

RIS3 Regional Assessment: North Aegean

A report to the European Commission, Directorate General for Regional Policy, Unit I3 - Greece & Cyprus

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1. Executive summary: Overall conclusions and recommendations

Smart specialisation priorities and the innovation system

The overall weak innovation performance of the North Aegean region can be understood when considering the current composition of the regional innovation system. The regional economic structure is dominated by the service sector (notably tourism) and the agro-food sector, which is traditionally a sector in which internal R&D expenditure is low. At the same time, the business sector is faced by the challenges posed by insularity and small and fragmented scale of sectors. Whilst the higher education research sector has developed over the last decade through the consolidation of the activities of the University of Aegean, the interactions with local business remain limited, even if certain departments such as environmental sciences have been involved in past initiatives.

The very low levels of business R&D in official statistics does not mean that there is no innovation occurring, rather, innovation in such sectors is often incremental, based on application of technologies or of a non-technological (marketing, design, etc.) nature. The focus of 'bottom-up' efforts over the last decade within the islands has been to try and leverage the rich, but increasingly threatened, biodiversity of the island in the form of products or services based on the natural environment. However, such efforts to support regional enterprises to innovate within a 'green growth agenda' have been at the margin rather than the core of Structural Fund interventions. Similarly, despite the relevance of ICT as an enabling technology and as a mean of reducing the isolation of regional enterprises from national and global markets, there has been no significant effort to improve ICT uptake in the business sector.

The North Aegean region has limited business and scientific capacity but is characterised at the same time by a rich and diverse cultural and environmental diversity. While the islands' economy is heavily dependent on public sector funds, stakeholders underlined the positive entrepreneurial culture of different islands.

- There is a clear logic in building on and extending past efforts to 'brand' the islands as 'sustainable' and to implement innovative solutions to tackle insularity and protect biodiversity while exploiting the potential for new higher value added products and (tourism) services based on the natural environment.
- The region, like a majority of other Greek regions, has a potential comparative advantage in focusing future research and innovation actions co-financed by the ERDF on maximising the potential of the 'bio-economy'.

Governance and stakeholder involvement

Regional development and innovation planning in North Aegean for the 2014-2020 period foresees participation and coordination of multiple actors, including the Inter-ministry Committee for Policy Design at Ministry of Development and Competitiveness, regional stakeholders that define R&I and ICT priorities and objectives, the regional programming team at IMA, and final decisions from the elected Regional Council. We recommend that the planning process and schedule should be as transparent as possible via the adoption of a new governance structure engaging bottom-up participation, working groups, regional stakeholders forming the Regional Innovation Council, and the elected Regional Council. A planning roadmap indicating time schedule, roles and contributions of stakeholders, and coordination with national authorities, should guide the regional innovation planning process and elaboration of the Smart Specialisation Strategy.

Innovation policy

The review indicates that in the ongoing North Aegean Operational Programme, R&I actions are marginal and other thematic priorities prevail. The policy documents recognise the potential role of the University of North Aegean as an agent of change and innovation in the local economy, but this statement is not translated into effective policy or concrete action to sustain this role. National/GSRT priorities for 2014-2020

seem incompatible to the needs and capabilities of the North Aegean innovation and productive system.

- We recommend a shift towards systemic innovation policies – in line with the smart specialisation focus selected – involving three types of institutions: (1) the university, (2) business associations/chambers, and (3) development agencies and the public sector. These institutions should organise the RIS3 implementation as a set of open platforms that will enable SMEs, micro companies and individuals to develop/perform their innovations projects targeting emerging niche markets.
- A main focus of innovation support in the next period should be on upgrading the human and technical capacities of regional firms to undertake innovation. There is a need for a pro-active coaching and mentoring process for firms, support for the placement of (returning) graduate and/or experience innovation managers into firms, and actions to link innovation with raising ambition and export capacities.

Clusters policy

Our recommendations for the RIS3 setting are: (1) use recent cluster mapping data and techniques to identify regional competences and assets; (2) support and consult existing clusters to meet the objectives of smart specialisation; (3) replicate an effective industrial cluster development approach to facilitate the rapid spread of good practice and ideas; (4) seek and provide advice on what methodology to use to develop clusters, and consider the creation of a cluster secretariat; (5) strengthen the cooperation of existing clusters to make connections to local, national and global value chains; (6) facilitate cross-clustering and the identification of innovation opportunities at the interface between different clusters; (7) create specialised one-stop-shops for the regional specialisations and competences, preferably within existing structures to support mainly SMEs; (8) develop further, incubators and accelerators that provide wide range of services including training, business angel networks, etc, (9) ensure a qualitative upgrade of the tourism sector to develop the alternative types of tourism (eco-tourism). Specific funding measures and support should be developed aimed at tourism innovation and inter-linkages with other productive sectors (bio-agro-food, ICT, etc.); (10) seek to enhance the competitiveness of SMEs in the agricultural and fisheries sectors where aquaculture could be a key objective of the rural development policy; (11) deploy incentives for the fishing sector to restructure fishing organisations, producers' organisations and other stakeholders; (12) ensure that support in rural areas is directed to young people through support for business start-ups in the agro-food/forestry sector.

ICT policy, broadband & e-services

The Region should mainly strengthen support on ICT for the most crucial sectors of the regional economy i.e. tourism & culture, primary sector, transportation, energy & environment, food & beverages, and education. The region should investigate viable policy tools to provide incentives for new IT-enhanced products and services from local SMEs, and also award funds for the fast transformation of traditional businesses using ICT tools.

Broadband expansion, gradually aiming at FttH, is a strategic step for improving the competitiveness of the whole economy and improving the quality of life. Education should be supported to both improve the average digital skills of the workforce and also direct the local research community towards innovative products and services. ICT services can help transform North Aegean into a business-friendly region, capable of attracting significant value-added investments. An emphasis should be given to the conditions for a substantial role for the private sector in sharing the risk of the planned ICT initiatives.

2. Regional Innovation Performance and potential

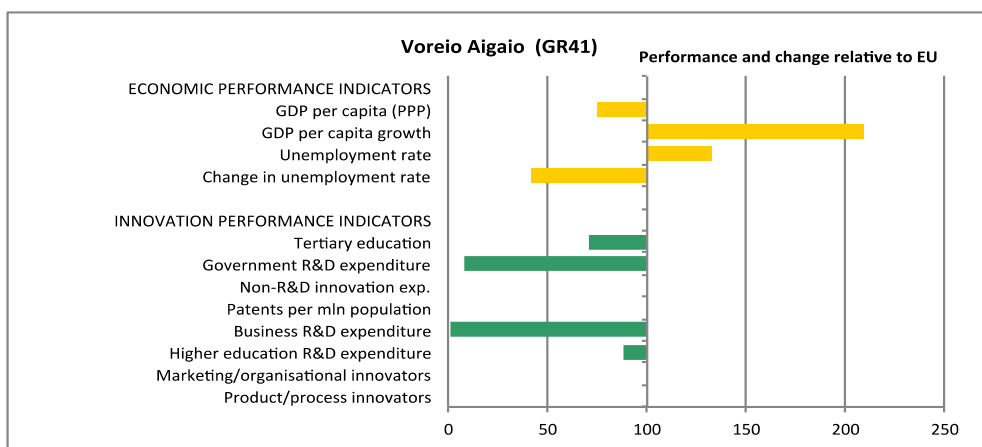
2.1 Regional profile and specialisation

The North Aegean (Voreio Aigaio) region is composed of nine islands gathering 200,000 inhabitants (1.8% of Greek population in 2011)¹ situated north-east of mainland Greece. Three key factors combine to pose a ‘green growth’ challenge for the island. First of all, whilst Figure 1 would suggest that the economy of the islands has been growing during the decade (up to the 2008 crisis in any event) this has been at lower rate than the national or European average so there has been no convergence (and the GDP of the region is still only 76% of the EU27 average, i.e. 1.4% of the national GDP in 2009). The active population share is much lower and less educated compared to the national average, underling the effects of emigration. Traditional services (retail trade, public administration, transport and tourism etc) along with agro-food are the major income sources. The services sector accounted for 83.5% of the regional added value in 2009 while the contribution of the sector of industry and construction was of 12.4% and that of the agricultural sector of 4.1%, declining over the past decade, but with a slight increase between 2008 and 2009 (see detailed table in Appendix E).

Secondly, the region has a particularly rich natural environment with very important ecosystems and a considerable area is integrated in the NATURA 2000 network. However, ADE (2011) noted that due to their the small size, the islands tend to have precious few -if any- land resources for extensive agriculture, whilst they also regularly lack key natural resources, including adequate water supplies, fossil fuels but also non-fuel minerals. In cases where raw materials may have been available in the past, these have now often been exhausted. The environmental balance is seriously endangered and this trait, in turn, makes environmental management a necessity.

Thirdly, the region has a weak innovation performance, compared to the EU and, even, national, average, as can be seen from Figure 1. The causes of this weak regional innovation performance are to be found in the insular nature of the region, the small scale of firms in all sectors and the limited higher education and public research infrastructure.

Figure 1 Summary benchmark of regional innovation performance



Source: Regional Innovation Monitor, data used is 2011 or latest available year. Trend data is over latest three year period for which data is available.

During 2000 -2008, the region accounted, on average, for just 1.1% of the national gross expenditure on R&D (GERD). At regional level, GERD accounted for 0.5% of the regional GDP in 2005, a share below the national and EU27 averages (0.6% and 1.8%

¹ All data is sourced from Eurostat unless stated differently.

respectively). However, with an annual growth of 8.2% in R&D expenditures, which was higher than the national average of -0.5%, the region is improving its relative position. However, this is largely due to the RTDI activities of the University of the Aegean². Indeed, the only sector where the R&D expenditure as a share of GDP is above the national average is that of the higher education (0.46% in 2005). In contrast, business expenditure on R&D (BERD) is practically non-existent (0.03% of GDP, 0.6% of GERD in 2008), even compared to the low national average, and is unlikely to have increased during the economic crisis.

In terms of human potential, only 1.3% of Greek human resources for science and technology (HRST) are located in the region, or 12.2% of the regions workforce, a share under the EU27 average (14.6%). The region has only 1.4% of total Greek researchers and 0.08% of private sector researchers.

In terms of scientific output, the University of the Aegean (covering both the South Aegean and the North Aegean regions through its multiple campuses) ranks 9th out of the 21 Greek universities with 959 publications over the period 2006-2010 (201 in 2010), representing 2.5% of the output of Greek universities (Thomson Reuters data from 2010³). Out of these publications, 40% involved an international collaboration and 40% a national collaboration. With a total of 2,340 citations over the same period, the University had a citation impact⁴ of 0.71 (14th rank). The University of the Aegean is particularly active in natural sciences (736 publications, 1,955 citations, citation impact of 0.74), engineering and technology (229 publications, 494 citations, citation impact of 0.61), and social sciences (148 publications, 203 citations, citation impact of 0.6).

This scientific specialisation does not match the industrial specialisation, which mainly focuses on services. According to an analysis from the European Cluster Observatory of the relative regional industrial specialisation compared to other regions within Europe⁵ (see detailed table in Appendix G) the region is relatively specialised in bars; sea and coastal water transport; manufacture of builders' carpentry and joinery; and in the provision of services to the community as a whole.

In terms of the information society, according to the survey of the "Observatory for Digital Greece"⁶ on "Internet Users in Greece" (March 2010), the North Aegean region is ranked fifth for the PC usage (41.7%), and fourth for the use of the Internet (41.9%). However, it is encouraging that the use of the Internet over the period 2005-8 has more than doubled. At the household level, the percentage of home Internet connections in the region is 38.9% (3rd place).

Figure 2 : SWOT of regional innovation potential and specialisation

Strengths	Weaknesses
<ul style="list-style-type: none"> • Rich and relatively unspoilt biodiversity • Entrepreneurial culture (notably on Chios) • Natural advantages for tourism • Quality food and drink products with designated origin protection • University as both a means of attracting skilled students and graduates and of developing and dif-fusing technologies into regional firms • Regional government agencies (RF, IMA, planning) 	<ul style="list-style-type: none"> • Insularity leads to higher relative costs for busi-nesses operating from the islands • Fragmented business structures with small size of firms and lack of a critical mass • Lack of quality business support services • Ageing population and continuing external migra-tion and difficulty to retain graduates on islands • University remains largely disconnected from regional enterprises, even if there are ad hoc cases of co-operation.

² <http://www.aegean.gr>

³ <http://metrics.ekt.gr/en/reporto2/index>

⁴ The relative number of citations to publications of a university compared to the world average

⁵ The minimum degree of specialisation is 1.5 (meaning that the region has 50% more employment in the industry than the size of the region), and the industry must have at least 500 employees in the region (in order to eliminate high specialisations in very narrow industries).

⁶ <http://www.observatory.gr>

Strengths	Weaknesses
<p>department have establish good co-operation)</p>	
Opportunities	Threats
<ul style="list-style-type: none"> • Under-exploited tourism potential notably from Turkey and other nearby non-EU countries • Under-utilised potential of clustering of regional firms (Mastic producers model has not been replicated by other sectors) • Rich potential for new products and services based on specific characteristics and culture of each of the islands • Relatively good level of digital network connection and improving usage of Internet potential. 	<ul style="list-style-type: none"> • External migration leading to a brain drain; • Potential conflict between further development of tourism and island biodiversity • Regional development planning may continue to fail to take account of business needs and focus on infrastructure • Lack of experience in designing and implementing innovation type measures • Risk of continued lack of ‘joined-up’ regional development policy (across programmes and funds) and of mainstreaming of successful actions

Needless to say the insular and rural character of the region heavily influences the specialisation profile of the North Aegean. According to the Regional Innovation Monitor, the most dynamic manufacturing sectors are food and beverages, manufacture of fabricated metal products, manufacture of furniture and manufacture of wood and of products of wood. Their share in regional value added has increased over the last decade, partly as a result of regional policies to diversify the regional economy away from an over dependence on tourism and agriculture. The academic research potential on the islands is partly aligned with the economic reality, notably with a relatively strong environmental science potential (see below).

At the same time, the rural and insular nature of the region may provide specific opportunities for what is termed in the smart specialisation jargon as an entrepreneurial discovery process. The rich biodiversity and high quality environment of the islands is one factor that has been used in past ‘innovative actions’ and which is a recurring theme in regional strategies. The mastic producers of Chios are probably the best known example in the islands, and indeed in Greece, of a group of entrepreneurs acting to add value to a traditional product and boost exports largely through marketing and design innovation, as well as through finding new applications and derivative products for mastic.

Box 1 Identification of Technology Based Opportunities in North Aegean, MET3 project

MET3 aims to develop a network for integrated trans-regional cooperation between knowledge & technology providers, innovation intermediaries and users and thus facilitate industrial and commercial exploitation of research results by taking into account technology and other “soft” aspects in the process. Project partners jointly developed exploitation plans for selected technologies with market potential and proactively sought to promote them to private and public sector. This effort was complemented by a series of experience exchange and capacity building events to enhance peer learning and development of common strategies. Project partners have assessed R&D results identified at the RTO providers of their regions and selected the ones that present promising business opportunities. For the region of North Aegean the following Technology Based Opportunities, i.e. ideas for commercialisation of “research based” products & services have been identified and analysed:

- *Agrofood*: The Melissotheque of the Aegean (museum reference collection of wild bees & other pollinating insects from the Aegean area); Marine Reserves
- *ICT*: PrivaSIP: Identity Privacy in Session Initiation Protocol; MarineTraffic: Marine Vessel Traffic Management Information System
- *Environment*: Autonomous floating ecological and efficient desalination

Our **recommendations** are:

- The North Aegean region has limited business and scientific capacity but is characterised at the same time by a rich and diverse cultural and environmental diversity. While the islands’ economy is heavily dependent on public sector funds,

stakeholders underlined the positive entrepreneurial culture of different islands. There is a clear logic in building on and extending past efforts to ‘brand’ the islands as ‘sustainable’ and to implement innovative solutions to tackle insularity and protect the biodiversity while exploiting the potential for new higher value added products and (tourism) services. The region, like a majority of other Greek regions, has a potential comparative advantage in focusing future research and innovation actions co-financed by the ERDF on maximising the potential of the ‘bio-economy’⁷, in line with the 2012 Commission strategy⁸.

2.2 The strengths and weaknesses of the regional innovation system

The overall weak innovation performance of the region can be understood when considering the current composition of the regional innovation system. The regional economic structure is dominated by the agro-food sector, which is traditionally a sector in which internal R&D expenditure is low. This does not mean that there is no innovation occurring, however, innovation is often incremental, based on application of technologies or non-technological (marketing, design, etc.). During the stakeholder meeting on 6th September, it was noted that existing unions or associations of businesses were often not effective. One example is the olive oil industry, where the members of the Union of Agricultural Co-operatives (on Lesbos), which has governance problems, tend to focus on bulk and cheaper oils and are struggling financially, whilst around 15 smaller producers which have shifted to organic or speciality oils are able to command higher prices and are prospering.

In terms of academic research potential, the University of the Aegean has been developed, since 1984, as a ‘networked university’ with teaching and research activities dispersed over five Aegean islands and two regions (north and south Aegean). The principle scientific research areas in which the University of the Aegean is engaged are: environmental sciences and technologies, social sciences, finances and business administration, information and communications technologies, mathematics and actuarial science, humanities and sciences of education. Given the islands location and multiple sites, the University has been one of the first in Greece to optimise the use of ICT, according to its website. However, it appears that, unlike similar universities (e.g. the University of the Highlands and Islands in Scotland), the use of video-conferencing to deliver courses is not yet widespread. This may be a future opportunity to develop further education services at lower cost (reducing need to travel between islands, etc.) or to a wider number of students.

As concerns business support services, the regional chambers have business innovation centres, which have been supported in the past by ERDF funds (including through Regional Innovative Actions Programmes (RIAPs), see below). Moreover, the Regional Fund has participated in a number of Interreg type projects seeking to develop or transfer methods for business support to the islands, including a project on one-stop shops⁹ and, according to the RG representative, is currently trying to develop an online ‘business Facebook’ for regional firms. However, the participants at the stakeholder meeting underlined that the only time an in-depth analysis of business needs and subsequent project development had occurred was during the RIAPs. There was a general view that regional firms were not being provided with adequate support to enable

⁷ The bioeconomy encompasses the production of renewable biological resources and their conversion into food, feed, bio-based products¹ and bioenergy. It includes agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries. Its sectors have a strong innovation potential due to their use of a wide range of sciences (life sciences, agronomy, ecology, food science and social sciences), enabling and industrial technologies (biotechnology, nanotechnology, information and communication technologies (ICT), and engineering), and local and tacit knowledge.

⁸ http://ec.europa.eu/research/bioeconomy/press/press_packages/index_en.htm

⁹ ICHNOS PLUS - “Innovation and Change: Network of One-Stop Shops” (Programme: Interreg IVC, Duration: July 2008 - June 2010, Subject: Transfer and deployment of the Regional Competence Centre (RCC) model and its mainstreaming into the regional policies through the ERDF Operational Programmes. The RCC model has been conceived as a structure to co-ordinate “One Stop Shops” acting as single contact points for enterprises.

them to exploit the potential opportunities and overcome the specific development obstacles due to insularity.

We **recommend** a shift towards systemic innovation policies – in line with the smart specialisation focus selected – involving three types of institution: (1) the university, (2) business associations/chambers, and (3) development agencies and the public sector. These institutions should organise the RIS3 implementation as a set of open platforms that will enable SMEs, micro companies and individuals to develop/perform their innovations projects targeting emerging niche markets.

3. Stakeholder involvement and governance of research and innovation policies

3.1. Stakeholder involvement in strategy design and implementation

In the previous (2000-6) and current (2007-13) period, the regional development planning process was top-down and involved organisations predominantly from the public domain. Indeed, research, innovation and digital agenda policies were amongst the most centralised as they were designed and implemented at national level. In many cases, the regional authorities were not informed about R&I actions funded by resources from the ROP but implemented through national calls.

Only a few research and innovation actions have been designed and implemented by in a bottom up way by the regional partners, such as the two Regional Innovative Actions Programmes, NAIAS and Biobus, co-financed by the ERD during 2000-06. In addition, the Regional Fund¹⁰ has participated to a number of Interreg, FP and CIP projects¹¹. A central theme of these projects has been sustainable development, both in terms of maximising the potential of and protecting the islands' biodiversity.

Box 2: lessons from regional programmes of innovative actions in the North Aegean

Two RIAPs were implemented in the North Aegean region. These programmes were bottom up initiatives driven in both cases by a public private partnership formed by the three regional chambers of commerce, the University, the regional authorities (Regional Fund), and the Co-operative Bank of Lesbos.

The first programme NAIAS involved six major actions: the development of an e-commerce portal for regional products, the trialling of an innovative olive oil waste water treatment system, support for regional enterprise to develop new products using traditional local resources, the expansion of services in the business innovation centres of the chambers and, perhaps most innovatively, the creation of a local corporate-responsibility label. A final evaluation judged the programme to have been at least partly successful although there was concern that the BICs were not particularly effective.

The second BIOBUS (Biodiversity Resources for Innovative Business Development, 2006-7), building on NAIAS, focused on innovation and biodiversity through actions including: establishing three regional business and biodiversity resource centres (RBBCs) advising enterprises on biodiversity and business; identifying biodiversity and business growth opportunities; developing corporate biodiversity action plans for regional enterprises; investing in biodiversity businesses and products of selected enterprises.

An evaluation of BIOBUS concluded that the main results were the RBBCs, a database on biodiversity and business and the re-focusing of the regional eco-label. However, the evaluation also noted that "as the region is not highly industrialised and the economy is very dependent on local environmental resources...it is paramount for the development of the regional economy, that the knowledge of the university is diffused into regional enterprises. BIOBUS was a step in this direction, but it is not clear, whether this happened on a

¹⁰ The Regional Development Fund is the paying authority for the most of public works of the ROP. It also acts as a partner in various inter-regional programmes and acts as a form of development agency.

¹¹ EU projects in which the North Aegean Regional Fund has participated include: OCR INCENDI Pilot actions for preventing the danger of forest fires in the Mediterranean region. (Interreg IIIC, 2005-8); CORI Coastal Risk (Programme: Interreg IIIB, 2006-7); EX-INT From external to internal: managing the transformation of borders and preparing for the new neighbourhood (INTERACT, 2005 -7); MEDRISK Protecting the Environment, Prevention and Risk Management (Interreg IIIB, 2006-7); MOONRISES Integrated Monitoring System for Calculating Desertification Danger (Interreg IIIB, 2006-7); PACINTERREG (INTERACT, 2004-6); WETMUST integrated multilevel system on monitoring wetlands by the use of modern technologies (Interreg IIIB, 2006-7,); ORPHEAS Local strategy for employment promotion within the framework of sustainable development (ESF, 2002-5); DIAS-NET e-Learning platform for information society development in European islands & remote areas (FP4, 2002-4)

larger scale than the 12 enterprises which received funding.”

The evaluation also noted that there was no planned follow-on funding for the database and that the biodiversity theme for the RBCC was not a concept seen as important by the host chambers beyond securing on-going funding for the BICs which tended provide a ‘very standard service’.

Source: Technopolis Group, Impact Assessment of the Regional Innovative Actions Programme, Study for DG REGIO, 2011.

However, during the meeting on 6 September, regional officials and stakeholders commented that despite a broadly positive experience with the RIAPs, the projects and initiatives supported had not been the result of a significant mainstreaming during the 2007-13 period. Similarly, it was underlined that the results of other EU funded inter-regional type projects were generally not followed up due to lack of funding.

Such lessons are important, since the development model where ROP priorities are centrally designed and regional stakeholders have limited influence is no longer functional. Under the Kallikratis reform, the Greek regions are now responsible for designing their operational programmes based on their new responsibilities for economic planning and development, natural resources, energy, industry, jobs, trade, tourism, transport and communications, agriculture, livestock, fisheries, health, education, culture, sports, public works, planning and environment. Regional councils have to endorse regional development plans and R&I actions linked to economic development, industry, energy, and other sectors.

Moreover, the Commission has proposed that the presentation of a smart specialisation strategy will be an ‘ex-ante conditionality’ for ERDF funding for 2014-20. This conditionality applies specifically for two of the 11 thematic objectives of the ERDF: (1) strengthening research, technological development and innovation (R&I target), and (2) enhancing access to and use of quality of ICT (ICT target).

Thus 2014-2020 regional development planning in North Aegean implies participation and coordination among the following actors:

- The Inter-ministry Committee for Policy Design, Ministry of Development and Competitiveness, is setting the overall planning framework, time schedule, and planning milestones.
- Regional stakeholders define R&I and ICT priorities and objectives with the widest participation of organisations, not only from the so-called Triple Helix (industry, research, government), but from innovation users and consumers representing the demand-side and user-driven perspectives (RIS3)
- Regional programming teams and IMA teams supported by external experts draft the OP and submit to the regional council for approval.
- The Regional Council endorses RIS3 and the policy mix of research and innovation of the respective O.P.
- Follow-up of the OP proposal from the Secretariat of Technical Coordination (ΕΥΣΣΑΑΠ).

In the North Aegean, the new planning process has just started and foresees (1) the formation and activation of development planning teams, (2) the organisation of consultation at regional and sectoral levels and preparing proposals, (3) the formulation and submission of the first summary planning directions by the end of September, and (4) preparing for active participation in the first national development conference, in November 2012.

The meeting of the RIS3 Expert Team with the IMA and regional stakeholders from academia and businesses, held in Mytilene on 6 September 2012, was the first presentation of RIS3 concepts and methodology. The discussion was informational on (1) the concept of smart specialisation, RIS3, and differences from previous innovation planning initiatives; (2) the leading role of Regional Government and the need for bottom-up participation; (3) the role of the DG REGIO expert group, (4) the time schedule and procedures of stakeholders participation. The specialisation of the region was also discussed to clarify the concept of smart specialisation, weaknesses of the primary

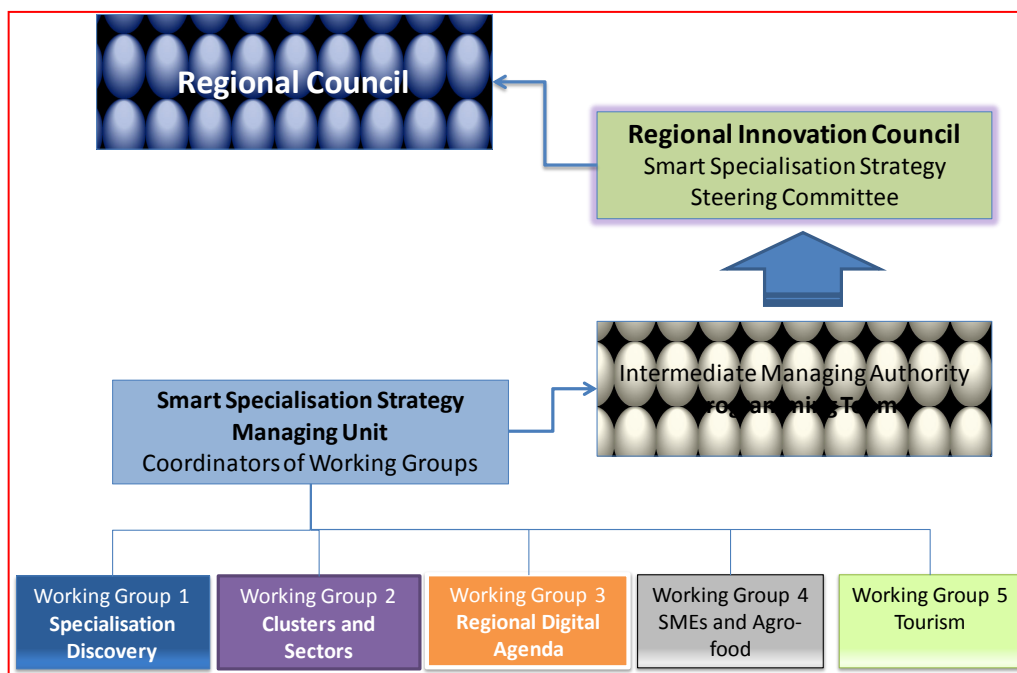
sector, small manufacturing capacity, and tourism characterised by small units with minimal economies of scale, no identity and brand name.

Stakeholders expressed their interest to participation in the development of a RIS3 for North Aegean. Focus working groups were proposed as a means to gather proposals and discuss scenarios and priorities. The IMA indicated that leading businesses from the private sector will be invited notably of entrepreneurs of successful business and local producers of virgin olive oil, beverages, dairy products, wine, and fisheries.

Our **recommendations** are:

- The Regional Authority and the IMA of North Aegean needs to make clear and reinforce a framework for effective bottom-up strategic planning with the direct involvement of regional stakeholders. If the expertise is not available in house, then remaining technical assistance budgets should be used to mobilise experts that would support specific working groups of stakeholders. The diagram below proposes a potential management structure.
- A roadmap (including a time schedule, roles and contributions of stakeholders,) covering all stages of developing a RIS3 and aligning the future ROP around the priorities emerging should be drafted and widely communicated to guide the regional planning process.

Figure 3: Possible governance structure for RIS



3.2 Multi-level governance and synergies between policies and funding sources

The governance of development in North Aegean does not adequately adopt principles of systemic innovation. Regional innovation funding is minimal, both private and public; there is limited tradition on innovation actors cooperation; and regional policy is not focused on creating synergies, networks, clusters and linkages both internal to the region and external.

As noted above, the use of project based funding from EU inter-regional, research framework programmes, etc. in the past has not been mainstreamed in a coherent way via the regional operational programmes. Moreover, past evaluations, e.g. of the RI-APS, have pointed to the lack of synergies or risk of overlap between initiatives funded by the ERDF and other funds such as the ESF or LEADER+ programmes.

Moreover, in terms of synergies between different funding sources, Spilianis et al noted that actions in the region in 2000-2006 were financed by a ROP per region (in which ERDF, ESF and EAGGF actions were included), by national sectoral OP and by the Cohesion Fund. However, during the 2007-13 period, two major differences in management were introduced. First, three regions (and not one) are included in a common ROP. Second, the ROP only covers ERDF interventions for Voreio Aigaio, along with the Cohesion Fund and national OP, while SME support is handled by banks that cover a part of the co-financing with loans to enterprises (the so-called “JEREMIE” approach).

Finally, ADE (2011) note that the Cohesion Funds actions in the region “*only concern environmental infrastructures that have nothing special to do with insularity; actions supporting the amelioration of transport services in order to decrease isolation (construction of ships, application of territorial continuity principle) would help more the cohesion objective*”.

Our **recommendations** are:

- Due consideration of how support from the ERDF can be combined with funding for training and employment under the ESF and for innovative rural actions under the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund is required given the importance of upgrading skills in the core agro-food sector and the need to foster biodiversity while maximising the development of new products and services linked to the natural environment.
- The future RIS3 should include a chapter on external linkages both within Greece and to neighbouring regions (Turkey, etc.) to identify opportunities for pooling of RTDI resources (equipment and staff), networking (e.g. environmental monitoring networks, linking thematic tourism routes, etc.), etc. It should also propose a strategic monitoring and networking of regional partners involved in other EU funded programmes (Horizon 2020, etc.) in order to ensure that, wherever relevant, the results of such projects are mainstreamed or used to develop a project pipeline for ERDF funding for innovation.

3.3 Vision for the Region

The overall development objective for the North Aegean, as defined in the ROP for 2006-13 programming period, is to reduce the geographical isolation, reverse declining population trends and economic backwardness that derives from the insular nature of the region. The vision seeks to strengthen the regional economy by reorganising its productive base through three strategic objectives:

- Reversal of population decline and marginalisation of island economy by the utilisation of (information) technology and based on local advantages.
- Ensuring equal access to upgraded health and welfare services, educational and culture – recreation facilities.
- Diversification of the insular economy away from a dependence on tourism.

However, ADE (2011) are highly critical of the ‘discrepancy’ between the regional SWOT analysis and the external environment, the national and regional priorities for investment into the productive sector (diversification of tourism products and innovation) and the actual focus of funding. While the vision focuses on reducing insularity, “*the OP priorities address specific geographical features in only one action related to the insularity effect on the competitiveness of the local companies (the small local market effect) financed with only with €4m, 1% of the budget*”!

Similarly, no real attention is paid to the specific characteristics and opportunities of each island. Rather there is an explicit decision for the territorial distribution of funds between the areas based on population criteria rather than adapting actions to geographical specificities (e.g. mountainous nature of Samos). ADE (2011) conclude that the “*most important lesson from the analysis of the region is that for an archipelago such as the Voreio Aigaio a planning and a monitoring system at the island level is*

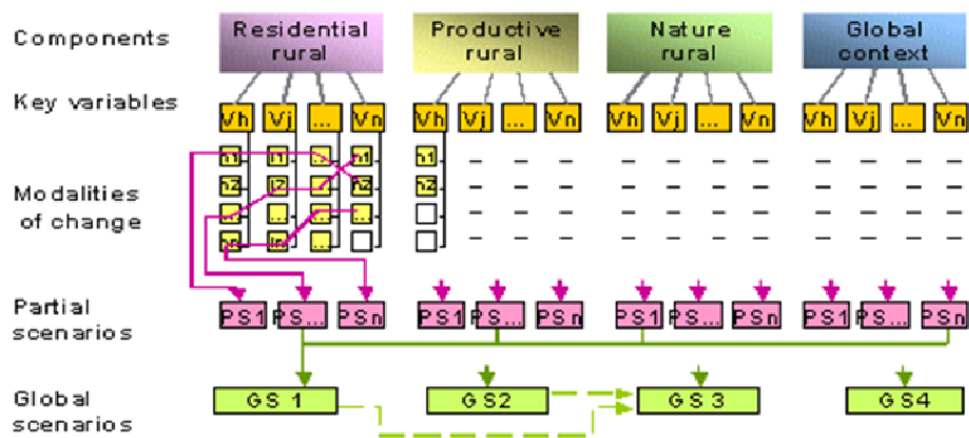
necessary, as intra-regional disparities can be enormous and actions implemented on one island have low or frequently no impact to adjacent island”.

For the 2014-2020 period, all Greek regions are expected to design their development programme taking into account the strategic visions and goals of "Europe 2020", the National Reform Programme, and Memoranda of Economic Policy (Mnimonia). Regions are invited to promote the knowledge society and upgrading their education system, improve their competitiveness by accelerating the integration the global economic environment, strengthen research, technological development and innovation, improve access and use of information and communication technologies, halt and then reverse the indicators of unemployment, develop the productive sectors, endogenous capacities for investment financing and attraction of foreign direct investment.

To date the development vision and strategic objectives for the North Aegean Region for 2014-2020 have not been set. According to the stakeholders interviewed, initial ideas focus on continuing efforts to overcoming insularity and to opening the local economy to neighbouring markets in Turkey and the Middle East.

We **recommend** that the IMA should pilot a **regional forum and open dialogue** with stakeholders and the population, and discuss ideas and orientations of future development in North Aegean. The aim should be to elaborate a number of scenarios for the future and state the different conditions/policies for their realisation. Scenario writing starts with the definition of main components, key variables per component, and modalities of change of key variables. A partial scenario (e.g. for specific islands or themes) based on each component should be integrated into a number of global scenarios for the entire region (see Figure 4 for an example).

Figure 4: possible scenario planning approach



4.1 Current research and innovation policy

During the current period, the Structural Fund support specifically targeted at the region is provided through the Operational Programme ‘Crete and the Aegean Islands’. Within the OP, Priority 5: digital convergence and entrepreneurship in the North Aegean region, which was allocated approximately 2.6% of total funding, can be considered the most relevant in terms of the smart specialisation agenda. This priority aimed to broaden and modernise the productive base of the local economy.

An evaluation of mountainous and island regions for DG REGIO (ADE, 2011) sheds more light on the pattern of investments supported by the Structural Funds in the North Aegean since 2000. According to the case study of the North Aegean region, the largest part of the budget (85 to 90%) was spent for basic infrastructures and only a small part to assist the productive sector. For example, in 2000-2006, the overall level of EU funding invested in Lesbos was €237 million (including ESF and locally planned EAGGF), of which the majority was allocated to ‘hard’ infrastructure projects, including 30.6% for transport and 22.1% for environmental projects. Furthermore RTDI actions that were already marginal in the 2000-6 programme are non-existent in the

current period; a conclusion that was corroborated by the participants to the 6th September meeting with the expert team.

Figure 5: current and future main regional priorities

Policy document	Identified priorities	Objectives, targets and goals identified
Operational Programme ‘Crete and the Aegean Islands’	<ul style="list-style-type: none"> • Priority 2: accessible infrastructures and services in the North Aegean (11.8% of OP funds) • Priority 5: digital convergence and entrepreneurship in the North Aegean (2.6%) • Priority 8: sustainable development and quality of life in the North Aegean (20.3%) 	<ul style="list-style-type: none"> • aims to improve interconnections between the islands of the region and island connections with the mainland. • to broaden and modernise the productive base of the local economy. • to protect the natural environment (one of the main assets for tourism) and improve education, health and social infrastructures

This apparent lack of RTDI funding via the ROP may be counter-balanced by the delivery of support via national programmes. It is difficult to obtain a precise estimate of the importance of support from the Structural Funds for RTDI per region in the absence of specific regional allocations. However, data from DG REGIO on expenditure during the 2000-2006 period and allocations for 2007-2013 provides an estimate of regionalised RTDI budgets. As can be seen from Appendix D, during 2000-2006 the North Aegean region is estimated to have received the highest per capita allocations of all Greek regions. This probably reflects investments in the development of the University of the Aegean, as the research infrastructure category is particularly important. On the other hand, the regionalised expenditure for innovation and technology transfer appears to have been lower than other Greek regions despite the needs identified for supporting technology adoption and product development and exporting of the regional firms.

During the 2007-13 period, the planned allocations in regionalised per capita terms, place North Aegean in 7th position out of 13 regions. Research infrastructure investment is comparatively less important than in the previous period, with the largest share being allocated to human potential for research. Currently the overall OP for Crete and the Aegean Islands has achieved a slightly above average level of ERDF expenditure, 43% compared to 40% nationally¹². According to data received from the GSRT (see Appendix E), regional enterprises and the University have been awarded funding from the national OP for Competitiveness of € 2,238,786 (or 0.9% of the national total). Overall, the current situation can be considered highly unsatisfactory from a number of perspectives:

- The current ROP does not have a sufficient focus on innovation and knowledge-based development priorities and only marginal levels of funding are allocated directly to digital convergence and entrepreneurship. Insufficient attention is paid to supporting entrepreneurship and the innovation capabilities of SMEs.
- The strategy is only outward looking in the sense of trying to reduce insularity by improving communications between the islands and with mainland Greece. The full potential of digital solutions and of opening the region to other external sources of knowledge has not been pursued
- Given the economic structure of the region, the chances that regional firms are able to compete for R&D and innovation funding managed nationally are limited. Hence, there is a need reflect on the appropriate methods to stimulate private R&D and innovation investments. Past pilot efforts, e.g. via the RIAPs, to assess business needs and support product innovation and quality, corporate responsibility and sustainable business development could be built upon.

¹² Data provided by DG REGIO, as of 15 September 2012

- To date, there is no reflection on the improvement of demand-side conditions such as the use of public procurement as a driver for innovation.

We **recommend** that innovation support should focus on upgrading the human and technical capacities of regional firms to undertake innovation. In line with the experience of other peripheral and islands regions (e.g., Highlands and Islands Enterprise in Scotland), there is a need for a pro-active coaching and mentoring process for firms, support for the placement of graduate and/or experience innovation managers into firms, and actions to link innovation with raising ambition and capacities to export.

4.2 Cluster policies

As noted above, North Aegean is an insular archipelagic area; insularity is not compatible with the dominant development model, which is characterised by mass production of standardised goods in or near urban centres, near main transport axes.

Activities on the North Aegean cannot: a) enjoy the privilege of economies of scale as islands are characterised by small size, that results in a limited internal market and constrained local demand for commodities and services, as well as limited workforce, limited variety and quantity of resources; b) have good accessibility, low installation, operating and transport costs, as islands are isolated and remote areas; c) profit from agglomeration externalities as islands have limited markets and activities.

Consequentially, businesses on islands are hardly competitive. This affects even more job and career opportunities and attractiveness for population. On smaller islands insularity entails even lower attractiveness. Nevertheless, these same characteristics entail a quality of their natural and cultural assets, and, combined with the fact that islands have low nature fragmentation by artificial surfaces, a particular quality of life. These assets were partially used for an alternative development model based on “quality” product and services.

Box 3: Cluster – Size, Specialisation and Focus in North Aegean

Size¹³, Specialisation¹⁴ and Focus¹⁵ in North Aegean is mainly around *Farming and Animal Husbandry* with 2 stars in the Cluster Observatory start system. *Agricultural Products, Construction, Maritime, Processed food, Tourism and Hospitality, and Transportation and Logistics* are also sectors with significant activity and 1 star in the Cluster Observatory start system.

The strong insular character of the North Aegean Region is reinforced by the special identity of each island and reflecting local resources, which creates a potential for high quality agricultural and farming products. The region hosts a number of products of Protected Designation of Origin (PDO)/Protected Geographical Indication (PGI): mastic of Chios (a unique product), olive oil of Mytilene, wines from Lemnos and Samos, varieties of cheese (“kalathaki” cheese of Lemnos, “graviera” and “ladotyri” of

¹³ The 'size' measure shows whether a cluster is in the top 10% of all clusters in Europe within the same cluster category in terms of the number of employees. If employment reaches a sufficient share of total European employment, it is more likely that meaningful economic effects of clusters will be present. Those in the top 10% receive one star.

¹⁴ The 'specialisation' measure compares the proportion of employment in a cluster category in a region over the total employment in the same region, to the proportion of total European employment in that cluster category over total European employment. If a region is more specialised in a specific cluster category than the overall economy across all regions, this is likely to be an indication that the economic effects of the regional cluster have been strong enough to attract related economic activity from other regions to this location, and that spill-overs and linkages will be stronger. If a cluster category in a region has a specialisation quotient of 2 or more it receives a star. If a cluster category in a region has a specialisation quotient of 2 or more it receives a star.

¹⁵ The 'focus' measure shows the extent to which the regional economy is focused upon the industries comprising the cluster category. This measure relates employment in the cluster to total employment in the region. If a cluster accounts for a larger share of a region's overall employment, it is more likely that spill-over effects and linkages will actually occur instead of being drowned in the economic interaction of other parts of the regional economy. The top 10% of clusters which account for the largest proportion of their region's total employment receive a star.

Mytilene), ouzo (Plomari, Mytilene), as well as thermal waters in Mytilene and religious, outdoor and other forms of alternative tourism.

In North Aegean, most of the aforementioned sectors are not connected to the regional innovation system and with the exception of a few cases there are no collaboration schemes or facilitators or associations active. Overall, **sector-specific support services/schemes** have been only partially deployed and tested in the North Aegean. Policies and support for the formation of agglomerations, sectoral associations, etc, have not being implemented whatsoever in any sector including traditional.

Entrepreneurial and Innovation Support Services and Transfer of knowledge (kind of **one-stop-shops**) have been underpinned in North Aegean by a number of institutions, associations, unions or projects: Lesvos Chamber of Commerce, Chios Chamber of Commerce, Samos Chamber of Commerce, Hoteliers Union of Samos, Lesvos Hoteliers Association, Chios' Hotel Owners Association, Epikentro Entrepreneurship Centre, Centre for Entrepreneurial and Technological Support, ICHNOS plus and ERMIS projects, etc. Despite the efforts of intermediaries the collaboration between innovation actors is limited.

Only one **incubator** has been established in the North Aegean (Aegean Technopolis) with the main premises located on the island of Chios. Policies for this development has being designed and funding has being funnelled centrally and not by the regional authorities. The incubator has not achieved its goal. Furthermore, no Industrial Zones are established in North Aegean.

No **clusters** have being formed in the North Aegean. Cluster policies have not being designed at regional level and those designed centrally have not found any application in the region.

As might be expected, there are no regional venture capital funds, nor even business angel networks in the North Aegean. The commercial banks are limited to providing standard business traditional loans but access for these are now scarce due to the financial crisis. However, a regional co-operative bank¹⁶ existed until recently. The Co-operative Bank of Lesvos–Lemnos was a 'mutual community' bank serving the islands of Lesvos, Lemnos and Agios Efstratios. It offered a full range of products and services for both personal and business financial needs on the islands. The bank was one of the partners in the ERDF co-financed Regional Innovative Actions Programmes during the 2000-2006 period and led a project to develop an online e-commerce portal (<http://www.e-lesvos.net/>). However, in March 2012, the Bank of Greece revoked the licence of the bank along with those of two other small cooperative banks in Greece after efforts to restructure the banks to guarantee their solvability failed (the banks had total deposits of 300 million euro and loans of 250 million). Although commercial banks are reported to be interested in taking over the deposits, they are unlikely to act in the same way as a local development bank.

At the meeting organised on 6 September 2012, the Intermediate Managing Authority of North Aegean indicated they were willing to implement cluster policies and programmes for the sectors where a competitive advantage exists, but that this would require further study.

Our **recommendations** for the RIS3 setting are: (1) use recent cluster mapping data and techniques to identify regional competences and assets; (2) support and consult existing clusters to meet the objectives of smart specialisation; (3) replicate an effective industrial cluster development approach to facilitate the rapid spread of good practice and ideas; (4) seek and provide advice on what methodology to use to develop clusters, and consider the creation of a cluster secretariat; (5) strengthen the cooperation of existing clusters to make connections to local, national and global value chains; (6) facilitate cross-clustering and the identification of innovation opportunities at the interface between different clusters; (7) create specialised one-stop-shops for the regional specialisations and competences, preferably within existing structures to sup-

¹⁶ Co-operative banks operate within a specific region and only give loans to shareholders.

port mainly SMEs; (8) develop further, incubators and accelerators that provide wide range of services including training, business angel networks, etc, (9) ensure a qualitative upgrade of the tourism sector to develop the alternative types of tourism (ecotourism). Specific funding measures and support should be developed aimed at tourism innovation and inter-linkages with other productive sectors (bio-agro-food, ICT, etc.); (10) seek to enhance the competitiveness of SMEs in the agricultural and fisheries sectors where aquaculture could be a key objective of the rural development policy; (11) deploy incentives for the fishing sector to restructure fishing organisations, producers' organisations and other stakeholders; (12) direct support to young people for business start-ups in the agro-food sector.

4.3 Digital economy and ICT policies

The North Aegean region hosts only a small number of ICT companies (despite reduced tax rates for VAT as well as the lower operational costs); however, the use of innovative ICT can be of benefit in almost all of the major business sectors. Tourism, agriculture, fishing, and construction can achieve significant competitive improvements, if they apply modern ICT tools in the production and marketing chains.

A detailed analysis of existing practices could serve to reveal significant opportunities for leveraging Structural Funds to stimulate growth and employment. For instance, an inventory of ICT infrastructure and services, at regional level, could be the subject of a horizontal action, for example, in the context of the OP 64 Invitation "Administrative Reform". The results of such an inventory would be extremely useful for the regional government, as it would contribute to three major objectives: (a) reducing operating expenses (b) improving the usage of latent and underutilised infrastructures and services, and (c) the expansion of useful and operational services on a broader scale.

The RNA has reasonable human resources to promote e-government initiatives and regional administrative reforms. The current regional priorities for ICT are: (1) Development of eGovernment via Digital Public Infrastructure, (2) Integration of ICT in Public Administration Reform, (3), Promotion of Broadband infrastructures, (4) Reduction of operating expenses of the Public Sector, (5) Enhancement of electronic transactions with citizens and businesses in the Public Sector, (6) Strengthening of new Entrepreneurship, (7) Strengthening the Competitiveness of Enterprises through ICT (8) Redesign and simplifying public administration procedures thus building a fast and easy to serve services to regional citizens.

ICT adoption can also enhance entrepreneurship and competitiveness, through the modernisation of the production capacity and the efficient utilisation of research and innovation. The region should stimulate an active involvement of the private sector in the delivery of ICT products & services through public-private partnerships (PPPs) and the use of innovation business models for the delivery of private services over public infrastructure.

Moreover, the private sector should be encouraged to play a leading role in promoting and adopting green ICT solutions to minimise energy and ICT waste management costs. Indeed, the next generation networks (NGN) should have a positive impact on green growth sectors (sectors contributing most to the production and emission of greenhouse gases), such as energy, transportation, buildings, etc. The aim is to support (a) large organisations/companies and public sector in the consolidation of their computing and storage needs through the creation of energy-efficient computing centres (Green Centres), (b) smaller businesses and citizens to "assign" their computing needs to the "cloud", (c) energy providers for the use of next generation networks to monitor, manage and control the distribution of energy, (d) new collaborative methods using next generation networks to reduce transport needs (tele-working, tele-medicine, remote assistance at home, etc.) (e) use of ICT for vehicle traffic and fleet management (f) the use of ICT for remote management of buildings and reduce energy consumption, and (g) the use of ICT for instant recognition and disaster response thereto.

4.3.1 Broadband infrastructure and NGA networks

The development and expansion of metropolitan fibre optic networks and the promotion of advanced broadband in rural areas is a national priority. Many North Aegean towns and villages are still unable to access fast Internet, reducing the potential to develop ICT projects. Hence, the region should pay a special attention to the development of broadband networks (fibre, wireless, etc. networks, etc.).

The calls for proposals 93, 195 and 145 of the OP "Information Society" have supported, already, the development of broadband infrastructure. Fibre-optic metropolitan access networks (MAN) have been created in three municipalities: Mytilene, Chios, and Samos. In addition, digital networks operate in the education sectors on the islands: firstly, the Greek School Network¹⁷ is the educational intranet of the Ministry of Education, Culture and Sport, which interconnects all schools and provides basic and advanced telematics services; secondly, the premises of the University of the Aegean are served by GRNET (the Greek Research and Technology network), providing advanced connectivity and computing services. There is a potential to extend the MAN capabilities to cover all the (elementary and secondary) schools in the municipalities.

In addition, a number of current national initiatives are of relevance to the region:

- To facilitate the utilisation of the MANs, an open tender to select a contractor for the project "Integrating Rings Metropolitan (MAN) with National Networks" (Invitation 33 of OP "Digital Convergence" budget €7 million) has been issued.
- Funding is available (Syzefxis¹⁸, school-net, etc) to the coverage of the MAN and wireless networks and their synergies with other infrastructures
- The promotion of the use of fibre optic and wireless networks to provide Internet access and coverage of remote and mountainous areas. Recently, Invitation 34 of OP "Digital Convergence" has been published, with a national budget of €201.5, entitled "Development of broadband infrastructure in rural white areas of the Greek Territory", which aims to cover the rural areas of the country, with high-speed Internet service.

4.3.2 E-services and e-government

During the next period the implementation of secure and reliable electronic services for citizens and businesses in RNA is of major importance since, due to the Kallikratis reform, many administrative centres have been reallocated between various island capitals thus forcing citizens to travel to neighbouring islands in order to be served. The application of E-services and e-government in the North Aegean is a solution to solve many problems and inconveniences that hinder the daily life of citizens.

A specific emphasis should be placed on improving the quantity and quality of e-services available to the citizens and the business community. These services should be developed using flexible models that ensure low-cost, transparency, and sustainability. Public-private partnerships should be utilised as a major tool in implementing viable e-services, tailored to the needs of the local business communities. Ideally, there should be a pre-identification of the particular services to be supported, as well as to the interoperability with other local or national e-services.

The RNA possesses some experience in the management of EU and other development projects, aiming to the design, implementation and promotion of eGovernment services. However, the regulatory framework that includes complex, ambiguous, inconsistent, and obsolete regulations is hampering the implementation of e-government, so there are significant delays in the implementation of projects and disbursement of funds.

¹⁷ <http://www.sch.gr>

¹⁸ "SYZEFXIS" (<http://www.syzefxis.gov.gr>) is a project of Ministry of Public Reform and eGovernment, which seeks to aggregate and improve telecom services of the entire public sector. SYZEFXIS II funds infrastructure under the OP of Digital Convergence and Administrative Reform.

Hence, the implementation of the Law 3979/2011 on eGovernment should be a major priority for the RNA, in order to achieve the following objectives:

- The simplification of operating procedures will result in a drastic reduction of the administrative burden for citizens and businesses in their relation with RWG.
- To reduce corruption cases, and establish relationships of trust between citizens, businesses and public sector bodies.
- To create equally accessible services for all citizens of RNA

A number of major horizontal projects aimed at monitoring the national budget, the electronic recording of public property (all the public properties), the electronic public procurement, digital forest maps, digital cadastre, archaeological cadastre, etc. already underway with financing from the OP Digital Convergence.

The North Aegean regional stakeholders needs to ensure that all the digital systems already established or planned are interoperable, in line with the Greek e-Governance Framework (Plaisio Ilektronikis Diakyvernisis, PID); and ensure that all projects developed comply with the obligation of interoperability¹⁹ in line with national and European guidelines²⁰ and standards²¹.

A priority should also be given to the adoption and use of open source platforms (software)²² in order to manage available resources in a fair, transparent and cost effective way. The use of open source software enables the further development of software and applications, thereby offering public organisations a set of economic, reusable tools and resources that can contribute to innovation and entrepreneurship²³.

According to the preliminary strategic directions of the Region²⁴, the following sectors are best suited to benefit from modern ICT tools and technologies:

Primary sector: it represents a significant portion of the regional economic activity, with remarkable growth potential if combined with modern ICT tools. Agriculture, fishing, and aquaculture enterprises are in urgent need to accommodate modern control, administration, monitoring, marketing, and logistics tools. Added value bio-agricultural and alternative agriculture producers can benefit from internet-based marketplace participation, to widen their distribution channels and optimise branding, procurement, packaging etc. Farmers could also be supported to optimise their production activity, by employing modern control and monitoring tools, especially in reducing the cost of energy by using alternative sources.

Transportation: the cost and the time consumed on transportation for citizens and enterprises of the RNA is enormous. Modern smart transportation approaches, based on ICT, should be deployed, to minimise the cost of travelling, reduce the consumption of fossil fuels, and improve the efficiency of businesses.

¹⁹ Interoperability includes: A predefined information format (information models and metadata); a default mode for the exchange of information (communication protocols); a default data access mode; a default mode for searching the data (metadata technologies, catalogues, etc.)

²⁰ PID is of the overall public IT architecture serving enterprises and citizens and the national version of the European Interoperability Framework. It is the cornerstone of the Greek Digital Agenda. Interoperability, based on the European Action Plan 2011-2015 (ICT for Government and Public Services - Action plan 2011-2015) is a necessary condition for the implementation of cross-border electronic services.

²¹ The main features allowing interfacing with other subsystems include (a) the provision of web services based on international standards (SOAP, UDDI, WSDL, etc.) (b) a workflow design based on international standards (XPDL, BPML, etc.). In addition, all projects should create appropriate metadata in line with the Greek Interoperability Framework (e-GIF) and the specifications of public administration portals.

²² The adoption of open source platforms is encouraged by both the European Commission (http://ec.europa.eu/dgs/informatics/oss_tech/index_en.htm) and national strategies (e.g. www.ellak.gr) for e-government, as well as through actions like Interreg IVC - "OSEPA" <http://osepa.eu/> etc.

²³ See <http://www.flossimpact.eu>

²⁴ "Σχέδιο Αναπτυξιακού Προγραμματισμού για την Περίοδο 2014-2020", Περιφέρεια Βορείου Αιγαίου, Οκτώβριος 2012.

Energy: the cost and the consequences of energy consumption represent serious challenges for the Region. ICT tools should be used in a systematic way to help reduce waste and improve efficiency, at both residential and business settings.

Tourism & culture: the Region hosts numerous archaeological and religious sites, capable of attracting large numbers of visitors. SMEs should be motivated to exploit modern technology and synergies to maximize the outreach of the Region, minimise management and advertising costs, and thus extend the tourist season and create more and better jobs.

Food & Beverages: SMEs in this critical sector can also improve their profit margins by better branding and advertising, using new-generation ERP and CRM tools, along with modern e-commerce and procurement platforms.

Education: the education system of the Region should be supported in a way to (a) improve the ICT skills level of the citizens and (b) enhance the ability of higher education institutions and research centres to carry out applied research for innovative products and services.

e-government and learning: the cost of dealing with the regional public services is significant for both citizens and regional and national government. Properly designed and interoperable e-government apps would be a major contribution towards efficiency and transparency. These services could be easily combined with proper initial training applications, to overcome the barriers for those with low IT skills.

Broadband Internet: the availability of affordable broadband connections for all the households is a major European target. The Region should complement all the related national- and EU-level actions, to further extend broadband in the Region, with emphasis on the smaller islands. More specifically, it should help making local Industrial Zones/Parks as “FttH-ready”, i.e. bringing fibre to each hosted enterprise. The same can be done for selected urban neighbourhoods, by connecting the respective households with a passive “open-access” FttH local network. It is also crucial to facilitate additional actions like setting-up of public free-access hot-spots in public places, in ports, schools, sports/recreation areas, churches, etc.

Furthermore, the Region should seek to encourage a substantial private sector involvement in the full project cycle and risk sharing. This can be best carried out by flexible PPPs, or by ICT vouchers for selected households or SMEs. Regarding other specific RIS3 Strategy ICT-related requirements:

- There is no master plan for e-government services since most (cadastre, e-prescription, e-invoicing, etc) are administered by national authorities. However, e-services like local taxation or regional permits may be administered regionally. All e-government services should adhere to well-defined interoperability standards, and be based on dependable cloud computing platforms²⁵.
- There is no reference to plans for the deployment of new and the extension of existing NGA networks.
- An operational inventory of ICT infrastructure should be created.
- Active involvement of the private sector in ICT activities has to be addressed by the Region, in a way to both leverage community funding and improve sustainability, especially for the delivery of products and services.

²⁵ http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf

5. Monitoring and evaluation

Monitoring refers to the need of verifying the state of implementation of activities. Evaluation refers to assessing whether and how strategic goals are met. In order to perform evaluation, it is essential that objectives are clearly defined in a RIS3 in measurable terms. A central task during the design phase of the RIS3 is to identify a parsimonious yet comprehensive set of output and results/outcome indicators and to establish target values for each of them.

As noted above, at the present time, there is apparently no specific institution or group of experts, etc. tasked with monitoring in more depth and analysing the innovation, cluster or ICT potential of the region. One option might be to fund doctoral and post-graduate research into innovation potential and activities. This would be a relatively low-cost way of developing know-how and creating a group of specialists better able to support policy making processes. This could be done eventually on an inter-regional basis for several Greek regions, pooling expertise and know-how.

Guidance on evaluation methodologies for innovation measures is already available for the 2014-20 period²⁶ and the IMA, regional authorities, etc. should make themselves aware of and use such materials to develop an evaluation plan. At a minimum, one official should be specifically tasked with setting up an evaluation and monitoring system for innovation measures in the IMA.

²⁶ See:

http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/eval2007/innovation_activities/ino_activities_guidance_en.pdf

Appendix A List of people interviewed

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Thrasivoulos Kalogridis (Chamber of Lesvos, President) thrassos@istoselides.gr

Appendix B List of key documents and reference materials

ADE S.A. (2011) Study on the relevance and the effectiveness of ERDF and Cohesion Fund support to Regions with Specific Geographical Features – Islands, Mountainous and Sparsely Populated areas. Study for DG REGIO, European Commission.

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Technopolis Group (2011) Policy lessons from experimentation with Regional Programmes for Innovative Actions (RPIA), study for DG REGIO, European Commission

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Appendix C Key Actors in of the regional innovation system

Leading and noteworthy businesses:

Companies with sizeable production capacity and exports: ΚΑΤΣΑΚΟΥΛΗΣ, ΑΙΟΛΙΚΗ ΓΗ, ΑΛΑΜΑΝΕΛΛΗΣ ΕΥΣΤΡΑΤΙΟΣ, ΑΝΔΡΙΩΤΕΛΛΗΣ ΕΜΜΑΝΟΥΗΛ, ΕΛΠΑ-ΕΛΑΙΟΥΡΓΙΑ ΠΑΠΑΡΙΣΒΑ, ΒΙΟΛΟΓΙΚΑ ΕΛΑΙΟΚΤΗΜΑΤΑ, ΡΑΦΤΕΛΗ-

ΠΡΩΤΟΥΛΗ, ANEMOS, ΕΝΩΣΗ ΜΑΣΤΙΧΟΠΑΡΑΓΩΓΩΝ ΧΙΟΥ ΣΥΝ.ΠΕ, MASTIC SPA ΣΟΔΗΣ, MEDITERRA, ΒΕΤΟ ΠΟΤΟΠΟΙΑ, ΒΙΚΤΩΡ, ΕΛΛΗΝΙΚΗ ΒΙΟΜΗΧΑΝΙΑ ΑΠΟΣΤΑΓΜΑΤΩΝ«ΕΒΑ», ΕΠΟΜ- GROUP PERNOD RICARD, ΠΟΤΟΠΟΙΪΑ ΒΑΡΒΑΓΙΑΝΝΗΣ, ΠΟΤΟΠΟΙΪΑ ΖΑΡΜΠΑΝΗ, ΠΟΤΟΠΟΙΪΑ ΠΛΩΜΑΡΙΟΥ ΙΣΙΔΩΡΟΣ ΑΡΒΑΝΙΤΗΣ, ΕΝΩΣΗ ΟΙΝΟΠΑΡΑΓΩΓΙΚΩΝ ΣΥΝΕΤΑΙΡΙΣΜΩΝ ΣΑΜΟΥ, ΑΙΓΑΙΑΣ, Α.Μ.Μ. ΧΡΥΣΑΦΗ, ΝΗΡΕΥΣ, ΤΑ ΜΥΛΕΛΙΑ, ΦΟΡΚΥΣ ΙΧΘΥΟΚΑΛΛΙΕΡΓΕΙΕΣ, ΓΙΑΝΝΗΣ ΨΑΡΡΑΣ, ΠΑΠΑΔΟΠΟΥΛΟΣ ΛΕΩΝΙΔΑΣ, and a noteworthy spin-off: MEDBIO.

Key Research Actors:

The research fabric is very thin and composed of the public University of the Aegean headquartered in Mytilene (Lesvos Island). Other units of the University are located on three islands in the North Aegean (Lesvos, Chios, Samos) and two in the South Aegean (Syros and Rhodes), thus making the University of the Aegean a challenging University-Network.

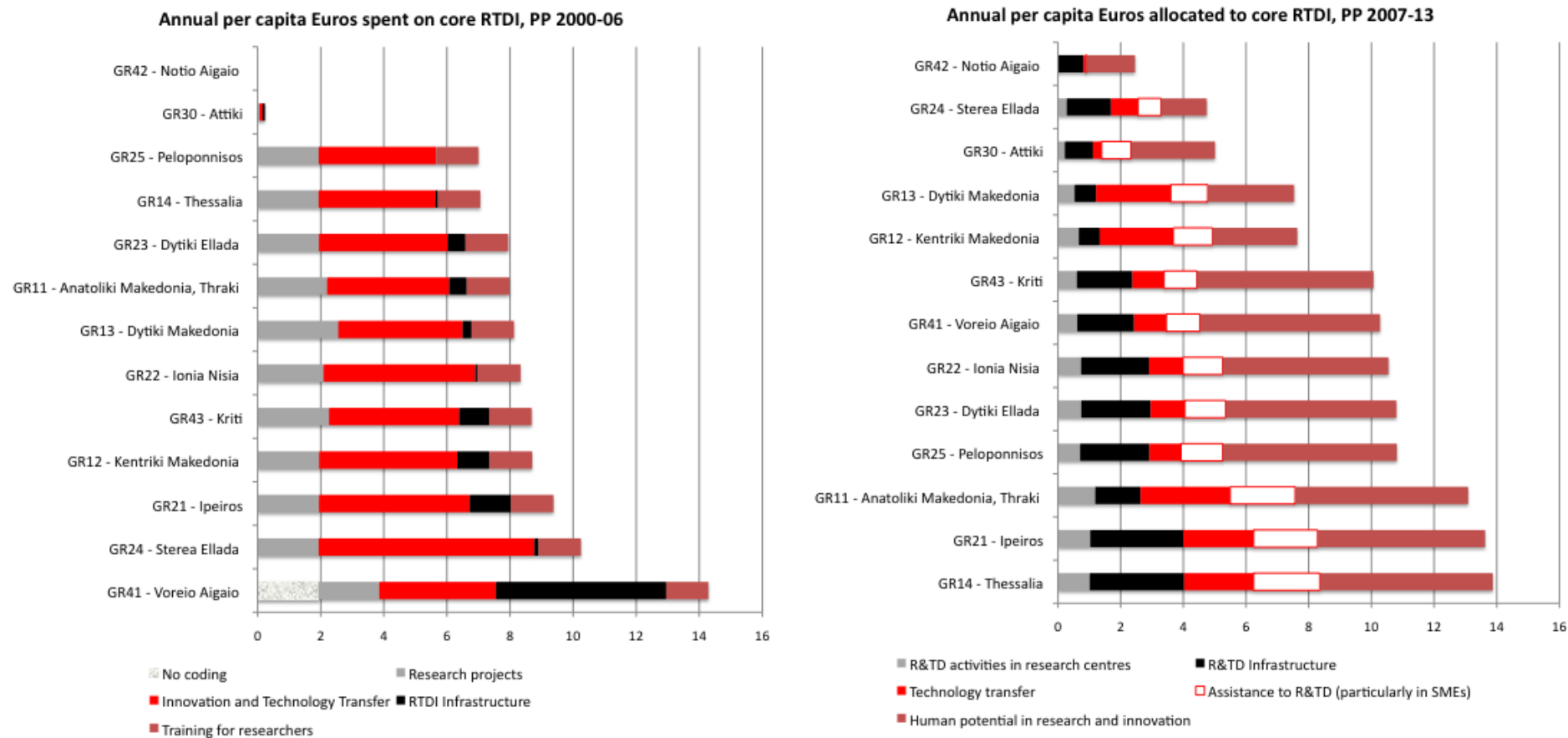
Local business angel, seed and venture capital providers:

None

Principal Intermediaries:

Lesvos Chamber of Commerce, Chios Chamber of Commerce, Samos Chamber of Commerce, Epikentro Entrepreneurship Centre, Hoteliers Union of Samos, Lesvos Hoteliers Association, Chios' Hotel Owners Association, etc.

Appendix D Estimated Structural Fund allocation for RTDI per Greek region



Source: Data DG REGIO. Calculations: Technopolis Group. The total for each region includes the amounts allocated via the Regional Operational Programmes plus the expenditures and allocations regionalised on a per capita basis in the case of the national, cross-border or transnational OPs. DG REGIO developed the regionalised data-sets.

Appendix E Regional RTDI funding under the OP Competitiveness and Innovation

Allocation by region of GSRT grants for RTDI projects (State Aid) under the OP Competitiveness and Innovation

Region	Enterprises	Research organisations	Other entities	Grand Total	% share
Attica	€ 78,383,203	€ 33,291,462	€ 480,411	€ 112,155,076	47.4%
Central Macedonia	€ 22,588,727	€ 13,566,039	€ 38,300	€ 36,193,066	15.2%
Western Greece	€ 22,841,816	€ 8,901,221	€ 7,000	€ 31,750,037	13.4%
Crete	€ 3,623,524	€ 13,728,214	€ -	€ 17,351,738	7.2%
Central Greece	€ 9,388,903	€ 1,397,119	€ -	€ 10,786,022	4.6%
East Macedonia & Thrace	€ 5,886,928	€ 1,864,884	€ 25,090	€ 7,776,902	3.3%
Thessaly	€ 4,648,471	€ 2,134,643	€ 253,000	€ 7,036,114	3.0%
Epirus	€ 2,403,100	€ 1,887,252	€ -	€ 4,290,352	1.8%
Peloponnese	€ 3,382,986	€ 545,200	€ -	€ 3,928,186	1.7%
North Aegean	€ 1,813,280	€ 425,506	€ -	€ 2,238,786	0.9%
West Macedonia	€ 1,355,665	€ 524,695	€ -	€ 1,880,360	0.8%
Ionian Islands	€ 388,000	€ 120,000	€ -	€ 508,000	0.2%
South Aegean	€ 476,000	€ -	€ 18,750	€ 494,750	0.2%
Grand Total	€ 157,180,603	€ 78,386,235	€ 822,551	€ 236,389,389	100%
	66.5%	33.2%	0.3%		

Source: data received from the GRST on 10 October 2012. Calculations authors.

Appendix F Total Gross value added at basic prices – North Aegean

% of Total Gross value added at basic prices	2005	2006	2007	2008	2009
A - Agriculture, forestry and fishing	6.27	6.33	4.28	3.77	4.11
B-E - Industry (except construction)	5.51	7.06	6.37	5.59	5.89
C - Manufacturing	3.43	4.49	3.97	3.16	3.31
F - Construction	9.09	9.43	8.02	6.91	6.52
G-I - Wholesale and retail trade, transport, accommodation and food service activities	32.22	31.12	34.71	36.35	31.84
J - Information and communication	2.40	2.42	2.34	1.96	2.13
K - Financial and insurance activities	3.33	3.18	2.82	2.45	2.87
L - Real estate activities	10.26	9.64	9.95	10.48	11.09
M_N - Professional, scientific and technical activities; administrative and support service activities	2.87	3.14	3.10	3.22	3.51
O-Q - Public administration, defence, education, human health and social work activities	25.42	24.76	25.47	26.58	28.96
R-U - Arts, entertainment and recreation; other service activities; activities of household & extra-territorial organisations and bodies	2.63	2.92	2.94	2.69	3.07
TOTAL - All NACE activities - in Millions of Euros	2,511.8	2,660.4	2,858.3	3,029.2	2,969.9

Source: Eurostat

Appendix G Relative industrial regional specialisation – North Aegean

	Industry	Rank in Europe	Specialisation	Employment
1	Bars	2	3.89	2 770
2	Sea and coastal water transport	2	17.80	1 304
3	Manufacture of builders' carpentry and joinery	3	5.55	1 268
4	Provision of services to the community as a whole	3	6.61	5 974
5	Fishing, fish farming and related service activities	4	23.28	1 327
6	Retail sale of food, beverages and tobacco in specialized stores	8	2.42	1 741
7	Growing of crops; market gardening; horticulture	13	8.04	8 983
8	Other retail sale of new goods in specialized stores	14	1.56	4 229
9	Manufacture of other food products	18	1.78	1 395
10	Hotels	23	2.14	1 602
11	Administration of the State and the economic and social policy of the community	27	1.81	4 624
12	Building completion	28	1.65	1 575
13	Adult and other education	28	1.81	873
14	Farming of animals	40	1.62	571
15	Primary education	70	1.65	2 370

Source: Smart specialisation in Europe: European specialisation data by region Centre for Strategy and Competitiveness, Stockholm School of Economics, April 2011