth, recent developments may play in favour of islands. Digitalisation can be an important “game changer”. In addition to attracting remote workers, as mentioned above, it can make it easier for island

An inflow of highly paid staff can also make housing, services and goods more costly for the entire population. In many cases, a high number of employees are present during a relatively short construction phase. Their presence can have a destabilising effect on a small local community.

companies and public authorities to access the expertise they need, e.g. by recruiting staff that mostly works from another location. Telemedicine offers an example of such change.

The importance of marine resources also increases with Europe's green transition, e.g. for renewable energy production from offshore wind parks.

Obviously, insularity also generates a series of challenges. The first and most of obvious of these is low accessibility and connectivity. Physical disconnection from mainland generates a dependence on sea and air connections. This makes the transition to fossil free transport particularly challenging. Dependence on a limited number of transport services also exposes islands to disruptions of connections, e.g. in the event of extreme weather events. For companies, insularity is linked to limited access to logistic services and higher costs. They may need to have more stocks in order to maintain production also in the event of a disruption of transport services.

Seasonal variations in demand for transport services can make it unprofitable for private actors to maintain year-round transport services. The provision of sufficient accessibility for inhabitants and companies therefore requires public service contracts or other arrangements to compensate for limited spontaneous provision of transport services by market actors. ESPON BRIDGES produced an overview of transport service provision models, the most frequent being public service contracting. Such contracting can be complex for local and regional authorities, especially when only few market actors are in position to submit bids.

Ensuring that high quality transport services are provided at an equitable price for islanders and public authorities requires high levels of expertise in the organisation of bidding processes, negotiation of contracts, monitoring of effective delivery of transport services and management of relations with service providers. More generally, small markets can make it difficult to achieve cost-efficiency through competition in the procurement of services of general interest. Some of the assumptions of EU-driven policies promoting liberalisation in the provision of services of general interest may therefore not hold true. This is particularly obvious in islands where some private companies are *de facto* in a monopolistic or oligopolistic situation for the provision of specific services.

This is for example the case for ferry services. Coastal services in Greece were liberalised in 2002. This is said to have led to a "high concentration in routes serving islands of commercial interest" and "a remarkable reduction, or even complete elimination in certain cases, of maritime services to islands with low transport demand" (Lekakou et al., 2019). Overall, there are usually a maximum of two operators competing for each line, and eleven shipping companies in total operating the main lines (Lekakou et al., 2019). In 2020, three companies⁶ concentrated between 40 and 50 % of all traffic in Greece (XRTC Business Consultants Ltd, 2021). Between 2015 and 2020, large companies engaged in partnerships and mutual ownership strategies to be better equipped to face competition. At the same time, smaller actors entered the Greek coastal service market in the same period (XRTC Business Consultants Ltd, 2018). While this increased competition on some lines, it remains to be verified if it had an impact on the cost and quality of connections to small and remote islands.

The low economic and demographic mass in smaller islands makes it difficult to benefit from economies of scale. As a result, island populations and public authorities are confronted to higher per unit costs in the provision of services of general interests, and in the operation of other commercial activities targeting island populations.

Small labour markets are also more exposed to mismatches between the skills needed by companies and those offered by the labour force. Some groups, e.g. young graduates or women, may find it difficult to integrate the labour market and choose to move to the mainland. Public policies to ensure that initial education, training and lifelong learning activities are aligned on local needs and opportunities are therefore particularly important on islands. The socially balanced development of island also presuppose measures to compensate for structurally imbalanced migration patterns. As most small islands do not have higher education institutions, young people move out to study. Only a portion of these persons move back after graduation. Brain drain may also occur if islands do not offer sufficiently attractive employment opportunities corresponding to the level of qualification of job seekers.

⁶ ANEX, Attica Group and Minoan Lines

Sustainability development policies targeting islands need to take into account natural limitations to growth. In Mediterranean islands, freshwater provision is a key such limitation. Desalination plants can help compensate for limited freshwater access but generates a significant energy consumption. Ecosystem vulnerability is another recurring limitation to be considered. The small size of island ecosystems, and their many native species, can make them particularly vulnerable to external shocks. Climate change generates additional challenges in this respect. It is also associated to more frequent extreme weather events. Island regions can be particularly exposed to storms and flooding. Resources available to intervene in case of major contingencies (e.g. firefighters, medical emergency personnel) are also often more limited than in other regions.

In terms of territorial governance, small islands are often characterised by a high level of proximity among elected representatives, senior officials, and stakeholders. It has been observed that this may induce a degree of clientelism which impedes the proper implementation of policy measures (Baldacchino, 2012; Corbett, 2018; Veenendaal, 2019). Improved multilevel territorial governance, also involving the European level, is part of the solution to address these issues. Integrated territorial development approaches, actively promoting public participation in policy making processes, can also be promoted.

Overall, insularity is therefore a territorial specificity, which is associated to a series of assets and challenges. The key objective for a territorial development policy is to transform the assets into effective economic potentials, while ensuring that development bottlenecks that may result from insularity challenges are effectively compensated for or overcome. At the same time, the specific environmental and social vulnerabilities of island regions need to be considered to ensure a resilient development on the medium to long term, in the face of uncertainties regarding future framework conditions and the possibility that external shocks may occur.

In view of assessing the North Aegean ROP's contribution to balanced and sustainable territorial development, the study first assesses the specific situation of the region on the basis of available data.

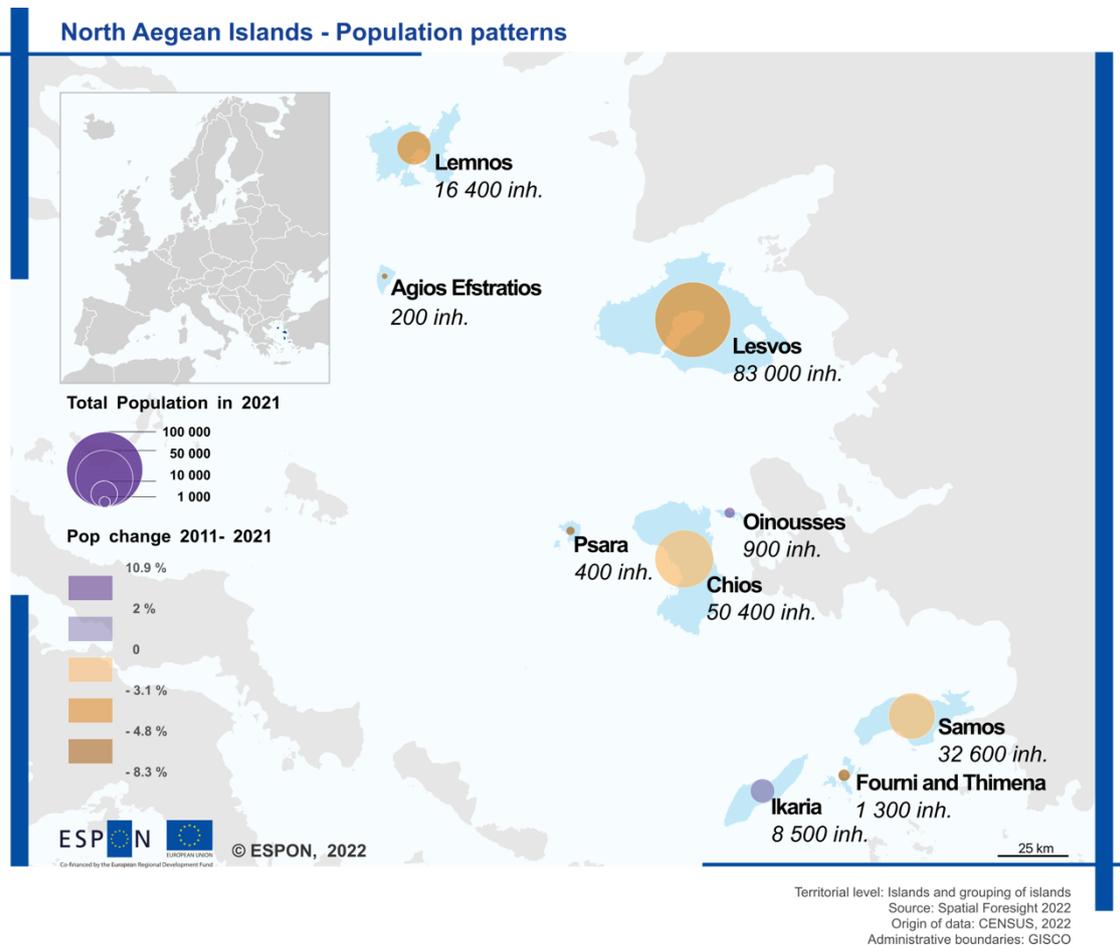
3 Understanding the context

The North Aegean is an island region with three large islands (Lesvos, Chios and Samos), each of which belongs to a different NUTS 3 region. There are also two intermediate size island, Lemnos and Ikaria. All these large and intermediate islands have airports. The region also includes four smaller inhabited islands: Agios Efstratios south of Lemnos, Psara and Oinousses respectively west and east of Chios and Fourni and Thimena between Samos and Ikaria. The North Aegean region is therefore characterised by situations of double insularity, i.e., with smaller islands whose “mainland” is a larger island.

The island region is located close to the Turkish mainland. Geopolitical tensions limit functional integration with these neighbouring territories. This accentuates the North Aegean insularity. In some respects, the North Aegean region is also confronted to the challenges of a border region at the outer border of the European Union. This has been particularly obvious during the refugee crisis (see section 3.4).

Compared to other island regions in Greece such as South Aegean and Ionian Islands, the North Aegean Region has a relatively low tourism intensity. Along with most of Greece, it has experienced population decline in recent years. These specific features are described in more detail in sections 3.3 and 3.4 below.

Map 1 Overview Map of the North Aegean Region



Unfortunately, very few data sets at the level of municipalities of islands are available. The analysis below builds on sub-regional data whenever possible. However, in many cases, only observations at the level of the North Aegean region as a whole can be made. These observations provide contextual information of relevance for the design and implementation of a small island ITI, but obviously do not offer a satisfactory basis for evidence informed recommendations for its design and implementation.

3.1 Demographic trends

The North Aegean islands have experienced population decrease between 2011 and 2021 (Table 1). During this period, population decreased by almost 4% in Lesvos, by 1% in Samos, and almost 2 % in Chios NUTS 3 regions. The region presents a consistent weak negative natural growth of population. The overall population of the North Aegean Region went from 199 000 in 2011 to 194 000 in 2021. This stands in contrast to neighbouring South Aegean region, which experienced a 5 % population increase between 2011 and 2021. However, compared to Greece as a whole, population decline in the North Aegean region is limited. Only the Athens region (Attica) and Crete have a lower population decline.

The region's population declined rapidly in the 1960s and 1970s, then increased moderately in the 1980s and 1990s, and decreased moderately in the 2000s and 2010s (Figure 1). During this period, demographic trends have been relatively consistent across the three largest islands of Lesbos, Chios and Samos. Limnos experienced stronger decline in the 1970s and 1980s, while Ikaria experienced a 10% population increase in the 1990s. Among the smaller islands, the Oinousses and Agios Efstratios experienced massive population decline in the 1960s and 1970s⁷, followed by a population rebound in the 1990s (Figure 2). Psara's population has declined constantly between 1961 and 2011, from 578 to 412 inhabitants. Fournoi's population is relatively stable since 1991, at a level equivalent to that of 1961. Overall, the small islands display contrasted demographic trends, and a tendency towards stronger demographic decline between 2001 and 2011.

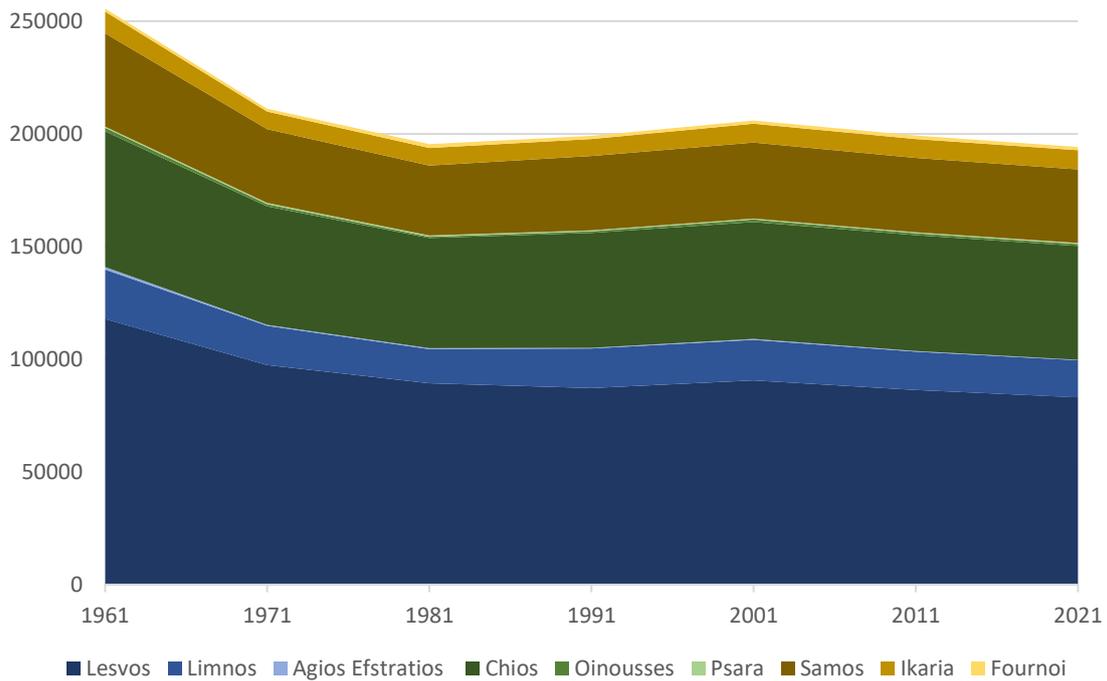
Table 1 Population change by region between 2011 and 2021

Regions	2011	2021	Population change
Eastern Macedonia and Thrace	608 182	562 069	-7,6%
Central Macedonia	1 88 108	1 792 069	-4,8%
Western Macedonia	283 689	255 056	-10,1%
Epirus	336 856	319 543	-5,1%
Thessalia	732 762	687 527	-6,2%
Central Greece	547 390	505 269	-7,7%
Ionian Islands	207 855	200 726	-3,4%
Western Greece	679 796	643 349	-5,4%
Peloponnese	577 903	538 366	-6,8%
Attica	3 828 434	3 792 469	-0,9%
Northern Aegean	199 231	194 136	-2,6%
Southern Aegean	309 015	324 542	5,0%
Crete	623 065	617 360	-0,9%

Source: ELSTAT – 2021 population-housing census

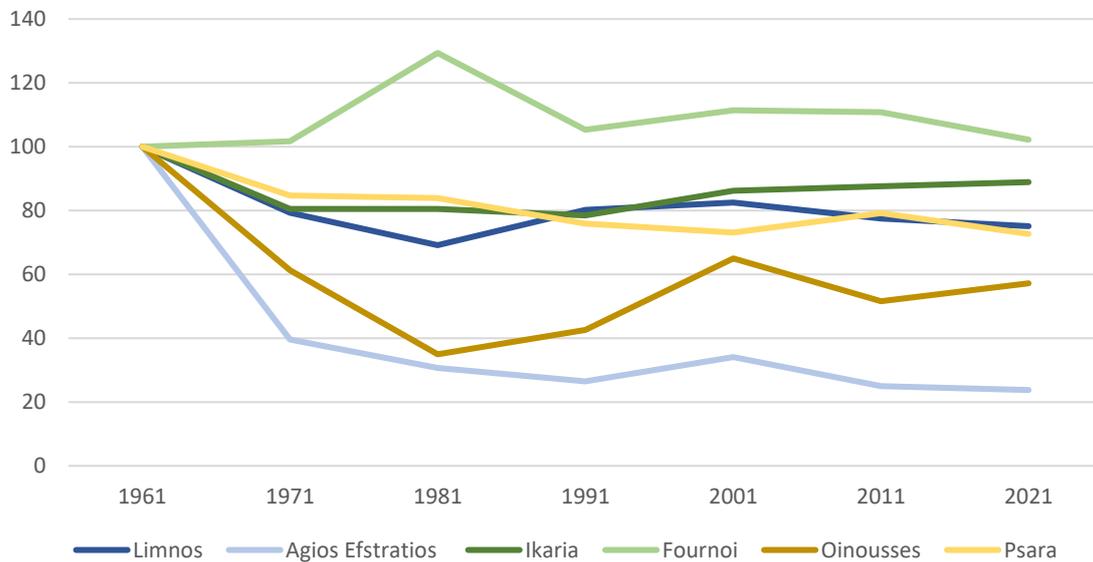
⁷ Agios Efstratios was used as a military prison between 1967 and 1974. An earthquake demolished most of the houses in 1968.

Figure 1 Population change by island between 1961 and 2021



Sources: Eurostat municipal population data (1961-2011) and ELSTAT – 2021 population-housing census

Figure 2 Population change relative to 1961 in the smaller islands



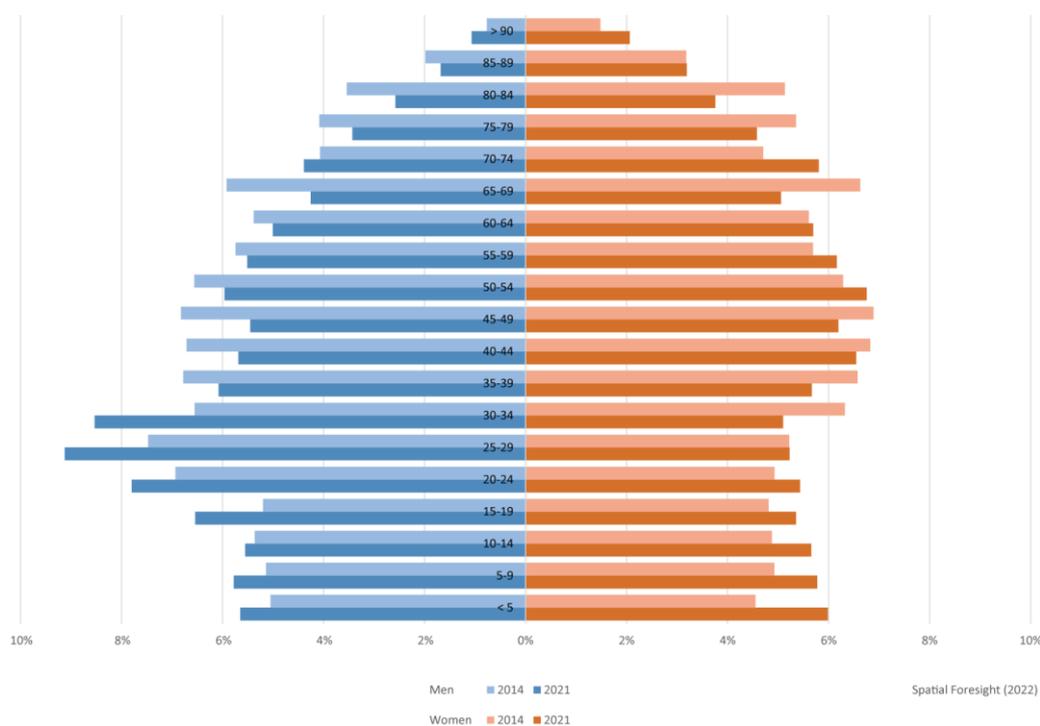
Sources: Eurostat municipal population data (1961-2011) and ELSTAT – 2021 population-housing census

There are major gender imbalances in the young working age population (15 to 34 years). These imbalances have significantly increased between 2014 and 2020 (Figure 3). The proportion of men in this age group went from 56% in 2014 to almost 64% in 2020. At the same time, population in this age group increased by 26%, i.e. much more than population as a whole. This is partly linked to the inflow of refugees from Syria, the majority of which were young and male (Murray, 2015; Pew Research Centre, 2016). However, men in

this age group were also overrepresented in 2014, before the refugee crisis. Other factors are therefore also involved, such as the presence of numerous military bases in the region. Both in 2014 and 2021, shares of young men in the population aged 15 to 34 years were higher in Samos (58.4% and 66.5%, respectively) and Chios (56.9% and 63.4%) than in Lesbos (56.3% and 62.0%). The overrepresentation of young males is therefore stronger in the less populated insular sub-regions.

Between 2014 and 2021, all North Aegean NUTS3 regions have also experienced major increases in numbers of children: +34% of 0–14-year-olds in Lesbos, +45% in Samos and +23 in Chios. Needs for schools and other infrastructure catering for the needs of these age groups have therefore increased. Relative shares of seniors in the population have fallen (see Figure 3 to Figure 6). However, in absolute terms, numbers of seniors have increased: +9.6% of citizens above 70 years in Lesbos, +8.8% in Samos and +10.5% in Chios. Public authorities therefore face multiple parallel challenges in the provision of health and education services and infrastructure.

Figure 3 Overlay of age Pyramids for the North Aegean region in 2014 and 2020⁸



⁸ The age pyramids are based on figures from Eurostat. The total regional population estimate provided by Eurostat for 1st January 2021 is 229,155 inhabitants, while data from the 2021 census indicate that the regional population is 194,163 inhabitants. The Eurostat estimate is therefore 18 % higher than the census data. Considering the extent of these difference, the reliability of data on population by age group is questionable.

Figure 4 Overlay of age Pyramids for the Lesvos Region in 2014 and 2020

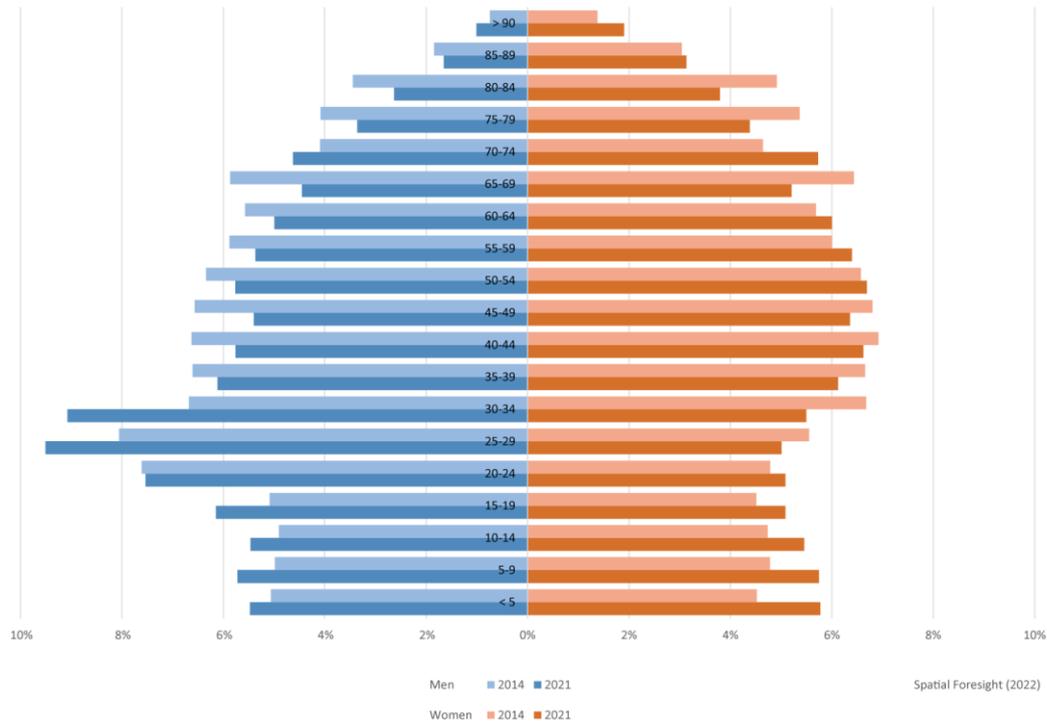


Figure 5 Overlay of age Pyramids for the Samos Region in 2014 and 2020

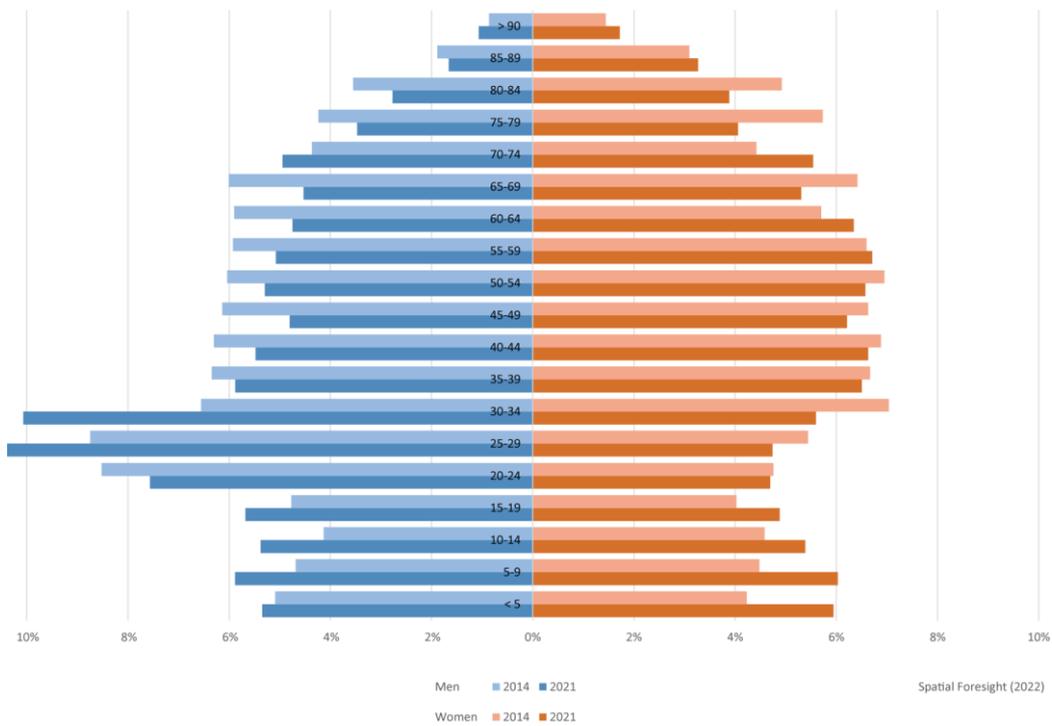
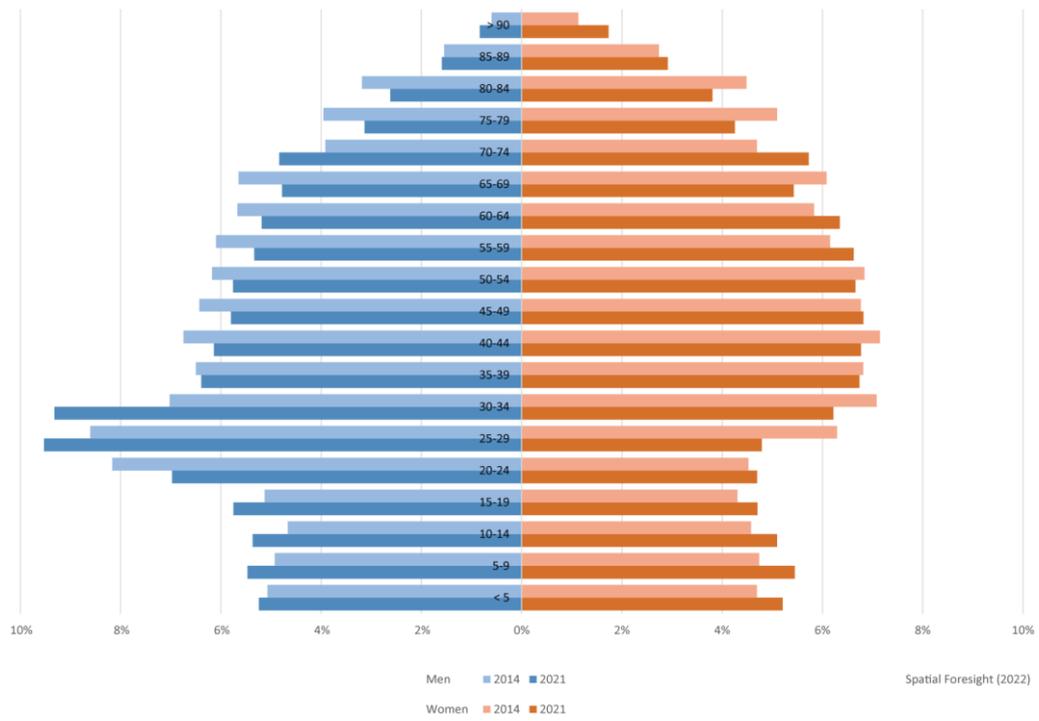


Figure 6 Overlay of age Pyramids for the Chios Region in 2014 and 2020



3.2 Migration

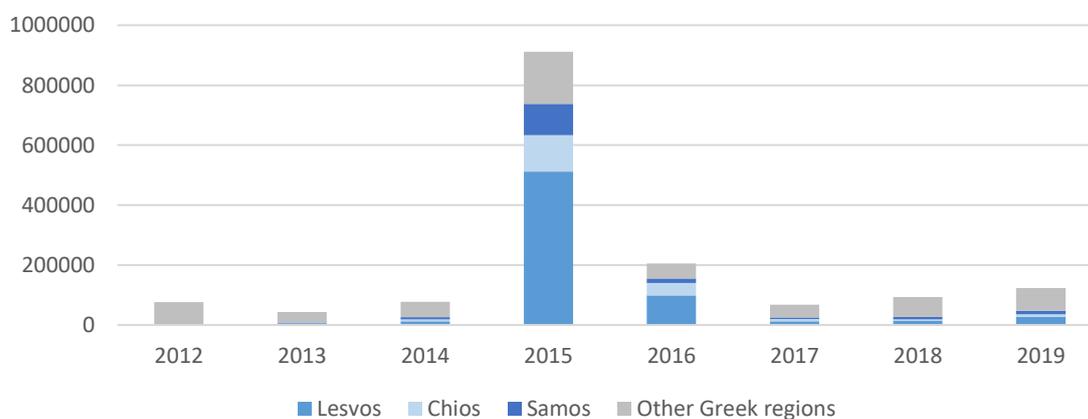
More than 80% of illegal entries and stays during the refugee crisis year of 2015 occurred in the North Aegean region (Figure 7). This implies that numbers of counted entries exceeded 500,000 in Lesbos (2015 population 102,000 inh.), 120,000 in Chios (2015 population 53,000 inh.) and 104,000 Samos (2015 population 42,000 inh.). During the same year, 5,145 arrivals of non-EU residents were registered.

Between 2016 and 2019, Lesvos NUTS3 region had a net migratory population gain of 19,846 inh. The corresponding figure was 8,525 inh. for Samos, and 6,797 inh. for Chios. Most registered arrivals therefore concern population in transit to other destinations. Hosting the large numbers of refugees has nonetheless a major challenge. Since the EU-Turkey deal of March 2016, numerous migrants have been prevented from travelling between the island of arrival and the Greek or EU mainland. After the September 2020 fire in the Moria refugee camp in Lesvos, the UNHCR reported that 11,500 asylum seekers were left without shelter⁹. Siegel (2022) describes the “Lesbos crises” as a combination of unmanageable situations, lack of European solidarity and effects of the Covid-19 pandemic on the reception of migrants.

Pilot actions for the social and economic integration of refugees granted asylum or subsidiary protection have been implemented with funding from the European Union, e.g., via the Structural Reform Support Programme, to accompany the transition from humanitarian support to long-term development solutions. Based on a review of international and local, the World Bank has synthesised recommendations for such actions in December 2021 (World Bank, 2021). These recommendations could be relevant for the design and implementation of ROP measures in the 2021-2027 programming period.

It can be relevant to adapt these general recommendations to island communities such as those found in the Aegean Region. Labour markets disconnection from neighbouring territories for example makes it particularly important to carefully identify sectors with unsatisfied demand for labour. Social integration processes may also be different in small island communities, compared to e.g., urban agglomerations on the mainland.

Figure 7 Numbers of foreigners entering illegally by NUTS3 region between 2012 and 2019



Source: Greek Ministry of Migration and Asylum

⁹ <https://www.unhcr.org/news/briefing/2020/9/5f5b3a774/unhcr-shocked-fires-moria-asylum-center-ramping-support-affected-asylum.html>.

3.3 Economic development

The North Aegean region generally appears as a region with considerably lower production of goods and service by capita compared to Greece as a whole (Figure 8). Differences among NUTS3 subregions are very limited. Unfortunately, no other indicators such as household income could be compiled at this geographic level, to check for possible discrepancies among islands.

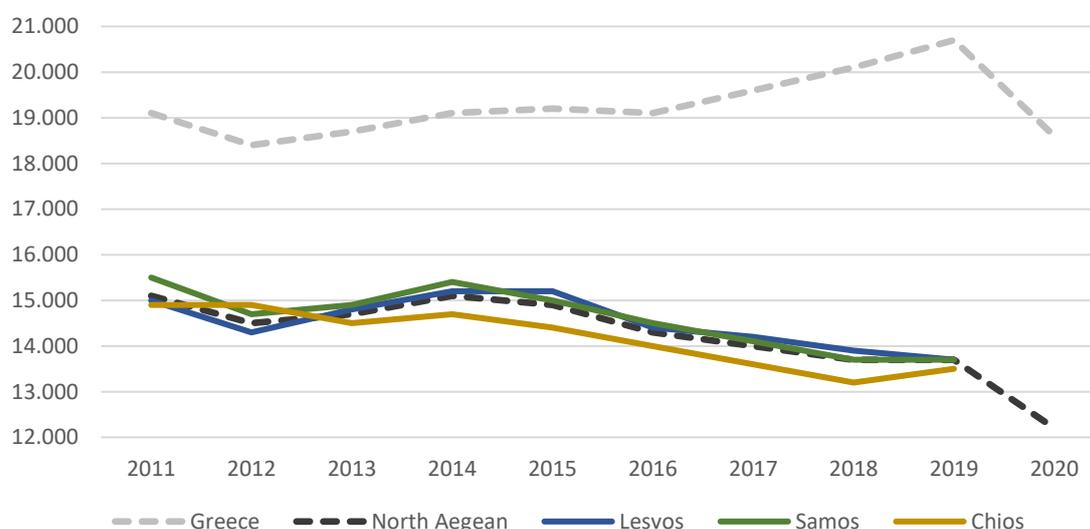
Between 2011 and 2019, Greek GDP decreased by -2.7% in EUR, but increased by 8.9% in PPS. In other words, lower production was compensated for by lower prices for key goods and services for the general population. During the same period, the North Aegean Region experienced a decrease of GDP of -5.4% in EUR, and an increase of GDP in PPS of 5.9%. The decline of production was therefore steeper. However, between 2019 and 2020, the decline in GDP resulting from the COVID epidemic was of 9.8% in Greece as a whole (measured in EUR), but -8.6% in the North Aegean Region.

Changes in GDP per inhabitant are influenced by the higher demographic growth in the North Aegean Region that in Greece as a whole (Figure 8).

Contributions of different branches to regional GDP vary among NUTS 3 regions (see Figure 9). The agricultural sector is relatively more important in Lesvos than in the two other regions, while Samos NUTS 3 region is more specialised in retail, accommodation and food services, i.e., key activities linked to tourism. Activities related to real estate are particularly developed in Chios. All three regions are characterised by the large share of gross added value generated the public sector, and the limited development of industrial activities and construction.

This is reflected in household disposable income levels, which have fluctuated around 10,500 PPS per inhabitant in the North Aegean Region between 2014 and 2019, while they reached 12 700 PPS in Greece as a whole in 2019. Effects of the COVID epidemic on household disposable income levels are not yet available.

Figure 8 Evolution of GDP per inhabitant in PPS between 2011 and 2020



Source: Eurostat

Figure 9 Shares of Gross value add by branch in NUTS 3 regions

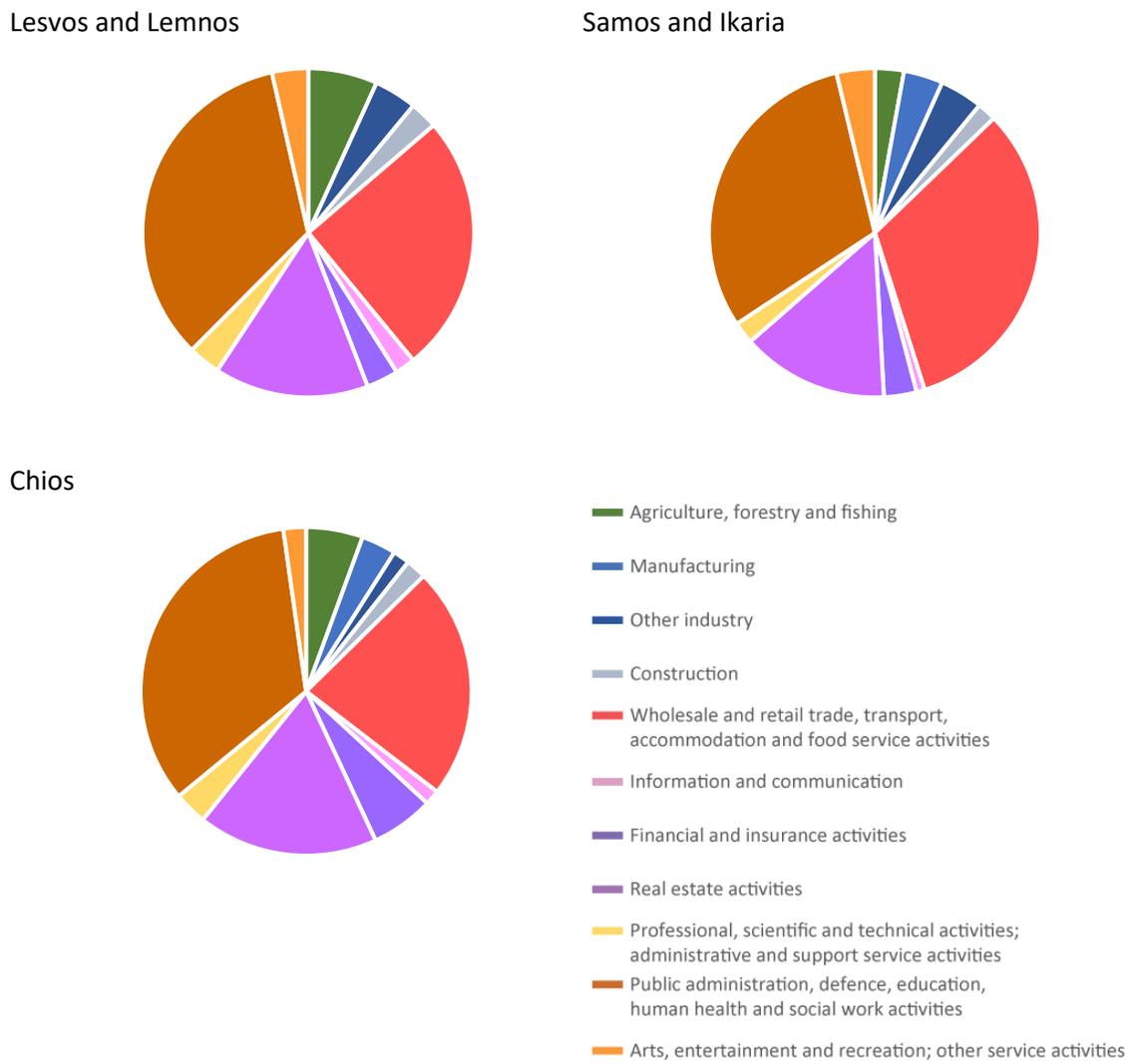
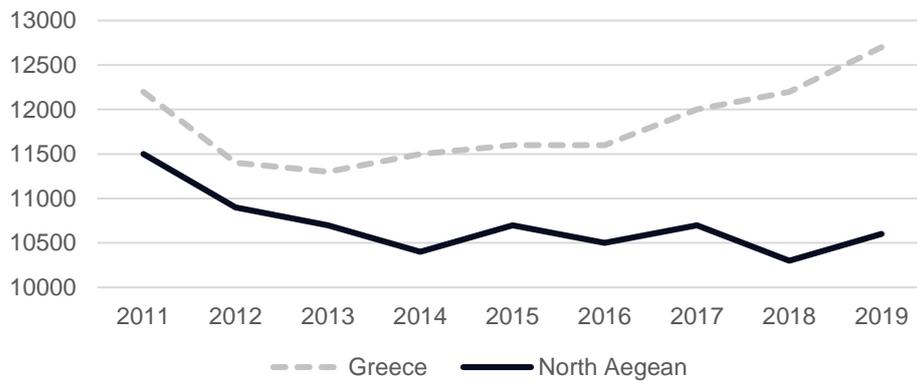


Figure 10 Evolution of household disposable income per inhabitant in North Aegean region and in Greece (in PPS)



Source: Eurostat

3.4 Labour market

Unemployment rates in Greece peaked between 2008 and 2013, as a result of the financial crisis (Figure 11). The North Aegean region following a similar pattern as the rest of the country, but with lower values between 2013 and 2016. Unemployment rates have then fallen since 2018. The large proportion of long term unemployed persons is an issue of particular concern (Figure 15). These rates have also fallen, but remain at a high level (8.4 % in 2021).

Employment rates are well below the Europe 2020 objective of 75% (Figure 12). However, they increased considerably between 2014 and 2019, from 49% to almost 61% in the North Aegean Region. Employment rates have grown more in this region than in Greece as a whole.

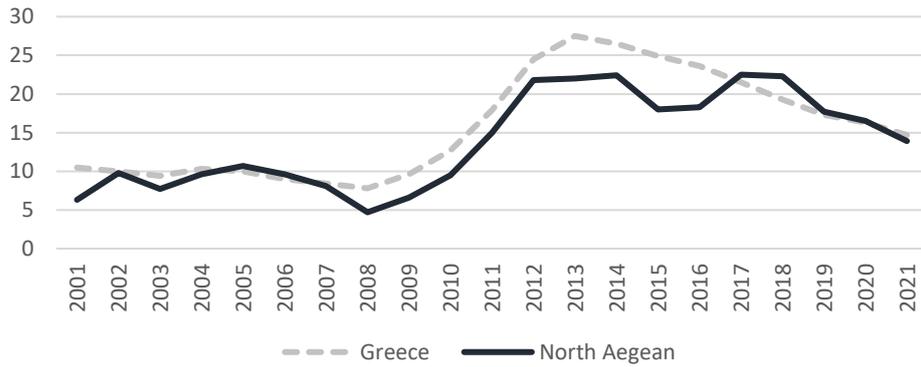
Unemployment rates among persons with a tertiary education rose considerably in the North Aegean between 2012 and 2018, reaching more than 20%. It then fell abruptly until 2021 to levels similar to those observed in Greece as a whole (10.4 % in the North Aegean, 11 % in Greece as a whole). During the same period, unemployment rates of persons with primary or lower secondary education also plummeted, going from 26.2 % in 2017 to 12.2% in 2021. This is significantly lower than in Greece as a whole (16.8 %), suggesting that persons with low qualifications find it easier to find employment in the North Aegean Region than in other parts of the country. Unemployment rates of persons with secondary education fell less. Rates of 16.5% were observed for this group in the North Aegean region in 2021.

Gender imbalances when it comes to unemployment are particularly important in Greece, with unemployment rates roughly twice as high for women compared to men (Figure 14). Since 2018, these differences between women and men are more important in the North Aegean region than in the rest of Greece. The difference between male and female unemployment rates was 9.3 percentage points in the North Aegean region, against 7.5 percentage points in Greece as a whole.

Another challenge is the high proportion of long-term unemployed (i.e. persons that have been searching for employment for at least one year). The long-term unemployment rate was 8.4 % in 2021. This implies that just over 60 % of unemployed persons were long-term unemployed. This ratio peaked at 71.7 % in 2015, and has declined since. It has consistently been a few percentage points lower in the North Aegean Region compared to Greece as a whole.

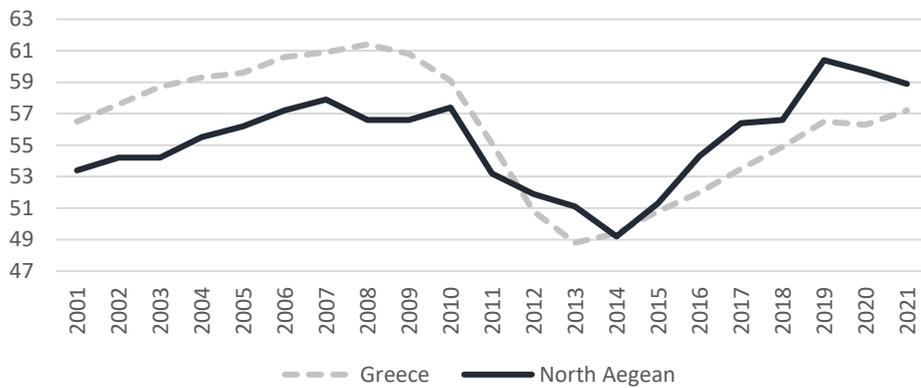
It is difficult to make a general assessment of labour market mismatches. However, an analysis of labour shortages in the tourism sector during the peak of the 2021 summer season shows that 1 900 out of 7 100 job openings foreseen by North Aegean hotels could not be filled. This rate of unfilled positions (27 %) is among the highest in Greece. The share of unfilled positions is particularly high for chambermaids (46 %).

Figure 11 Unemployment rates North Aegean region between 2001 and 2021



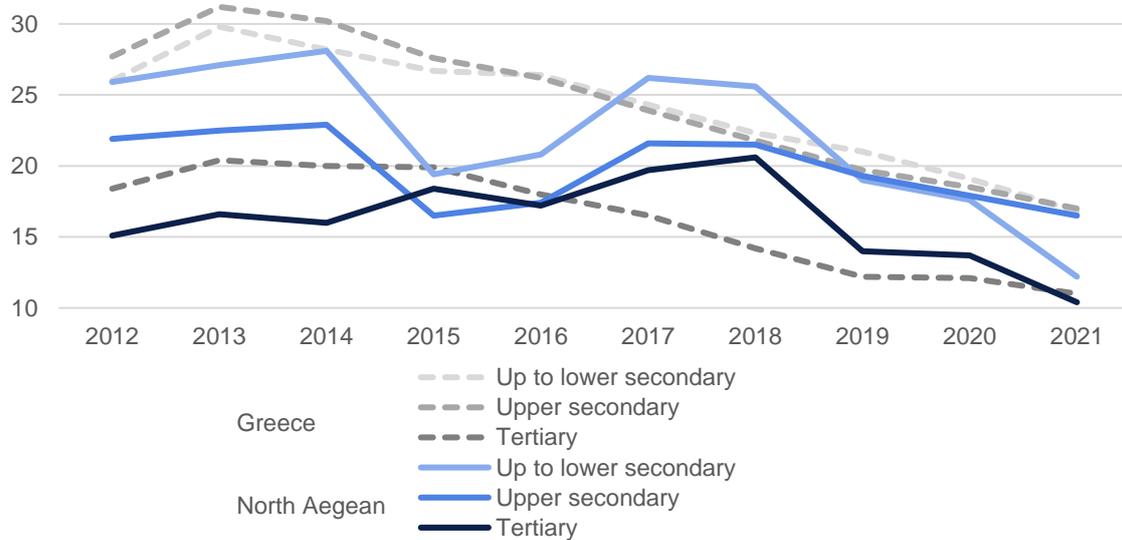
Source: Eurostat

Figure 12 Employment rates North Aegean region between 2001 and 2021



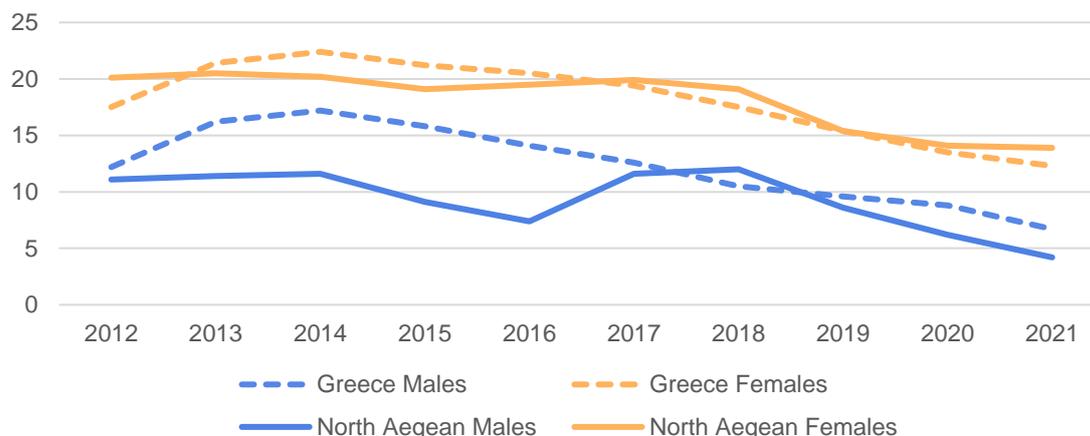
Source: Eurostat

Figure 13 Unemployment rates by level of education between 2012 and 2021



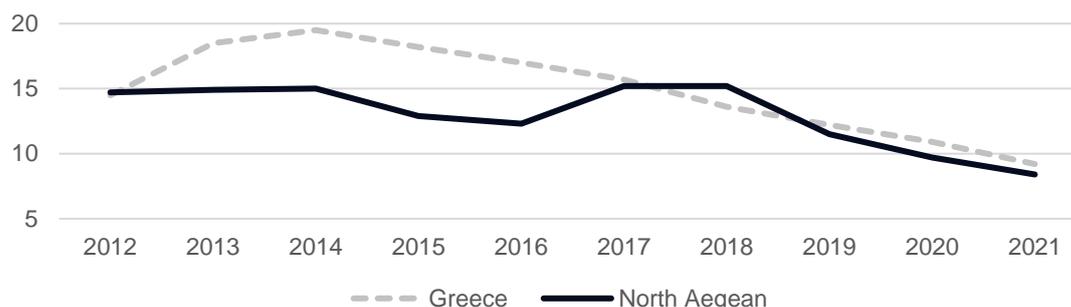
Source: Eurostat

Figure 14 Unemployment rates by gender between 2012 and 2021



Source: Eurostat

Figure 15 Long term unemployment rates between 2012 and 2021



Source: Eurostat

3.5 Tourism

Major tourism related activities such as accommodation and restaurants, provided work for respectively 2 % and 7 % of the North Aegean workforce in employment in 2015. Corresponding rates in 2020 were 2 % and 10 %, suggesting a growth in the relative importance of this sector¹⁰.

Samos is the most important tourism destination in the North Aegean region, followed by Lesbos and then Chios. These three islands experienced declines in tourism frequentation in 2011 and in 2015 (following the refugee crisis). Samos experienced a major increase in tourism frequentation between 2016 and 2018 (+51% nights spent). Growth was significant in Lesbos and Agios Efstratios (+18%). However, tourism in these two islands experienced some decline already between 2018 and 2019, i.e. before the COVID crisis.

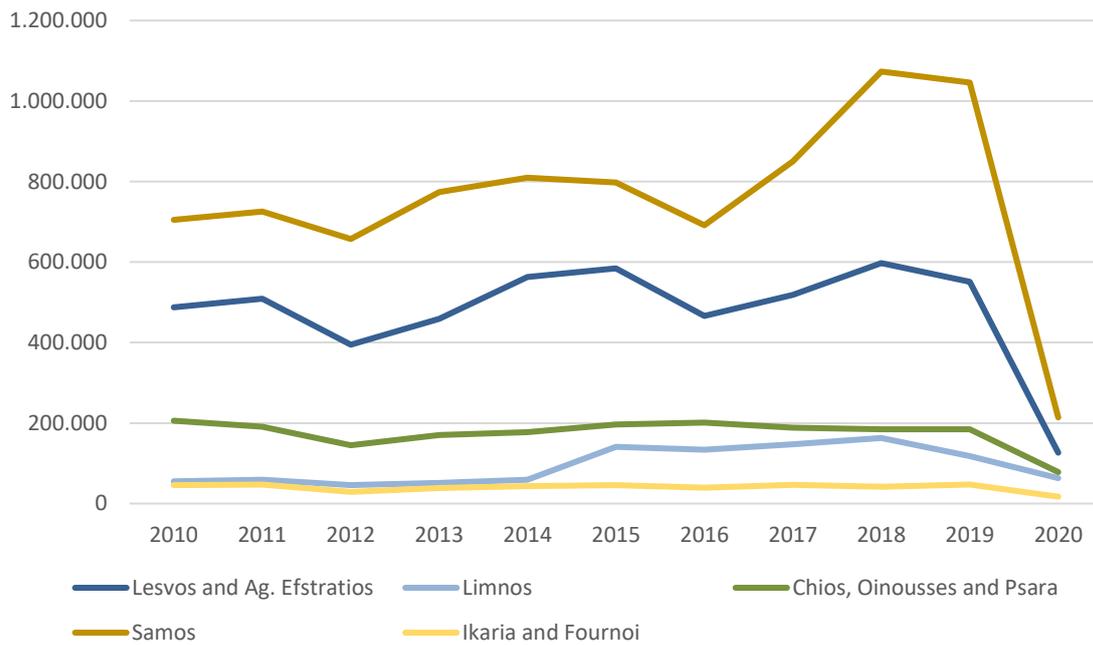
Chios experienced a drop in tourism frequentation of almost -30% between 2010 and 2012, an equivalent growth in the period 2012-2016, followed by a moderate decline between 2016 and 2019. Limnos experienced a massive increase in tourism frequentation between 2014 and 2015 (+138%). Tourism frequentation

¹⁰ Source : INSETE

continued to grow until 2018. Limnos stands out as the online North Aegean islands with an increase in hotel capacity above national average between 2015 and 2020 (Figure 18)

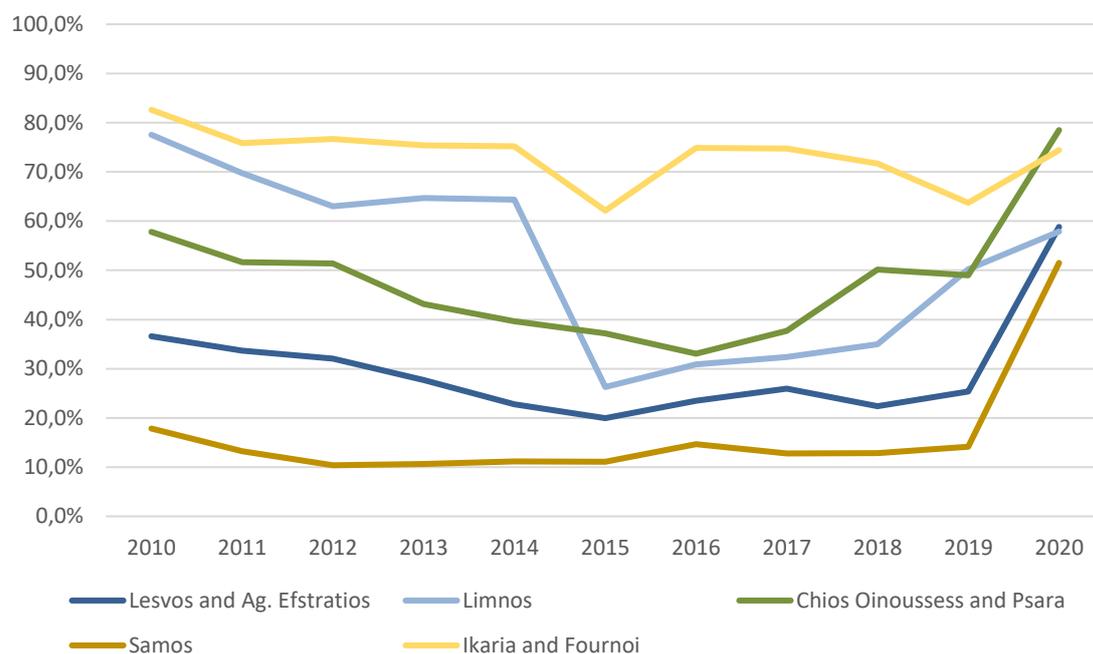
These evolutions also imply that the nature of tourism in many North Aegean Islands has changed, as proportions of domestic and foreign visitors have evolved significantly (Figure 17). Limnos was primarily a domestic tourism destination until 2014, but this changed radically in 2015 as shares of overnight stays of domestic visitors went from 64,3% to 26,3%. Chios and Lesvos also evolved into primarily foreign tourism destinations between 2010 and 2015. Islands of Ikaria and Fournoi remain a primarily domestic tourism destination.

Figure 16 Numbers of nights spent at hotels and similar establishments by island between 2010 and 2020



Source: Hellenic Statistical Authority

Figure 17 Shares of domestic visitors in total overnight stays by island between 2010 and 2020



Source: Hellenic Statistical Authority

The COVID-19 pandemic generated a massive drop in tourism frequentation (see Figure 16 and Table 2). The decline was the strongest in Samos and Lesbos, which are most dependent on foreign visitors and have the largest tourism industry. However even the primarily domestic tourism destinations Ikaria and Fournoi experienced a massive drop in tourism frequentation. The drop in domestic visitors was more limited than that of international ones (Figure 17), but nonetheless significant.

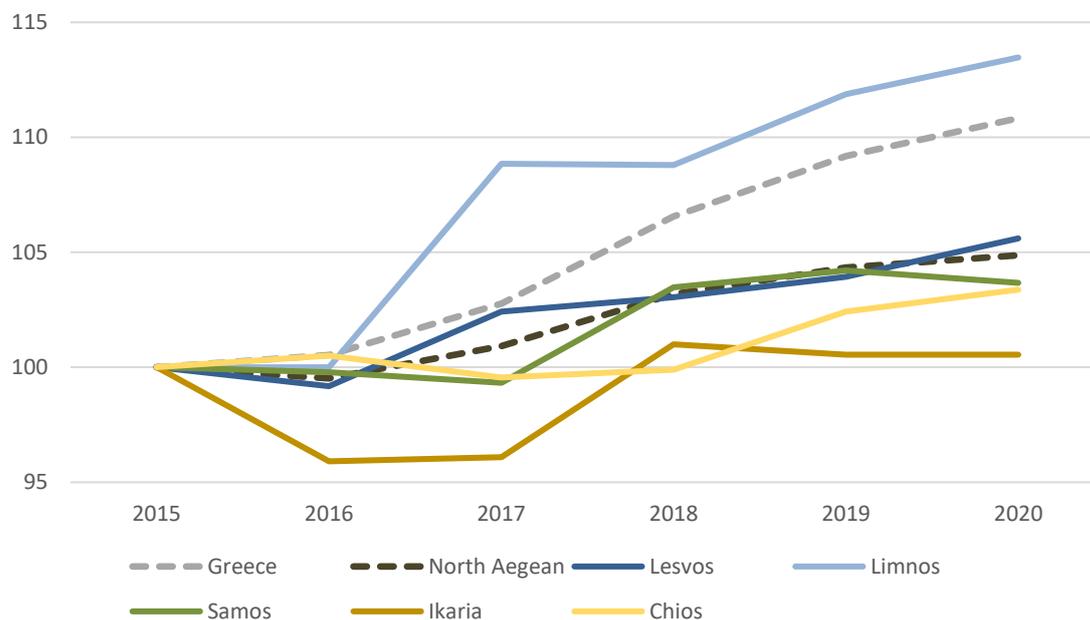
The impact of the COVID-19 pandemic was less important in Limnos. However, there is no indication of a major drop in hotel capacity between 2019 and 2020, suggesting that most hotels have managed to avoid bankruptcy during the first year of the pandemic (Figure 18).

Table 2 Drop in number of nights spent at hotels and similar establishments by island between 2019 and 2020

	Change 2019-2020
<i>Greece</i>	-75,1%
<i>North Aegean</i>	-77,1%
Lesvos and Ag. Efstratios	-77,1%
Limnos	-46,8%
Chios, Oinousses and Psara	-57,6%
Samos	-79,5%
Ikaria and Fournoi	-63,7%

Source: Hellenic Statistical Authority

Figure 18 Evolution of hotel capacities between 2015 and 2020 (index 100 = 215 values)



Source: Hellenic Statistical Authority

3.6 Energy provision and consumption

There are currently six non-interconnected electric systems in the North Aegean Region (see Figure 19 and Table 3). Electricity is primarily produced by burning oil. This generates high energy costs for consumers, pollution in the areas where production plants are located and high emissions of greenhouse gases. Part of the challenge is that islands experience consumption peaks during summer months. The interconnection of most North Aegean islands is foreseen in the years to come (see Figure 19). This will be a game changer in terms perspectives for more sustainable and less costly energy provision on the islands. It also implies that renewable energy production facilities in the North Aegean region may target mainland markets.

The North Aegean Islands are considered to have excellent potentials for offshore wind protection (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021c). Due to the steep sea-bed drop-off around Aegean islands, floating offshore windmills are considered. So far, these investments have proved difficult to bring to completion. A 2 billion EUR offshore windfarm with 81 turbine and a total capacity of 498 MW outside of Lemnos was granted production license in 2012¹¹, but it remains a project ten years later¹².

However, current shares of electricity production from renewable sources are comprised between 10 and 25% (Table 3). Major infrastructure investments are therefore needed, for production as well as for energy storage. There are currently 7 dams in the regions. Only one of them are currently used for storage, on the island of Ikaria.

The decarbonisation of North Aegean islands will also require the replacement of existing heating facilities, infrastructure for electric cars (charging stations), thermal renovation of buildings and changes in mobility habits, including modal shifts.

¹¹ <http://www.rfenergy.gr/en/production-license-from-offshore-wind-farm-of-a-total-capacity-of-498-15-mw/>

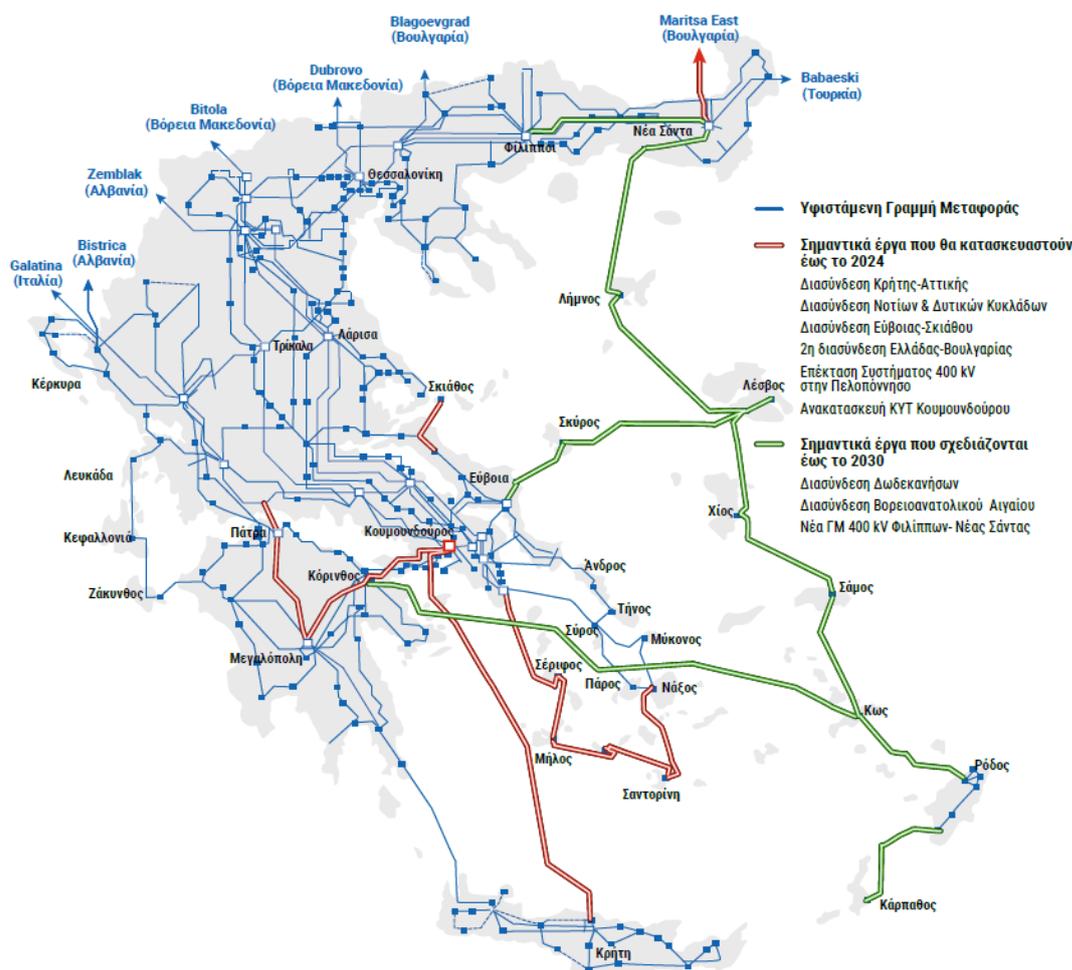
¹² <https://www.mononews.gr/business/plota-eolika-ependisis-6-dis-evro-os-to-2030-%CE%84erchete-to-thesmiko-pliesio>

Table 3 Electricity production from conventional plans and renewable sources in non-interconnected electric systems of the North Aegean in 2019

Electrical system	Electricity produced by conventional plants (MWh)	Electricity produced from renewable energy sources (RES) (MWh)	Percentage of production from RES
Saint Efstratios	1,123	0	0 %
Lemnos	51,555	9,169	18 %
Lesvos	254,642	45,281	18 %
Chios-Psara-Oinousses	187,818	19,089	10 %
Samos-Fourni-Thimena	112,612	28,017	25 %
Ikaria — Ikaria	24,475	4,052	17 %

Source: Regulatory Authority for Energy: National Report 2020

Figure 19 Existing and foreseen electricity transmission lines



Lines in red foreseen to be completed by 2024, lines in green foreseen to be completed by 2030
 Source: Independent Electricity Transmission Operator: Ten-year grid development plan 2023-2032 Transport and connectivity

The North Aegean region is connected to the mainland with numerous ferry connection to the Greek mainland, as well as to Turkey. There is also a dense network of connections among North Aegean islands (see Map 2). Most of these connections are subsidised by national authorities (Katarellos and Koufodontis, 2011).

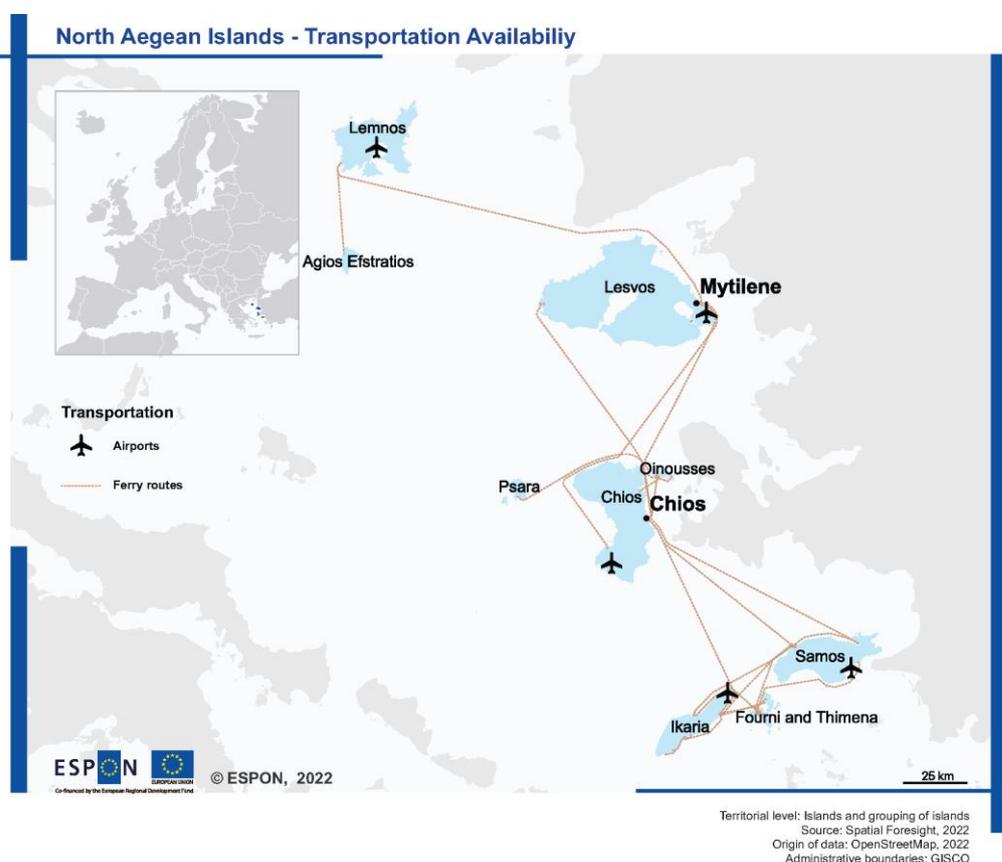
Between 2003 and 2012, state aid for ferry connections in Greece increased from under EUR 40 to over 90 million per year. Subsidies then dropped to EUR 80 million in 2012, but then again exceeded EUR 90 million in 2020 (Lekakou et al., 2019). Due to major differences in connection frequency, quality and connection, the effective accessibility of the different islands varies significantly.

The 5 large and intermediate size islands have their own airport. Air connections among the islands are mostly subsidised. This concerns the following air connections¹³:

- Limnos, Lesvos, Samos and Rhodos,
- Thessaloniki, Limnos and Ikaria,
- Athens and Ikaria,
- Thessaloniki and Samos,
- Thessaloniki and Chios.

These lines are all operated across the year.

Map 2 North Aegean Region – airports and main ferry connections (2022)



Available data indicate that 82% of households in the Aegean Islands and Crete NUTS 1 region had access to broadband internet in 2021¹⁴. This ratio has increased substantially in recent years from 47% in 2013 to 69% in 2019. Broadband access in these islands is a bit lower than in Greece as a whole (85%) and significantly lower than the EU average (92%)¹⁵.

¹³ https://transport.ec.europa.eu/transport-themes/public-service-obligations/air-transport_en

¹⁴ Eurostat dataset isoc_r_broad_h

¹⁵ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals

3.7 Conclusion: filling current knowledge gaps will help the region address forthcoming opportunities and challenges

The synthesis of social and economic patterns and trends based on available data shows that little information is available at the level of individual islands. Some of these knowledge gaps may be filled when the detailed results of the 2021 census will become available. However, the design and monitoring of ITI strategies would require more frequently updated information on demographic change, labour market situations, economic activities and provision of services of general interest.

Regarding the key issue of quality of ferry connections between North Aegean islands, and between the North Aegean and other territories, the entry into force of EU Regulation on the provision of EU-wide multimodal travel information services on 1st December 2023¹⁶ will make it possible to have more evidence informed exchanges and policies. From this date, complete information on service frequencies should be available in an exploitable format.

Data on the relative importance of different sectors and on tourism confirm that North Aegean islands are diverse. This suggests that strategy elaboration processes at the level of the different islands would be purposeful as a complement to regional strategies.

Compared to many Greek regions, the North Aegean region has a young and growing population as a result of in-migration. The integration of migrants in local labour markets can be an opportunity for economic development.

The forthcoming interconnection of North Aegean islands to continental electricity transmission lines and the major potential for electricity production from renewable energy sources are, in combination, potential game changers for the regions.

Available evidence therefore suggests concrete paths for strategy elaboration, on which policy options may be formulated (see chapter 6).

¹⁶ Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services, Article 4(3)

4 Innovation and Sustainable Development Perspectives

The North Aegean region is characterised by large tertiary and primary sectors, limited industrial production, low productivity compared to national and European average values. Research & Development expenditure is very low (OECD, 2020). The transition to a more knowledge intensive economy, with more internationally competitive, export-oriented activities, is a major endeavour. Innovation in an archipelago region may have its own opportunities and challenges.

The following sections give first an overview of the innovation profile of the North Aegean region, presenting the innovation profile of the region, the key players of innovation, but also putting it into the national and regional support context. The chapter also goes through three sectors that may be relevant for innovation activities, namely the agri-food, the sustainable tourism and the energy sector. These sectors derive from and have been identified in the regional innovation strategy of North Aegean as relevant to innovation practices in the region. The report reflects on the opinions from different regional players, showcasing some good practice examples, as well as demonstrating some regional opportunities and challenges in these sectors. These can be used as information and food for thought for the policy design in the 2021-2027 period and be discussed in the framework of sustainable development perspectives.

4.1 Innovation profile and focus in the region

The North Aegean region remains an emerging innovator. According to the Regional Innovation Scoreboard, relative strengths of the region are in the indicators of 'relative SMEs (Small and Medium-sized Enterprises) collaborating', 'employment in innovative enterprises' and 'product innovators'. On the contrary, a weak profile is observed in the indicators 'design applications', 'R&D expenditures in business sector', 'Employed ICT specialists'. (European Commission, 2021)

In fact, the R&D expenditures in the region can be observed in the business sector, the public sector, the tertiary education and in the business and private non-profit organisations. The highest spending is to be seen in the tertiary education, followed by the public sector, highlighting that the innovation in the business and private sectors is very low. In 2019, R&D expenses amounted to 0.72 % of GDP, as compared 1.27 % GDP in Greece as a whole and 2.15 % of GDP in EU28. Things are more positive when it comes to business innovation, as in 2016-2018, 52.8 % of businesses (of the total businesses) apply at least one innovation type. A relatively positive %, compared to the respective 60,3% of the national level. (Εθνικό Κέντρο Τεκμηρίωσης & ηλεκτρονικού περιεχομένου / National Documentation Centre, 2021)

Business innovation is recognised as an important innovation element that needs to be further exploited and capitalised. Entrepreneurship needs to be strengthened through innovation. Business and entrepreneurship players in the region are professional associations, chambers of commerce (chambers of commerce of Lesbos, Samos and Chios), the Chamber Group for the Development of Greek Islands, the sectoral department of the Economic Chamber of Greece, the Geotechnical Aegean chamber, the Technical Chamber of Northeast Aegean and other professional bodies. Most businesses concentration is located in Lesbos, followed by Samos and Chios. Nevertheless, these businesses are very small and without export activity.

Particularly as regards entrepreneurship, different challenges can be observed, according to interviewees. Firstly, the local markets are rather limited, fragmented, remote and with low demand. In addition to that, the high transport costs for logistics and the high energy costs risk competitiveness and highlight the need for business parks logistics. Poor inter-industrial relations, due to focusing on one type of service or one type of product challenge diversification. Lastly, the lack of qualified personnel, the lack of entrepreneurial expertise and the lack of infrastructure, and the lack of incentives to stay in the region add up to the challenges, according to stakeholders from the region (I2).

The overall framework for innovation is designed at national level, through the national operational programme 2021-2027 'Competitiveness', which prioritises research and innovation, the reinforcement of entrepreneurship and competitiveness, the support of businesses to funding, the development of human resources. Similarly, the national programme of 'Competitiveness, entrepreneurship and innovation' from the 2014-2020 period had set the basis for innovation in the past years. In addition to the national operational programmes, the national innovation strategy had set the guiding principles for the regional innovation

strategies of Greece. The national smart specialisation strategy has identified the following priorities for the 2021-2027 period, namely agri-food chain, biosciences, health and medicine, sustainable energy, material, infrastructure and industry, digital technologies, tourism, culture and creative industries, environment and circular economy, logistics. These priorities, as well as the governance framework proposed from the national level will be the basis for the regional smart specialisation strategies.

At regional level, the regional operational programme of the North Aegean also puts innovation into its programming. More specifically, it will focus on smart growth, green growth, infrastructure development, social growth, enhancing extroversion and programme support. The key aim of the smart specialisation strategy was the 'transformation of the economy of the region into a competitive economy based on the smart utilisation of local production systems and their emergence into systems of new dynamics and perspectives' (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2014: 2014–2020). The action axis focused on mechanisms and integration actions of innovation and entrepreneurship in real economy, the development of the agri-food sector, tourism, nature and culture and islands of equal opportunities.

There are different innovation players in the region, however, there still seems to be a limited interaction among players from different levels and sectors. The key innovation player is the University of the Aegean. The University has developed a framework for the development of research, technology, innovation and entrepreneurship, as well as for the capitalisation of its research results. (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021b). The University has developed some innovation support mechanisms, such as the Mediation Office, whose aim is to broaden the research activities of the University and link it to the business sector. It has also developed the Technology Transfer Office, which links research with the economic, business and social environment. Furthermore, the University supports start-up activities, through the 'AEGEAN start-ups'. Other regional players are 'ELORIS', a research, education, innovation and development business in the North Aegean which aims at skills development of the population in the islands, and the development of projects and initiatives. Further players are the Industrial Centre for Research and Development of Mastic Applications in Chios, and the Regional Development Fund of North Aegean (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021b). In terms of the smart specialisation strategy the Regional Innovation Council has been the key strategic player.

The region faces several challenges in innovation and entrepreneurship. The most prominent one is the lack of personnel in the research field, despite the strong innovation role of the University of the Aegean (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021a). When it comes to business innovation, although it demonstrates high rates in the organisation and promotion of goods, it lags in technological innovation, i.e. in products or processes (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021a).

Reflecting on the regional perspective from the interviews carried out in the framework of the project reasons related to insularity, and more specifically the double insularity, which characterises North Aegean are a halting factor for innovation and entrepreneurship. More specifically, interviewees highlighted that the isolation from the mainland and other big urban centres, the high transport costs, the small, fragmented and remote local markets of the region and the difficulty in accessing own funding, the lack of infrastructure, the lack of qualified personnel and entrepreneurial expertise, as well as the lack of satisfactory quadruple-helix interaction, i.e. a lack of satisfactory interaction between local private sector actors, academia and local / national authorities and civil society representatives level makes innovation difficult and bureaucratic. (I1, I2)

Further needs highlighted in the interviews, regard a more open approach to innovation and a shift in mentality. This means being open towards new developments and avoiding scepticism towards new approaches, but also invest in innovation mechanisms that aid the monitoring and support of innovation, such as incubators, accelerators, developing synergies with business angels, attracting venture capitals, preparing business plans (I1, I2) In addition, interviewees pointed out that there is a need for a broader and more dynamic entrepreneurial discovery process, with higher stakeholder involvement, more targeted scope and openness towards new possible sectors where the smart specialisation could focus, such as circular economy, blue growth sectors as blue energy, ports and logistics, blue bioeconomy, e-health and others. (I4)

From the interviews it seems that increased communication and exchange would also benefit the innovation landscape of the region, especially more exchanges among the institutional players, such as the Directorate

of Development Planning which was the key mechanism for the monitoring of the regional innovation strategy, the Regional Council for Research and Innovation, but also with the Managing Authority of the North Aegean operational programme, but also more informal and online meetings to ease communication (I1).

4.2 The agri-food sector

The agri-food sector is a key sector in the North Aegean Region and sectors targeted by its regional innovation strategy (Περιφέρεια Βορείου Αιγαίου / Region of North Aegean, 2015). The region is home to several unique products while each island has a product specification for which it is famous for. In particular, the agri-food sector comprises activities that fall within the primary sector, namely: cultivation/breeding, processing/standardization and the handling/marketing of agricultural products which:

- Contribute over time and with great intensity to the formation of the gross production value of the region. These products include primarily: olive oil (in Lesbos, Samos, Chios, Ikaria and less in Limnos), ouzo (in Lesbos mainly, but also in the other islands), livestock products (mainly cheese) in all the islands, citrus fruits and juices (in Chios), salt.
- Contribute to the formation of the Mediterranean diet standard. Those products include, apart from the aforementioned also wine (mainly in Samos and Limnos, but also in the other islands), mastiha and mastiha products (in Chios).
- Are among the emerging sectors of primary production (e.g. fresh products, fisheries and aquaculture products (in all islands). (Special Managing Authority, 2014)

However, a number of challenges in the sector have been mentioned by interviewees from the region. Some are rather linked to the insularity challenges, such as distance from the mainland, infrastructure problems, lack of logistics (I6) while others pinpoint the small size of agricultural holdings and the increase of production costs (I11). What is more, the region of the North Aegean is still perceived by stakeholders as an ageing region with low labour force making it challenging for the agro-food sector to thrive (I11). This is in contradiction with observed demographic trends, that show a significant inflow of a young working age population. This probably reflect the insufficient integration of these new island inhabitants on the regional labour market.

The regional innovation strategy has identified three general strategic objectives for the agri-food sector, namely:

- 'From the field to the shelf';
- Focus on quality: documentation and certification;
- Cooperation among companies: horizontally (among the same industry), and vertically (among other branches).

The regional innovation strategy aims at the utilization and transformation of local resources and products. To this end, a needs-driven innovation approach is advocated, in which applied research is supported in response to innovation needs of companies. This will help applying innovation tailored to the needs of the companies in the region. In parallel, cooperation among companies is enhanced, e.g. with networks of companies that are part of the same value chains or island, to optimise benefits of research results in terms of effective innovation practices.

This strategic orientation does not seem to match reality, as there is little link of the agri-food sector with innovation, as pointed out in one of the interviews. (I11)

Interventions on the agri-food sector have been funded under the North Aegean operational programme 2014-2020 with a total budget of 8.7 million (35% of the RIS budget). The major public project is the Mastiha Research Centre with a budget of 1.25 million (see Text Box 4 below). Two more mastiha-related projects have also received funding. Furthermore, 19 businesses and three cooperatives have been selected under the state-aid interventions of the agri-food sector with a total budget of 3.37 million, aiming at the exploitation of patents and new business ideas for the improvement of production activities and the development of new products by existing or new enterprises. (Special Managing Authority, 2014)

Apart from mastiha, other products that have been supported under the regional innovation strategy are olive oil, livestock products and wine, focusing on the production of innovative products. Furthermore, research infrastructures for the treatment and exploitation of by-products and residues of the agri-food sector for the production of alternative products and energy (Aegean Agrowaste Lab) as well as the research

infrastructure AGRICA (Centre for Agri-Food Research and Innovation of the Aegean) have been created at the University of the Aegean. (Special Managing Authority, 2014)

Good practices that showcase some efforts to link innovation with agri-food production, are linked to specific companies or cooperatives, as presented in the boxes below. Nevertheless, they seem isolated from any coordinated effort of promotion and branding of the region, but rather individual efforts of the respective companies or cooperatives in specific islands.

Text Box 4 The Mastiha Research Centre

The Mastiha Industrial Research Centre is a research organization located in Chios and is an investment initiative – a message that local communities, with stubbornness, patience and in cooperation with the competent local and regional authorities can design and implement complex innovative projects. The Research Centre systematically documents the findings of global scientific research, seeking new and evolving existing applications, and ultimately acting as a bridge of knowledge between academia and industrial enterprises investing or wanting to invest in Mastiha. Production and research facilities of high technological integration have been created to accommodate the needs of the Research Centre, that allow the participation in various research and production activities and the provision of services and products of high added value. The total investments in buildings, equipment and special facilities related to the MRC amount to 3 000 000 €.

The main research activities of the Centre cover the following fields:

- Mastic: Antibacterial activity of mastiha, Non Oxidative Action of Mastiha, Mastiha in oral hygiene, Dermatological and Healing properties of Mastiha, Phytochemical analysis of Mastiha, Action of Mastiha and Mastiha Oil Against Cancer Cells
- Mastic Oil: Antibacterial activity of mastiha, Non Oxidative Action of Mastiha, Mastiha in oral hygiene, Dermatological and Healing properties of Mastiha, Phytochemical analysis of Mastiha, Action of Mastiha and Mastiha Oil Against Cancer Cells
- Other research : Hypolipidemic properties of Chios Mastiha Oil, Pharmaceutical Biology. (I6)

Text Box 5 The United Winemaking Agricultural Cooperative of Samos

The UWC Samos receives the grapes, produces the wine and trades almost the entire production of the island.

The careful cultivation in the patrilineal vineyards and in the up-to-the mountain dry stone terraces by the experienced winegrowers of the Cooperative of Samos, the high drainage soil favored by a diverse microclimate and then the careful winemaking, have internationally highlighted the wines of the UWC Samos.

In search of constant modernization, it invests in technology and know-how, in harmonious combination with traditional viticulture and winemaking and in compliance with ISO and HACCP certifications. It also has certification for the production of organic-farming wines from DIO, an organization of control and certification of organic products.

The Samos Muscat is highly recognized all over the world and has definitely associated its name with its geographical origin, as is the case with the best international varieties. This is the reason why Samos wine has one of the oldest registered European designations of origin (PDO) and is entitled to be marketed under the name “Samos” internationally.

The wines of the UWC Samos are the first Greek wines to be classified with a controlled origin appellation or as they are now classified as Protected Designation of Origin (PDO). Since 1937, they have been honored with hundreds of medals from international competitions, and new national and international distinctions are being added on every year. (I11)

In fact, the lack of extroversion, promotion and marketing of the agri-food sector has been highlighted by a number of regional players during the interviews. The sector would largely benefit from the support in the export of the different products which will be essential to broaden the markets, increase extroversion and support producers, as well as from the promotion and marketing of the products (I8).

In addition, more precise targeting of the sectors or products included in the regional innovation strategy is required for the 2021-2027 programming period. In the agri-food sector targeting should concern not only specific products (e.g. olive oil) but products with special characteristics that allow differentiation on the market (e.g. olive oil with increased phenols). (Special Managing Authority, 2014)

4.3 Sustainable tourism

Tourism is an important sector for the national GDP. The North Aegean region has a number of assets, including a pristine natural habitat with rare flora and fauna, important biotopes, ecotopes and natural ecosystems. However, the tourism industry is considered to be relatively less developed than in other parts of Greece. It is therefore a sector with a significant growth potential (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2014). The key question is what types of tourism to be promoted to maximise benefits for individual islands and local communities and for the region. Sustainable tourism strategies need to be adapted to a variety of local contexts.

Some examples of good practice can be highlighted. The Lesvos' geopark is an integrated and innovative tourism development project. The 'Pathways of Chios' made it possible to promote traditional architecture as an asset for tourism development. Many other examples of creative examples of product specialisations are observed, such as e.g. wellness tourism in Ikaria, bird watching in Lesvos, gastronomy tourism in Limnos and Psara (I9). One of the reasons for the limited exploitation of the region's tourism potential is the fact that regional players focus on individual islands, rather than trying to develop a coherent tourism offer in the region as a whole. Despite the fact that the region is home to five airports, multiple subsidized air services and ferry connections, interviewees recurrently refer to limited transport connectivity and accessibility as a tourism development bottleneck (I9, I10). It could be useful to pinpoint more precisely transport-related issues: are they linked to transport costs, frequency of services, quality and reliability of connections, time needed to travel from key areas of origin of visitors? These aspects are not detailed by the interviews. Possible advantages of relative isolation compared to other destinations could also be explored. They may for example limit the development of capital-intensive mass tourism, with relatively weaker social and economic benefits for local communities and help develop sustainable niche tourism products. Overall, interviews suggest that tourism development bottlenecks are insufficiently known, and that more detailed enquiries are needed. Second, reflections on obstacles and opportunities may need to be renewed. In spite of recurring references to "sustainable tourism", the mindset remains oriented towards mainstream mass tourism. Strategic reflections may need to be more open-minded ("thinking out of the box"), capitalising on the insular opportunities and nurturing the emergence of a tourism culture that would be the region's own.

Tourism is one of the priorities of the regional innovation strategy, which aims at focusing on quality, documentation and certification, i.e. quality and security of services, as well as on cooperation among businesses, to combat their isolation challenges (Περιφέρεια Βορείου Αιγαίου / Region of North Aegean, 2015). The Innovation Strategy points out that these efforts can be supported by research and networking programmes, applied research tailored to the businesses' needs and an enhancement of cooperation among actors of the sector. Possible concrete actions could promote business clustering, better embeddedness of local products in tourism activities, promotion and marketing, branding of the total archipelago touristic identity. The innovation strategy therefore advocates an integrated approach to tourism development at different territorial levels.

Interventions on the tourism sector have been funded under the North Aegean operational programme 2014-2020 under the regional innovation strategy with a total budget of 6.96 million (28.7% of the RIS budget). A large part of the projects concerns the use of ICT for the promotion of cultural resources (museums, castles, archaeological sites). The major project refers to the preservation and promotion of the modern cultural heritage of the region through emerging technologies and innovative ICT applications with a total budget of 758.490 thousand. (Special Managing Authority, 2014)

Apart from the regional innovation strategy, tourism-related interventions under the North Aegean ROP focus on the development and promotion of commercial tourist services for SMEs. Therefore, 131 businesses have been selected for funding with a total budget of 11.49 million, out of which 75 are new established and 56 are existing. (Special Managing Authority, 2014)

However, effective public promotion policies are in fact rather fragmented. According to the interviewees, few interventions in the tourism sector seek to support innovation. Furthermore, they point out that there is no platform to support tourism services and capitalization of digitalization (I9, I10). A holistic approach to

tourism is missing. Actions for the promotion, marketing and organisation of the tourism sector in the region lack coordination and coherence. A strategic approach with clear objectives, intermediate target value and timetables to reach them remains to be elaborated. Regional players highlight the need for a coordinated plan. Such a plan would address the weaknesses of the tourism sector and limit its vulnerability in the face of possible threats and vulnerabilities. It would also identify ways of capitalising on emerging market demand for new types of tourism products (I10). A coordinated plan would also seek to optimise synergies and complementarities with national policies. The Special Spatial Framework for Tourism which is currently under development is an example of such a national policy. It is expected to set the wider framework for tourism development in the country. Such approach will give a rather holistic and overarching aim to tourism, to which regions may relate to and identify synergies. In parallel, a regional plan would also need to be coordinated with tailored measures in each island, adapted to their respective tourism development potentials and objectives. In other words, interviewees considering that an effective tourism strategy should be designed and implemented with a multilevel territorial governance mindset.

Interviews consider that the lack of a coordinated and holistic approach is due to the currently little communication, exchange and cooperation among the different tourism stakeholders. Coordinated destination management is limited, both at regional and local levels. Few public policy measures are implemented to promote alternative tourism products. These regard the wider involvement of diversified players in the region, be that, relevant institutions such as the Regional Consultation Committee and the Regional Council, the University of the Aegean, the Observatory of Local and Insular Development, but also the wider public, the youth, the tourism companies etc. (I9, I10)

Regional players emphasise that wider public consultation would be needed (I10). This indeed appears purposeful considering the need for more detailed knowledge on tourism development bottlenecks and opportunities. However, more participatory approaches, e.g. with open dialogues, facilitated meetings and workshops, may be needed to collectively rethink the ways in which tourism development policy is designed and implemented. Such processes would allow tourism businesses, local populations and institutions to exchange and jointly reflect on pathways towards sustainable tourism embedded in regional assets, values and socio-economic development objectives. This would not only help to increase the ownership and participation in the actions, but also broaden the thematic range of tourism-related policy interventions, making them better tailored to the actual needs of the region. The multi-level territorial governance model for tourism development could also be finetuned.

Such an approach to tourism strategy elaborated, based on a collective process, raises some key challenges. The primary one is how to motivate businesses and individuals to get involved. One needs to carefully identify what they could get back from it on the short to medium term. A possible way forward is to make funding for pilot actions available, so as to create a financial incentive for all actors interested in innovative approaches to tourism development to get involved. Such funding could be organised in the framework of an ITI.

Another possible challenge to a collective approach to tourism development is a lack of knowledge and skills. Interviewees highlighted the lack of staff and especially trained staff in the tourism sectors. There are also few educational programmes and training courses targeting the tourism sector (I9, I10). A collective strategy elaboration process could be coupled with training programmes for tourism sector actors, e.g. bringing in lecturers from other regions. However, this presupposes that training needs are carefully identified, and that course formats are adapted to the constraints and educational background of target audiences. In terms of formats, options such as distance learning, evening courses, intensive multiple day group sessions may for example be considered. In relation to the collective strategy elaboration process, the main objective is to inspire involved stakeholders to consider tourism development in an open way, taking into account current trends and developments.

Sustainable tourism has become a necessity and a development that has especially after the COVID-19 pandemic increased in importance. Given the imminent climate change effects, it needs to be further taken up by the North Aegean region. The RIS already promotes ecological entrepreneurship and use of green technology in tourism accommodation. Interviewees point out that the North Aegean Region is in a favourable position to develop sustainable tourism, with its natural assets and and in the absence of mass tourism (I10).

4.4 Energy sector

Up to now, energy provision in the North Aegean region is all but environmentally friendly. Long distances from the mainland and non-interconnected energy networks, together with an increasing energy need, create an energy deficit in the region. This results in increasing environmental pressures (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021a). In addition, the outdated electricity generation system and the old transmission networks degrade the quality of life of citizens and make the region less attractive for development (Ειδική Υπηρεσία Διαχείρισης Ε.Π. Περιφέρειας Βορείου Αιγαίου / Special Managing Authority of the North Aegean Operational Programme, 2021a). Steps towards improving the situation are in the pipeline, as the energy electric systems of the region in the “Non-Interconnected Islands” (NIIs) will be connected to the Transmission System or the Distribution Network of the mainland by 2030.

The region is rich in natural energy sources, such as geothermal energy, solar energy and wind energy (OP 2021). More specifically, regional players highlight that there is a lot of potential in geothermal energy, which can resolve the problems of energy efficiency in the Region. Almost all islands have geothermal fields to be exploited. In Lesbos, for example, the field has been identified and could be available for entrepreneurial exploitation, in Chios the research is in progress, while in Ikaria there are also clear indications for the existence of geothermal fields, although the relevant research has been delayed (I3). However, there is still a high dependence on heavy fossil fuels and a limited capitalisation of sustainable energy resources in the region, as also confirmed by the interviews with regional players (I8). As interviewees point out, this means that a significant number of NIIs will continue to be electrified by the local production units of Public Power Corporation S.A., which are fuelled with oil, either heavy (fuel oil) and/or light (diesel), at the expense of the energy costs and the environmental burden (I3).

The potential of the region in renewable energies is recognised, both e.g., in the regional operational programme and by interviewees. A few good practices in the field, as shown in the boxes below, are some examples.

Text Box 6 The Greco Islands initiative

The Greco Islands initiative has the ambition to transform Greece’s small, non-interconnected islands into models of green economy, energy autonomy and digital innovation. The interventions are planned to focus on the energy sector, particularly on climate neutrality, with a parallel stimulation of the local economies. It will also include elements regarding the promotion of the natural environment and biodiversity, as well as digital transformation, e.g. digital services as e-learning and telemedicine, sustainable maritime interconnection and others. The green transition of these islands will create a comparative advantage for tourism. What is more it will overcome the continuation of the negative consequences of energy and socioeconomic isolation on the islands. Priority will be given to the small islands that are not expected to be connected with other bigger islands, such as the intervention currently running for Agios Efstratios. As a next step, Oinousses, Psara, Fourni and Thymena may follow. The Greco Islands initiative can help small islands become more energy autonomous, move faster to the green transition and reduce the barriers caused by high energy dependence. At the same time, it can create new opportunities for the economic sustainability of the small islands, by creating additional comparative advantages, e.g. regarding the sustainable tourism potential

Source: (EMEA STARTUPS, 2022; Ministry of Environment and Energy, Greece, 2021)

In addition, there are several initiatives in Greece linked to greening small islands, as has been the case with Astypalea, Halki and Tilos in the South Aegean. In the North Aegean, the green island project in Agios Efstratios is a similar example.

Text Box 7 The Green Island Project: Agios Efstratios

The Green Island Project on the island of Agios Efstratios is a pilot project where mature technologies of renewable energies are implemented. The project included the design, supply, installation and commissioning of a hybrid power plant for generating electricity from renewables and a district heating system using renewables. The hybrid power plant includes a wind turbine, a photovoltaic station, storage accumulators and an energy management and control system, while the district heating system will include the central units of heat production and storage. The project has been funded under the national operational programme ‘Competitiveness, entrepreneurship and innovation 2014-2020’. The agreement for the project was signed

in March 2021 and the project is to be finalised by 2023. The finalisation of the project will make the island energy autonomous, as electricity will be covered by more than 85% by renewables.

Source: [Terna Energy](#), (I8)

Some regional players, highlight the need for further actions in sustainable energy, to address the current energy challenges. Examples of needs for further action include the establishments of storage stations for energy production from photovoltaic in Oinousses, Chios and Psara, the electrification of shipping, the development of energy communities, especially in the large islands (I3). Numerous solutions to reduce dependence on fossil fuels and greenhouse gas emissions have therefore been identified.

However, interviewees observe inertia when it comes to taking advantage of identified opportunities and addressing energy challenges. As a matter of fact, big energy infrastructure projects have been discussed and agreed with the development of onshore wind farms being the core. The expected investments nationwide amount to 6 billion Euros until 2030¹⁷. The gradual connection of the North Aegean region grid to the mainland will make the required infrastructure available and will open up new opportunities for renewable energy projects in the region. This will be a major game changer in the field of renewable energies resources, not only in Greece, but also in its wider neighbourhood, for which the region would need to take key choices towards getting a step closer to realising the green transition. Especially in the overall current global energy crisis framework, such a development may have immense consequences in the energy provision landscape. It would be purposeful to further investigate implications for the North Aegean region, e.g. in relation to the development of wind farm maintenance activities and other support functions in relation to renewable energy production. This may help to develop SMEs that could also export services to other regions.

Another important element is lack of interaction, communication and involvement of several players and of the local community in the decision making. This often may result in 'NIMBY – Not In My Backyard' situations, which hamper development and avoid practical solutions. As mentioned by one of the interviewees, it is necessary to involve local communities in the decision making of the location of any additional renewable energy systems, in close cooperation with the municipalities. The interviewee suggests an open public consultation to avoid local reactions and find a common ground that serves both the energy development and the environment (I3). Considering the major conflicts that may arise from renewable energy production, co-creation approaches and workshops at different geographic levels may be called for.

4.5 Thinking more strategically will help the region capitalise on its potential and identify links between the three sectors

Looking at the agri-food, the sustainable tourism and the energy sector in the North Aegean region, three sectors that have been identified as relevant sectors for innovation in the region, it becomes clear that more strategic thinking on how to capitalise on the region's potential is necessary. The synthesis of the findings has identified the following challenges:

- There is a lack of innovation in each of the three sectors. Although there are some good practices in the region, as described in chapter 4, the lack of skilled personnel, strategic thinking, entrepreneurial expertise, extroversion of the local markets, together with the insularity challenges, such as distance, limited markets and high transport costs, makes it more challenging.
- Difficult to identify existing links between sectors. The analysis has shown that it is difficult to identify links between the three sectors and how each can capitalise on another. Although linkages and opportunities between sectors may eventually be developed, they currently neither seem to exist nor be envisaged.
- Necessity to address current and forthcoming transitions. The North Aegean region needs to take key choices and actions on how to deal with the green, digital and just transition. Particularly when it comes to the green transition, players in the region will need to take key decisions on how to shift to more sustainable energy sources and capitalise e.g. on the impressive onshore wind energy project planned for the region, which may play a key role in the wider energy landscape of Greece

¹⁷ <https://www.mononews.gr/business/plota-eolika-ependisis-6-dis-evro-os-to-2030-%CE%84erchete-to-thesmiko-pliesio>

and its neighbourhood, or on developing further the sustainable tourism and sustainable agri-food in the future.

- Stimulate strategic thinking in relation to innovation. The Regional Operational Programme can be used more proactively as a tool to stimulate strategic thinking across the different sectors and players in the different territories of the region. Thinking more strategically will help both in capitalising the region's potential and developing linkages between the different sectors, towards a more coordinated and targeted approach. Local and regional strategies will give the region a direction for its future development, creating economies of scale.

5 Cohesion Policy design and implementation in the 2014-2020 programming period

The present synthesises experience from the 2014-2020 programming period with respect to support to balanced and sustainable development in the North Aegean Region, with focus on the smaller islands. In order to contextualise this analysis, an overview of issues and fields that have been focused on is presented in section 5.1, on the basis of an extraction of information on implemented activities from the programme management system. These data also make it possible to compare volumes and thematic foci of ROP-supported activities in subdivisions of the region, including smaller islands. These patterns are analysed in more detail in section 5.2. Section 5.3 describes activities implemented as part of the smaller islands ITI and the reasons for which this experience was not deemed successful. This is largely linked to the strategy governance challenges.

5.1 Thematic focus of the Regional Operational Programme 2014-2020

A large proportion of major projects financed under the Regional Operational Programme of the North Aegean region compensate for inadequate infrastructure endowment. Although they undoubtedly contribute to strengthen perspectives for economic growth, sustainable development and citizen's quality of life, they tend to be guided by immediate needs, rather than a strategy for medium to long term change.

For example, more than half of cohesion policy project volumes in Samos region, and just under 20% in Chios and Lesvos regions, sort under thematic objective 7 ("Sustainable transport"). In all three regions, this funding has primarily gone to investments in new roads, despite the Operational Programme's insistence on the importance of improving the connectivity of the islands with the mainland. Projects dealing with water provision and wastewater treatment occupy a prominent position under Thematic objective 6 "protection of the environment". More than one third of project volumes in Lesvos sort under this thematic objective. The construction of sewerage system has been financed on multiple islands.

Low-carbon economy (Thematic Objective 4) has primarily focused on thermal renovations of dwellings (funding a support instrument with a total budget of € 13.5 million) and of a wide range of public buildings. As regards the latter, thirty (30) educational facilities of all levels of education have been selected for energy upgrade with a total budget of 19.5 million. (Special Managing Authority, 2014). This thematic objective has concentrated a higher share of project volumes in Chios region than in other parts of the North Aegean Region.

Chios region also stands out with its relatively higher share of project volumes (18%) under thematic objective 5 "climate change adaptation", with extensive focus on flood protection and infrastructure to evacuate stormwater. These high rates are also linked to the fact that wastewater infrastructure investments on Psara islands have been bundled with sorted under this thematic objective, and not under thematic objective 6 ("protecting the environment") like is most other islands. Other major projects under this thematic objective focus on protection of beaches against coastal erosion and enhanced fire preparedness.

Across the North Aegean region, small proportions of cohesion policy funding are dedicated to Research and Innovation activities and ICT access and usage (mostly less than 2%) for each. Admittedly, both these fields have been targeted by the national "Competitiveness, Entrepreneurship and Innovation 2014-2020". However, the low levels of Cohesion Policy support in these fields are inconsistent with the fact that the

ROP's first development objective, which includes a "strengthening the attractiveness, competitiveness & extroversion of the [North Aegean Region] & its businesses, with the cutting edge of innovation"¹⁸.

Main ROP measures funded in relation to ICT concern the digitalisation of heritage and tourism activities. Numerous other smaller projects support digitalisation in individual companies. No project addresses the completion of broadband infrastructure, which was identified as the first need in the field of ICT by the Regional Operational Programme. However, as noted above, extensive infrastructure investments in the field of broadband access were carried out during the programming period independently of the ROP (see section 0).

Cohesion Policy project volumes for SME competitiveness are relatively similar across all North Aegean NUTS3 regions: between 14 and 17%. Almost all 153 instances of SME support that were not related to the COVID pandemic concern the construction or renovation of tourist accommodation or car rental. SME support has therefore not contributed to the development of new activities. Support to SMEs that have been exposed to COVID corresponds to 57% of spending on this thematic objective. When related to population, this support appears to be concentrated in the larger islands (see section 5.2).

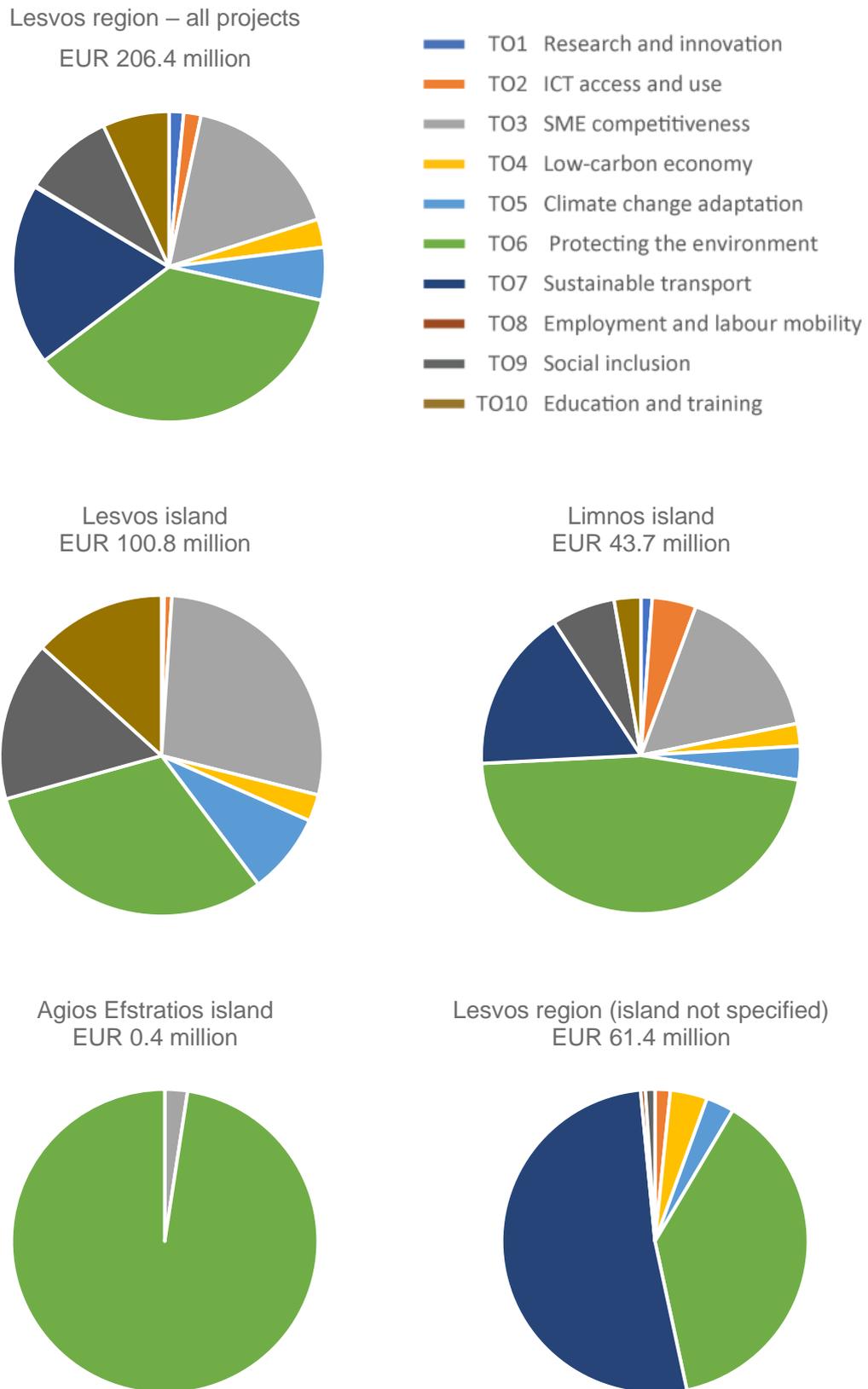
The North Aegean ROP has also contributed to a national Entrepreneurship Fund, managed by the Hellenic Development Bank with a contribution of € 6 million. This Fund helps entrepreneurs and SMEs get access to risk capital with a low interest rate¹⁹. Details in the types of entrepreneurial initiatives that were supported by this Fund in the North Aegean Region and on their geographic location could not be processed in the context of the present study.

ESF-co-funded projects total just over 25% of total project volumes. The programme dedicates a very low proportion of funding to Thematic Objective 8 ("employment and labour mobility"). Under Thematic objective 9 ("social inclusion"), it has funded major projects to support the health sector and to help "reconcile family and professional life". Projects sorting under Thematic objective 10 ("education and training") have primarily funded investments in school and higher education institution buildings and ICT equipment.

¹⁸ Regional Operation Programme for the North Aegean Region, p. 19. ("Άμεση ανάσχεση της συρρίκνωσης της παραγωγικής / επιχειρηματικής δραστηριότητας & ενδυνάμωσης της ελκυστικότητας, της ανταγωνιστικότητας & της εξωστρέφειας της ΠΒΑ & των επιχειρήσεων της, με αιχμή την καινοτομία").

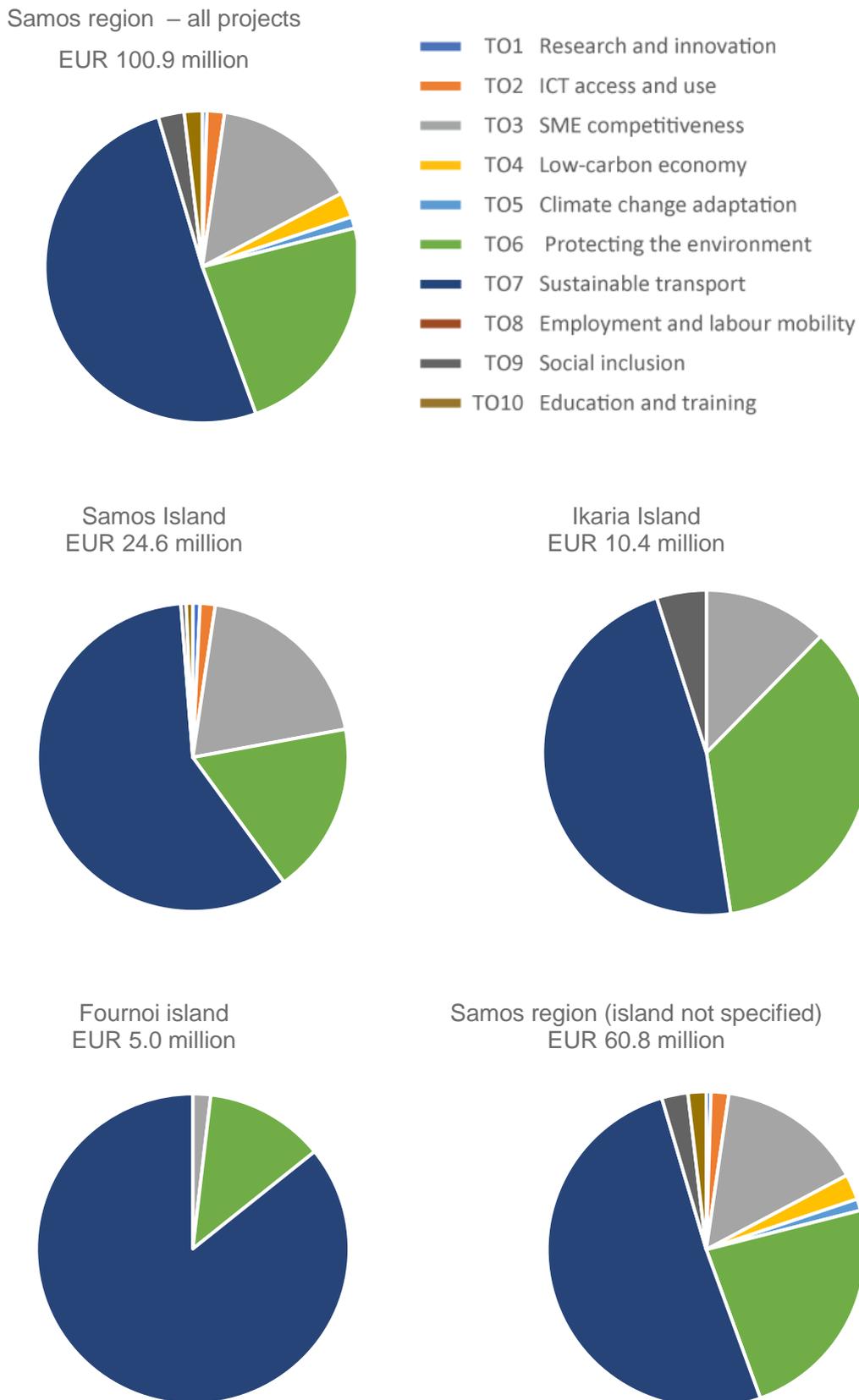
¹⁹ <https://plan.gr/programmata-tepixon-daneio-epixeirimatikotitas>

Figure 20 Project budgets by thematic objective and island in Lesvos NUTS 3 region



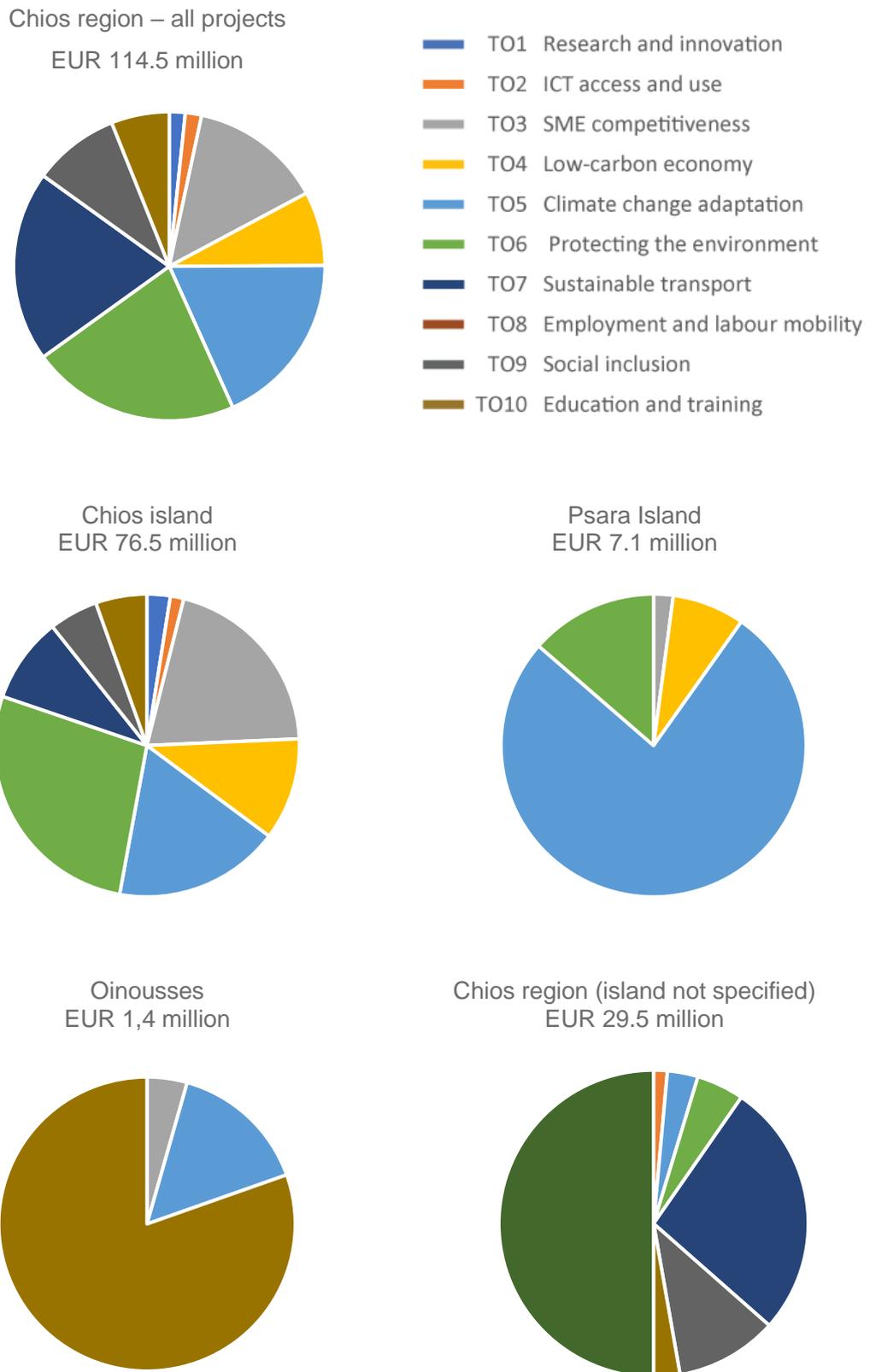
Source: own elaboration based on data extracted from ROP programme management system

Figure 21 Project budgets by thematic objective and island in Samos NUTS 3 region



Source: own elaboration based on data extracted from ROP programme management system. Major infrastructure projects with an obvious connection to a specific island have been reassigned to that island

Figure 22 Project budgets by thematic objective and island in Chios NUTS 3 region



Source: own elaboration based on data extracted from ROP programme management system

5.2 Cohesion Policy support intensities in North Aegean region islands

Available data on the implementation of Cohesion Policy in the North Aegean distinguish among projects that focus on a specific island, those that focus on a NUTS3 region (i.e. a group of islands) and those that concern the entire programming area. On this basis, it is possible to calculate intensities of cohesion policy co-funded activities (i.e. ratios of total project budgets by inhabitant). These figures show that some smaller islands have a relatively high volume of project activities, but that this is not the case for all of them (Table 4). The island of Psara stands out with higher aid intensity than all other islands. This is essentially due to investments in the construction of a sewerage system and a wastewater treatment plant (with a total budget of close to 4,4 million euros) in an island with only 412 inhabitants. The relatively high ratio in Fournoi is similarly linked to investments in port infrastructure. No major infrastructure investments have been funded in Agios Efstratios and in the Oinousses. This explains their low project intensity compared to Lemnos, where cohesion policy has funded major investments in hospital and in water provision networks.

Table 4 Intensity of cohesion policy co-funded activities by island

Region	Island	Pop	Aid intensity – focus on an island	Aid intensity – Focus on a NUTS3 region*	Aid intensity – all project*
Lesvos region	Lesvos	86 442	1 167	1 760	2 354
	Limnos	16 785	2 603	3 196	3 790
	Ag. Efstratios	252	1 679	2 273	2 867
Chios region	Chios	51 260	1 492	2 054	2 617
	Oinousses	804	1 746	2 309	2 871
	Psara	412	17 256	17 819	18 381
Samos region**	Samos	33 353	1 914	2 212	2 510
	Ikaria	8 426	2 280	2 578	2 875
	Fournoi	1 347	3 721	4 018	4 316

*Presuming that projects benefit all inhabitants within the NUTS3 / NUTS2 region equally

** Major infrastructure projects with an obvious connection to a specific island have been reassigned to that island

More detailed comparisons of the relative importance Cohesion Policy activities under each of the 11 thematic objectives in smaller islands reveal diverse thematic foci (see

Figure 20, Figure 21 and Figure 22):

- Projects targeting Agios Efstratios focus on environmental protection (thematic objective 6), funding waste management infrastructure,
- Projects targeting on Ikaria and Fournoi focus on transport infrastructure (thematic objective 7), with projects respectively funding road and port infrastructure
- Projects targeting Psara focus on climate change adaptation (thematic objective 5), with projects funding wastewater, stormwater and water management infrastructure,
- Projects targeting the Oinousses focus on education and training (thematic objective 10), with project to improve the educational infrastructure of the naval academy.

This suggests that perspectives on key development bottlenecks are specific to each of these islands.

Table 5 Intensity of support to SMEs in the context of the COVID pandemic by island

Region	Island	Pop	Total "COVID support" to SMEs	Support by inhabitant
Lesvos region	Lesvos	86 442	16 488 854	191
	Limnos	16 785	3 049 060	182
	Ag. Efstratios	252	10 177	40
Chios region	Chios	51 260	9 390 778	183
	Oinousses	804	61 404	76
	Psara	412	15 985	39
Samos region	Samos	33 353	11 041 714	331
	Ikaria	8 426	1 794 038	213
	Fournoi	1 347	92 768	69

When focusing specifically on support to SMEs in the context of the COVID pandemic, one observes that the smaller islands have received a proportionally smaller share of funding (see Table 5). This is partly linked to the fact that tourism activities are relatively less developed on these islands. However, the extent of differences and their systematic character may also reflect a lower awareness of available support mechanisms, or greater difficulties accessing support, among actors from the smaller islands.

5.3 Implementation of the ITI targeting smaller islands

As described in the introduction (see section 2.1), an ITI shifts parts of the management and implementation of a programme to a level that is appropriate for an integrated territorial development approach. They may also be cooperation frameworks that allow weaker areas to access funding, as they make it possible to assess and finance project proposals separately. In the North Aegean, was designed to "eliminate the phenomenon of unequal spatial development in the seven small islands of the Region (Agios Efstratios, Lemnos, Oinousses, Psara, Ikaria, Fourni and Thymena".

ITIs are also meant to initiate new working methods and make ERDF and ESF interventions more effective, by producing desired effects, and more cost-efficient, by doing more with less funds. The ITIs shall make it possible working across sectors, across funds, capitalise on synergies and addressing conflicts, and above all, making policy design and implementation more participative.

For the 2014-2020 an ITI for the small islands of the North Aegean was designed. The aim of the ITI has been to see "The small islands as models of sustainable, resilient and endogenous development in the Aegean". Three main Strategic Objectives were elaborated (Περιφέρεια Βορείου Αιγαίου / Region of North Aegean, 2020):

- Enhancing the resilience of local businesses and employees:
 - Supporting local entrepreneurship in areas of advantage (tourism, fishing, agri-food);
 - Upgrading the skills and abilities of the local workforce;
 - Expanding the economic base of small islands, integration into the labour market and income support.
- Preservation and promotion of the natural and cultural environment:
 - Improving the energy efficiency of buildings;
 - Promoting solid waste reduction and recycling as part of an integrated management;
 - Integrated and efficient management of natural resources (water);
 - Enhancing environmentally sustainable tourism;
 - Increase the functionality of the residential space.

- Strengthening accessibility to services that will compensate for the disadvantages of island isolation of residents, societies and businesses:
 - Eliminate isolation by providing high quality remote services to citizens and local businesses;
 - Improving connectivity and accessibility;
 - Improving the provided health, social care and active integration services.

It has not been possible to identify the process leading to the adoption of these strategic objectives based on the documents that have been reviewed.

In total, data from the project management system indicate that 31 projects with a total budget of 34.7 million euros were funded under the ITI. These projects are:

- On Lemnos: Support to digital transition in tourism sector, preservation and valorisation of archaeological heritage, measures to contain coastal erosion (preservation of beaches), wastewater and solid waste processing, road infrastructure, thermal renovation of public buildings,
- On Agios Efstratios: solid waste processing.
- On Oinousses islands: Thermal renovation of public building, soft measures to enhance the capacity to address impacts of climate change, wastewater processing and recycling infrastructure,
- On Psara, thermal renovation of public buildings, wastewater and solid waste processing,
- On Ikaria: Infrastructure for the production of drinking water (chlorination) and treatment of wastewater.
- On Fourni and Thimena Islands: Water desalination unit and pipeline, port infrastructure.

In addition, a project dealing with the development of telemedicine in Small Islands is identified as a component of the ITI. This project had a budget of almost 500 000 EUR, and was supposed to receive a support of more than 460 000 EUR. However, available data indicate that it has only received 55 000 EUR in payments.

Waste processing and water provision are therefore the most important recurrent issues addressed. 55% of funding is dedicated to such measures. They sort under thematic objective 6 ("Protecting the environment") except on the island of Psaras, where they are funded under thematic objective 5 ("Climate change adaptation"). 30% of funding has been used on two transport infrastructure projects (under thematic objective 7), i.e. port improvements on Fourni (12%) and construction of a bypass road around a village on Lemnos (17%). The remaining 15% correspond to smaller projects, often linked to the development of tourism.

The only component of the ITI with a systematic character and a potential to structurally improve resilience in the face of uncertain climate change and preservation of natural environments are therefore linked to water provision, wastewater treatment and, to a lesser solid waste treatment. These are recurring challenges of small islands across Europe. The ITI has therefore effectively addressed only one subcomponent of the strategic objective "Preservation and promotion of the natural and cultural environment".

The ITI therefore did not deliver according to initial expectations. Interviewees mention some main explanatory factors:

- The absence of a coordinated, joint strategy. Such a strategy would for example have made it possible to address themes and topics of interest to the whole region, such as support to local entrepreneurship. Without a strategic reference framework, the ITI was perceived as an earmarking of funds to smaller islands rather than as a mechanism for integrated and strategic development.
- Insufficient knowledge of ITI principles and objectives among targeted local authorities and stakeholders. Awareness raising campaigns would be needed according to one interviewee (I2). As long as this knowledge is not shared among involved stakeholders, it is difficult to organise dialogue processes that reach their objectives within the allocated time.
- In connection to this, an insufficiently developed bottom-up approach to decision making. A greater involvement of chambers of commerce and of local communities could help to generate projects that are target the needs and ambitions of the region's inhabitants and businesses in a more effective way.
- Insufficient technical support:
 - From the national level to the regional authorities: In the absence of such support and adequate own resources, regional authorities cannot play the development role they are

supposed to play. An interviewee points out that the Directorate of Development Planning of the Region, which should be in charge with the overall development planning, is understaffed. The Managing Authority is in multiple respects dependent on support from the Directorate to fulfil its missions.

- From the national and regional levels to local authorities: National sectoral ministries have not supported local authorities in the ITI planning and implementation to a significant extent. Technical competence in the islands is limited. Few engineers accept to relocate to the islands. The Management Organisation Unit of Development Programmes (MOU SA) attempted to organise a Technical Service to support the emergence of mature projects. However, the engineers of the Service are not eligible to sign technical studies necessary for project validation.
- Inadequate governance organisation, with insufficient involvement of Local Authorities in the programme. According to interviewees, more than 70% of Monitoring Committee members are civil servants representing central authorities or the region; the local level is therefore poorly represented.
- Low local ownership of the ITI. The beneficiaries in the small islands are generally described as very weak. In many cases the only person involved in planning and implementation is the Mayor, sometimes supported by 1-2 persons. No ROP implementation mechanisms are in place. This contributes to the low participation of local authorities in calls published by the MA. During the course of the programme, deadlines of all calls had to be extended several times due to low participation.
- Excessive red tape in connection to authorisations needed to implement ITI-related investments and measures (i.e. not necessarily in the ITI as such). This for example concerns authorisations in the field of waste management infrastructure.

Overall, it appears that the effort and time needed to set up well-functioning ITI governance arrangements targeting multiple small island communities have been underestimated. Experience from Italy (see text box below) illustrate the complexity of this endeavour. National authorities have elaborated extensive guidelines on how strategies should be elaborated and on their content. Mechanisms for cooperation and mutual commitments between administrative levels, from the local to the national, were also specified. The underlying rationale is that ITIs should function as an add on to national policies for e.g. transport infrastructure and service provision. Therefore, the ITI is associated to multi-annual framework contract, in which responsible sectoral authorities commit to make certain investments, and local actors commit to implement accompanying measures that will help ensure that these investments deliver foreseen social, economic and ecological benefits.

Text Box 8 ITI implementation in remote rural areas in Italy

The Italian National Strategy for Inner Areas (NSIA) has been designed to make remote areas more resilient and to improve the better quality of life of their inhabitants. It has been running since 2012 and has focused on 72 areas. Most of these are not insular. However, lessons learnt from this ambitious strategy may be relevant for a strategy to support small islands in the North Aegean Region.

The Strategy builds on an elaborate multilevel governance system. At the National level, a Technical Committee coordinates all activities, and ensures that sectoral ministries are actively involved whenever needed. At the regional level, it is compulsory for managing authorities to integrate the strategy in ROPs. Regional authorities also establish a multi-sectoral “support team” for inner areas. This support team help local actors synthesise ideas and elaborate a coherent strategy. They also provide assistance when it comes to identifying sources of funding, carrying out feasibility assessments and implementing projects. This assistance enables associations of municipalities to play the most important role in the elaboration of each NSIA strategy. Only associations of municipalities may apply, not individual municipalities.

Once the strategies have been elaborated, cooperation between levels is formalised in a multiannual framework contract. Each contract coordinates funding from local and regional sources, EU Cohesion Policy and national ministries. It also sets up a territorial governance model for the integrated implementation of the strategy. The centrepiece of this governance model is the establishment of a so-called “unique office”, which

implements actions on behalf of all participating public authorities. This helps to ensure that the responsibility for implementation is clearly assigned, and that the strategy is effectively implemented.

Many of these inner area strategies have been implemented by setting up Integrated Territorial Investments. There are examples of unique ITIs for multiple inner areas strategies. In the Basilicata Region, this unique ITI focused on agriculture and rural landscapes. It was implemented in conjunction with rural CLLD initiatives (LEADER). Other regions preferred to set up distinct ITIs for each strategy. In the Molise Region, these ITIs focused on improving basic service provision (healthcare, schools, roads and internet).

As noted above, the ITI process in the North Aegean Region was characterised by a weakly developed collaborative strategy development and local ownership of the strategy and its measures. Good practices can in this respect for example be found in Castilla La Mancha in Spain (see Text Box 9 below). Strong local participation in the strategy elaboration process was complemented with the possibility to submit project ideas in open so called “expressions of interest”.

Text Box 9 Success factors for the ITI in Castilla La Mancha, Spain

The Castilla La Mancha region in Spain has set up a unique ITI for five remote rural areas. In a recent independent assessment of the Spanish ITIs, this ITI was identified as an example of good practice because of its place-based, integrated and bottom-up approach. In addition, its proponents organised a comprehensive and inclusive participatory process involving the local level. The ITI benefited from a high level of political commitment. The governance system proved particularly effective. ITI design and implementation was supported by a technical assistance team, which also helped improve local capacities to implement and absorb public funding.

To facilitate the funding of measures addressing local needs, implementing bodies of the Castilla la Mancha ERDF programme had recourse to calls for expression of interest. This mechanism encouraged local entities to present projects that can be co-financed. The idea behind these calls was that additional incentives were needed to encourage sub-regional (local or provincial) level public bodies (town councils, provincial councils, or other government bodies) to submit project ideas. Once submitted, these project ideas are assessed and processed in the specific governance framework of the ITI. This makes it possible to get more participation from remote areas in the implementation of the ERDF programme.

The ITI strategy includes 9 strategic axes, 34 operational goals and 114 concrete actions. The strategy design was based on experience from previous programming periods, a thorough identification of local challenges and the analysis of a variety of socio-economic and territorial indicators. Potentials for economic development were identified in the fields of agri-food production, tourism, social services and the green economy. To unlock these potentials, the ITI seeks to foster an entrepreneurial culture in the business fabric and among local producers. The strategy builds on three pillars: digital infrastructure and digital service innovation, new employment opportunities and the sustainable use of natural and cultural resources.

The design and implementation of ITIs is foreseen to be organised differently in Greece in the 2021-2027 programming period. An interviewee indicated that the governance structure will be designed and set at national level, and then adjusted to the regional / local needs (17). In short, a Unit of Spatial Development will be established within the new Special Service for the Coordination of the Regional Programmes of the National Coordination Authority (NCA) for ESIF. This Unit will coordinate all territorial instruments, including ITIs, SUD and CLLD strategies. More specifically:

- Each regional programme will define a **Regional Committee**, in charge of the specification of the ITI policy in the region. Members of the Committee will be the Managing Authority of the relevant OP, the respective Region, Local Development Agencies and external experts. The Committee will provide recommendations for the preparation of the specific strategies, incorporating the provisions of the Partnership Agreement and the specific guidance to be delivered by the Unit of Spatial Development. The National Coordination Authority is going to provide the MAs with specific guidance on the establishment of the new Committees. Furthermore, the Committees at regional level could be involved in the monitoring of the strategy implementation, providing recommendations towards improving the effectiveness of the strategy.
- The submission of each strategy will be accompanied with the identification of the Committee in charge of the Monitoring and Evaluation of the strategy, led by an officer of the authority, which will implement the strategy (Region, Urban Authority or Development Agency). The establishment of those Committees is mandatory for all strategies.

- The **National Network for the Integrated Spatial Development**, established in the previous programming period will be enlarged. In the network representatives of all Funds are going to participate (including the CAP Strategic Plan and the Maritime, Fisheries and Aquaculture programme), as well as external experts. It is expected that this enlargement could convert the network into a think tank to operate during the whole 2021-2027 period.
- In addition, each region would have the possibility to establish a **local network** regarding the implementation of an ITI. The problem of the very restrictive capacity of the small islands remains and the question is who could participate in such a network from the small islands like Psara, or Fourni, or Agios Efstratios.

5.4 Conclusion: need to establish basic preconditions for ITI design and implementation

It therefore appears that more robust frameworks for the elaboration of ITI strategies, for ITI governance and for expert support to local and regional stakeholders in their implementation are in the pipeline. However, it is not necessarily clear how this will be adapted to the specific challenges and opportunities of small island communities. We have noted some key obstacles:

- The fact that each island has its own opportunities, challenges and ambitions, and the difficulty of integrating this diversity of situations in a unique strategy;
- The limited institutional resources on each island. The mayor is in many cases the only person acting as interface with regional and national authorities;
- Weakly developed civil society structures. Stakeholders do not make reference to NGO, interest groups, collectives, associations, business organisations, cooperatives or other structures with whose leaders or representatives one could engage a strategic dialogue with.
- The lack of technical expertise on the different islands and the difficulty of obtaining external support.

The challenge to be overcome in the 2021-2027 programming period for the North Aegean small islands is therefore to establish the basic preconditions for an effectively integrated, strategic, bottom-up approach to integrated territorial investments. Insularity plays a role in the reasons for which these preconditions are not currently in place, e.g. with respect to the relative isolation of the targeted communities and their disconnection from each other. Similarly, factoring in insularity in the design of the process of establishing these preconditions will help to make it more effective and cost-efficient. This will be the focus of recommendations in the next chapter.

6 Concluding reflections

The North Aegean region has attempted to address the challenges of double insularity and development in small islands using the ITI territorial tool. This attempt did not produce foreseen results, for a series of reasons. One may first note that such an ITI targets a territory that is not a functional area. The different islands are remote from each other and relate to three different “main islands”. This implies that the ITI would build on 7 distinct territorial strategies. These strategies may have similarities, e.g. with respect to challenges to be overcome in terms of transport connectivity and provision of services of general interest. However, they relate to territories with different development assets, challenges and objectives.

The study suggests that a more precise identification of vectors of change on each of these islands is possible. The design of pathways of transformation for regional and local economies would provide a robust strategic framework for individual measures.

The initial working hypothesis of the study was that a small islands ITI could help promote a more innovative and knowledge-intensive economy and address challenges and opportunities in three key sectors (agri-food, tourism and energy). The analysis confirms that this is a valid long-term objective. However, some obstacles first need to be overcome:

- In the agri-food sector, no initiatives that could benefit for an ITI framework could be identified on the small islands. Sectoral actors on the larger islands also did not express a wish to integrate smaller island producers in their activities. More in-depth enquiries on each of the smaller islands would therefore be needed, e.g., on possible connections between the development of sustainable tourism and food production activities.
- Sustainable tourism development strategies for the larger islands remain to be elaborated and adopted. An ITI could then meaningfully help smaller islands position themselves in relation to such strategies. Considering the small size and limited resources of the small islands, it is difficult to envisage an autonomous strategy development without strategies at the level of larger islands and the region as a whole to relate to.
- Energy provision of the North Aegean Region will undergo a major transformation in the years to come, with the interconnection of the electricity networks of the four largest islands to the mainland and a potentially massive development of electricity production from renewable sources. No regional strategy to capitalise on this new situation or to mitigate potential negative externalities (see Text Box 2 p. 17) could be identified. It is therefore difficult for smaller islands to position themselves in relation to these future developments. Some islands (e.g., Agios Efstratios) focus on becoming autonomous with respect to energy provision.

Based on these observations, concrete proposals on how the three identified “key sectors” could be addressed in integrated territorial development strategies are difficult to formulate at this stage. As an alternative, observations suggest that the Regional Operational Programme may focus on establishing basic precondition for an integrated strategy elaboration and implementation:

- Community-building initiatives, strengthening the habit and capacity of actors to work together. This would help to strengthen civil society structures. A broader range of civil society representatives one could engage a strategic dialogue with may emerge.
- Technical and practical support for local authorities on smaller islands, to increase their capacity to engage in strategic action. A regional pool of experts could be established, e.g., drawing on experience from the implementation of the Inner Areas strategy in Italy.
- Permanent monitoring of smaller islands, making it possible to access frequently updated information on demographic change, labour market situations, economic activities and provision of services of general interest. Considering the small size of these islands, a collection of data independently of national statistical authorities may be envisaged.

The ways in which these preconditions may be established are further described in section 6.1 below. This is followed by proposals on how territorial tools such as ITIs may be mobilised in the specific context of the North Aegean Islands in Section 6.2.

6.1 Establishing preconditions for more participative approaches to small island development

Making it possible to develop and implement evidence-informed strategies. There is currently little available evidence on the specificities of the different islands. There are no updated statistical data, as results from the 2021 census are not yet available. No studies of social and economic development patterns and trends on the different islands have been produced. It is therefore not possible to formulate evidence informed strategic options as a starting point for public debates and a participative strategy elaboration process.

More than other territories, island communities are dependent on own resources. It is therefore particularly important to dispose of regularly updated information on e.g. demographic trends, labour market mismatches, economic development patterns, tourism trends. The synthesis of available data showed that a limited range of data is available at the level of individual small islands. Considering their size, one could consider establishing a small island observatory that could monitor based on autonomously compiled data. This would be important as a basis for strategy elaboration and for the monitoring of ITI implementation.

A community building strategy. There is currently limited information available on how the different small island communities are organised, e.g. with respects to local political and economic elites, formal and informal groupings of stakeholders, individuals or associations that could be mobilised to drive change, conflicts of interest between groups, cultures of dialogue and consensus. Interviews suggest that civil society is weakly organised, and that there is not an established tradition of collective action. This would need to be confirmed by more in-depth enquiries on the different islands.

As noted in section 2.2, island communities may be mobilised around a collective project more easily than other territories, as there is often may be a stronger sense of belonging to a group with shared interests and objectives. Proactive measures may be implemented to develop the sense of community, trust, mutual awareness of skills and assets in individual islands. This can be done through micro-projects in which stakeholders develop the habit of addressing challenges together. Such projects could for example fund support groups for small scale entrepreneurship, initiatives to promote recycling and reuse, collective solutions for childcare and elderly care.

Community building helps to generate structures that can be involved in future participative strategy elaboration and implementation. Groups of inhabitants cooperating on different topics may designate representatives for strategy dialogues. They can also be mobilised for the implementation measures.

Community building requires sustained efforts over a longer period. The designation of community building facilitators for each island may be envisaged. This could be persons with an intimate knowledge of the island. To acquire the necessary knowledge of community building strategies, methods and techniques, these community builders would need to be supported by external experts.

6.2 Mobilising Cohesion Policy Territorial Tools

Combining CLLD and ITI approaches. Cohesion Policy regulations make it possible to combine CLLDs with ITIs. This could be purposeful also in the case of the North Aegean region, considering the limited resources of individual islands. Local Action Groups could help bring together public and private actors in individual islands and mobilise all relevant actors around a local development plan. These local development plans then feed into to ITI strategy. This would also encourage individual small islands to collectively formulate a vision for their development, i.e. a representation of how their inhabitants imagine their living environment, economy and environment in 15-20 years. In this process, insularity can be an advantage as it is associated with a strong territorial identity and as each local community is of a limited size.

Becoming visionary and strategic. Visions are a powerful tool to develop desirable futures that are shared among stakeholders who have a common interest in a territory. Given the specificities and differences of each island, a vision for each island would be an option. Setting the long-term goals and objectives of the island, thinking 'how does the island sees itself in the long-term future' is the first step towards a more collective and strategic approach to territorial development. However, the elaboration of such visions presupposes that preconditions for more participative approaches have been established (see section 6.1).

A vision without a strategy (i.e., concrete actions leading to its achievement) is unlikely to lead to concrete changes. The region of North Aegean would benefit from becoming more strategic at different levels, i.e., with coordinated sets of actions that can generate desired changes at regional level and within individual

islands. As mentioned above, clear visions and intervention logics for the three key sectors (agri-food, tourism and energy) at the level of the entire region would provide a useful basis for vision and strategy elaboration processes in individual islands. Each smaller islands constructs its development objectives and strategy in relation to its “mainland”, i.e., one or more of the larger islands.

Approaching the ITI as a collective process. A successful strategy elaboration is a process, taking the island community from one state to another state. The planning and facilitation of such processes requires precise competences. They are based on a stakeholder mapping exercise, identifying which organisations and individuals should be involved, who may gain from the transition to a small island community proactively pursuing the transition to a more sustainable and resilient development model, who may lose, and how each individual may be motivated to get involved. A facilitator makes sure that all participants feel acknowledged and heard when organising exchanges of ideas on island possibilities and challenges, threats and objectives. It plans the process in a logical sequence of steps, each of which sets the basis for the next one. A key question to be addressed in the case of the North Aegean is how to provide high quality process facilitation to each island. Process facilitation can be directly based on the community building efforts described in the previous section.

Vectors of change – identifying and reflecting on available resources. Human resources are the key resource in island communities. A starting point when trying to identify potentials for innovation and sustainable development may be to ask which resources are currently underexploited. The data compilation and interviews provide some hints, e.g. significantly higher unemployment rates among women, but few cohesion policy projects specifically targeting female entrepreneurship among women. The North Aegean has been characterised by outmigration of young people for decades, one may reflect on factors that could trigger return migration within this group. The COVID crisis has also changed working culture, making remote working more widely accepted. How could North Aegean islands capitalise on these changes, attracting and mobilising human resources that could make a difference? This requires wide reflections on key bottlenecks to be overcome to unlock these potentials.

Building on capacity. Insufficient capacities are a type of development bottlenecks that can often be addressed with “soft” measures requiring limited funds in comparison with e.g. infrastructure investments. Different capacities may be considered: financial capacities, collaboration capacities, adaptation capacities and leadership capacities (European Committee of the Regions, 2022). The financial capacity relates to the ability of mobilising adequate financial resources, be that from own funding or from other resources, e.g. EU funding and financial instruments (European Committee of the Regions, 2022).

Collaboration capacities refer to the ability to mobilise local players, like citizens, enterprises, administration, research and others and engage more with them in the development of a rather hands on support for their strategic development (European Committee of the Regions, 2022). They also refer to the capacity of collaborating with other places, which in the case of North Aegean would be with the other islands of the region or beyond.

Leadership and adaptation capacities refer to the capacity to mobilise local and regional actors, to identify and take advantage of opportunities. Models for agile local governments that are flexible to adjust and engage in different transition processes may be drawn upon (European Committee of the Regions, 2022). In individual North Aegean small islands, one may also focus on providing favourable framework conditions for entrepreneurial and skilled individuals with a community perspective. The European Commission Social Economy Action Plan²⁰, which is a follow-up of the previous Social Business Initiative provides inspiration on how private entrepreneurship can be mobilised in the pursuit of social and ecological policy agendas²¹.

Approaching small island development for a multi level territorial governance perspective. Individual small islands will not dispose all of the technical expertise needed for their development, e.g. when confronted to climate change related challenges, the transition to a low carbon economy, the use of new technologies for the provision of services of general interest. It is therefore essential to devise methods to

²⁰ <https://ec.europa.eu/social/main.jsp?catId=1537&langId=en>

²¹ See <https://op.europa.eu/en/publication-detail/-/publication/8731e1ac-6697-11eb-aeb5-01aa75ed71a1/language-en>

make such expertise available to small island communities when this is needed in their strategy elaboration or implementation process. This could be done with pools of experts at the regional and national levels, as is for example the case in the Italian inner areas strategy (see Text Box 8 p. 57).

More generally, observations from the 2014-2020 programming period suggests that stronger multi-level guidance may be called for to preserve the principles and objectives of the ITI approach. This involves more hands-on guidance from the national and regional levels on how an ITI should be designed and implemented to effectively enable territories to reach their development objectives. As has been noted in section 5.3, concrete improvements of national frameworks and support mechanisms for ITI, CLLD and SUD design are foreseen in Greece. However, it is not clear how the specific challenges, opportunities and objectives of North Aegean small island may be reflected in the Regional Committee to be set up, as long as their institutional capacity remains so limited. The collaborative elaboration of strategies for each of the targeted islands appears as a necessary preliminary step. This presupposes that preconditions for participative approaches to small island development are established.

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