MONITORIS3
Interreg Europe

NORTE REGION SMART SPECIALISATION STRATEGY (NORTE RIS3)

A MONITORING SYSTEM METHODOLOGICAL APPROACH FOR MONITORIS3 PROJECT

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List of Acronyms

CCDR-N - Norte Regional Development and Coordination Commission

CCDR - Regional Development and Coordination Commissions

CENTRO 2020 - Centro Regional Operational Programme 2014-2020

CIS - Community Innovation Survey

COMPETE 2020 - Competitiveness and Internationalisation Operational Programme 2014-2020

EC - European Commission

EDP - Entrepreneurial Discovery Process

ENEI - Research and Innovation Strategy for Smart Specialisation of Portugal

EPO - European Patent Office

ERDF - European Regional Development Fund

ESF - European Social Fund

ESIF - European Structural and Investment Funds

EUIPO- European Union Intellectual Property Office

GAIN - Galician Innovation Agency

GDP - Gross Domestic Product

GERD - Gross Expenditure on Research and Development

HORIZON 2020 - Framework Programme for Research and Innovation

ICT - Information and Communication Technology

IP - Investment Priorities

ISCED - International Standard Classification of Education

MA - Managing Authorities

NACE - Statistical Classification of Economic Activities in the European Community

NORTE 2020 - Norte Regional Operational Programme 2014-2020

NORTE 2015 - Norte Region of Portugal Competitiveness Pact

NORTE RIS3 - Norte Region Smart Specialisation Strategy

NUTS - Nomenclature of Territorial Units for Statistics

OP - Operational Programmes

PORTUGAL 2020 - Partnership Agreement between Portuguese State and the European Commission

PhD - Doctor of Philosophy

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 3/63 -

R&D - Research and Development

R&I - Research and Innovation

R&D&I - Research and Development and Innovation

RIS3 - Research and Innovation Strategy for Smart Specialisation

RIS - Regional Innovation Scoreboard

S3 - Smart Specialisation Strategy

SME - Small and Medium-Sized Enterprises

TO - Thematic Objectives

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 4/63 -

Table of Contents

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 5/63 -

Index of Figures

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 6/63 -

Index of Tables

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 7/63 -

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Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 8/63 -

1. Introduction

1. The development of Regional Smart Specialisation Strategies constitutes an ex ante conditionality established by community regulations for the 2014-2020 programming period. The aim is to encourage all European regions to identify their specific competitive advantages, as a basis for prioritising research and innovation investments under cohesion policy in 2014-2020. The smart specialisation paradigm determines the rationale for the definition of key sectors and public policy interventions in the field of Smart Growth of the Europe 2020 Strategy. Therefore, the Smart Specialisation Strategy of Norte Region (NORTE RIS3) developed on the basis of the principle of smart specialisation is a strategic referential of the Norte Regional Operational Programme (Estado português, 2014)[1].

2. In Norte Region, the design of the smart specialisation strategy (S3) was a collective construction process that began in June 2012, with a strong involvement of the main regional actors (about 130), based on the quadruple helix model, established in the "Guide to Research and Innovation Strategies for Smart Specialisations" of the European Commission. At first, the Regional Council of Norte Regional Development and Coordination Commission (CCDR-N) was consulted and thematic workshops were promoted, trying to test and clarify the rationale and to identify the areas in which the region can build competitive advantages. In a second moment, the strategy was submitted to public consultation, seeking a broad regional participation in order to enrich and improve the regional strategy of smart specialisation.

3. This process was concluded with the approval of the Research and Innovation Strategy for Smart Specialisation of Portugal (ENEI), on December 2014, through an order issued by the Secretary of State for Regional Development, the Secretary of State for Innovation, Investment and Competitiveness and the Secretary of State for Science. This order approved the national strategy and the 7 regional strategies of the continent and autonomous Portuguese regions, as well as the multilevel governance model, the global strategy monitoring mechanism and the indicative budgetary resources available for its implementation.

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[1] This document is available at:
http://norte2020.pt/sites/default/files/public/uploads/programa/po_norte2020.pdf.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 9/63 -

4. The development of a monitoring system is an integral part of smart specialisation, since it is essential to assess if the regional strategy of smart specialisation is being implemented as planned, supporting decision making on proposals for action lines, namely on the maintenance of priority areas or the eventual need of adjustments, being a step towards a deeper evaluation. It also serves the purpose of disseminating the achievements with the implementation of the strategy, as it is important to maintain a transparent process of information and communication with the stakeholders involved in the governance model of the strategy.

5. The MONITORIS3 project[2], approved by INTERREG Europe Programme, has the general objective of improving the implementation of regional development policies and programmes. In particular, programmes for Investment and Growth and Jobs and, where relevant, European Territorial Cooperation programmes, that support the delivery of innovation by actors in regional innovation chains in areas of smart specialisation and innovation opportunity. Its intermediate objective is the improvement of Strategies for Smart Specialisation (S3) related with structural funds policy deliveries (6 policy instruments) through the promotion of exchange of experiences and policy learning on monitoring strategies of such instruments.

    The project has a duration of 5 years and gathers 6 partners from 6 European Union Regions and 1 advisory partner with competences on implementing and monitoring S3. The project partners are the following: Galician Innovation Agency (Spain), Regional Development Agency of the West Romania (Romania), DUNEA IIc – Regional Development Agency, Dubrovnik and Neretva Region (Croatia), Veneto Region – Research and Innovation Section (Italy), Nordland County Council (Norway), Norte Regional Development and Coordination Commission (Portugal) and National Innovation Agency (Portugal).

    The sub-objectives of the project are the following:

    - To **analyse the "state of play"** in terms of monitoring strategies within 6 involved Regions across Europe and select best practices for sharing among partners around 4 thematic areas (Working Groups) where the 9 preselected policy instruments will be put in common;

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[2] More information available at: https://www.interregeurope.eu/monitoris3/

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 10/63 -

- To **select the most valuable best practices** through an active policy learning process, guaranteeing the active involvement of stakeholders identified in selected policy instruments through organisation of Interregional Thematic Seminars around the 4 Working Groups;
- To **transfer the shared and generated knowledge on Best Practices** identified all along the project, through a peer-to-peer learning process among partners in order to facilitate the interregional introduction of those practices addressed to the elaboration of 6 regional action plans on S3 monitoring;
- To **increase the capacity of the responsible for S3 implementation** to monitor and review the implementation activities, and consequently improve the policies (policy instruments) delivery, thanks to the establishment of this monitoring and thematic based model (Monitoring Action Plan) about S3 Strategies;
- To define, thanks to the interregional collaboration, a **specific approach and indicators for regions to monitor S3 strategies and the action plans implementation** (Phase 2 of the project) around previously agreed and defined thematic priorities related among them, in order to establish periodical comparison in order to make improvements of the activities implemented.

6. In summary, throughout the project, partners will be able to identify Good Practices on monitoring strategies of Smart Specialisation at Interregional level. From those, the Best Practices will then be selected as a source of inspiration for the preparation of the Regional Action Plans on S3 monitoring to be implemented during the 2nd phase of the project. Having this end in view, the project foresees, in a first phase, the interregional mapping of S3 monitoring strategies at interregional level that consubstantiates the "State of play" analysis of the six partners of the project. Therefore, the present document corresponds to this first phase of the project and presents the state of play of NORTE RIS3 Monitoring System as a contribution for the monitoring system methodological approach for MONITORIS3 project.

The Section 1 of this document contains a brief background of smart specialisation approach and the importance of monitoring systems. Section 2 is dedicated to a presentation of the Norte Region Smart Specialisation Strategy (CCDRN, 2013)[3], including the methodological framework, priority domains, vision and objectives. A summary of the main policy instruments that support the implementation of NORTE

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[3] This document is available at:
http://norte2020.pt/sites/default/files/public/uploads/documentos/norte2020_ris3.pdf

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 11/63 -

RIS3 is presented in section 3. Section 4 describes the governance model of NORTE RIS3, namely the governance context and the Regional Innovation Council. Section 5 presents the NORTE RIS3 monitoring system, including the methodological framework and the description of the different components of the system. Section 6 identifies the evaluation exercises that cover the NORTE RIS3. Finally, section 7 summarises the main conclusions to be taken into account for the subsequent phases of the MONITORIS3 project.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 12/63 -

2. NORTE RIS3

2.1 Methodological Framework

7.   The smart specialisation's paradigm is based on the principle that the strategic commitment of a given region should be founded on their resources and assets and on their ability to develop a competitive and global entrepreneurial basis, centralizing the public policy funding in the domains with relevant critical mass. These investments should articulate a vertical perspective, of value chain, with a horizontal one, of related variety, exploring the potential of the intersection between the different scientific, technological and entrepreneurial basis, promoting inter and intra-sectorial (intra-industry) spillovers in addition to the internationalisation of the regional innovation system.

Therefore, the construction of such a strategy involved the assumption of the following principles:

- **Choices and Critical Mass** – Identify a limited set of priorities on the basis of own strengths and international specialisation to which are then allocated financial resources ensuring more effective budgetary management;
- **Competitive Advantage** – Taking advantage of the R&D&I capabilities and the export-led industrial DNA, to promote interlinkages and develop a technology market that can boost innovation, through an entrepreneurial discovery process;
- **Connectivity and Clusters** – Stimulate a higher density of connections both internally and internationally and exploiting inter-sectorial synergies, combining knowledge and productive bases, as well as horizontal and vertical perspectives;
- **Collaborative Leadership** – Adopting a collaborative understanding of innovation, involving firms, universities, institutions and users (Quadruple Helix).

8.   In the conception of NORTE RIS3, it was adopted a six-step approach, established in the "Guide to Research and Innovation Strategies for Smart Specialisations" published by the European Commission (Foray, Goddard & Beldarrain, 2012)[4], that comprised the following activities: (i) analysis of the regional context and potential for innovation; (ii) set up of a sound and inclusive governance structure; (iii)

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[4] This document is available at:
http://ec.europa.eu/regional_policy/sources/docgener/presenta/smart_specialisation/smart_ris3_2012.pdf.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 13/63 -

production of a shared vision about the future of the region and strategic objectives; (iv) selection of a limited number of priorities for regional development; (v) establishment of suitable policy mix; and finally (vi) integration of monitoring and evaluation mechanisms.

9. Assuming this paradigm and the established methodology in the European Commission Guide, the conception of the NORTE RIS3 had as a starting point the construction of a theoretical framework that would allow the respective priority domains identification. A specific domain was considered as a priority when there are, or there is a possibility to be, regional critical mass gathered in one of the three vertices of a triangle, each one corresponding to the regional entities of the scientific and technological systems, technology producers and to advanced users of that technology (Figure 1).
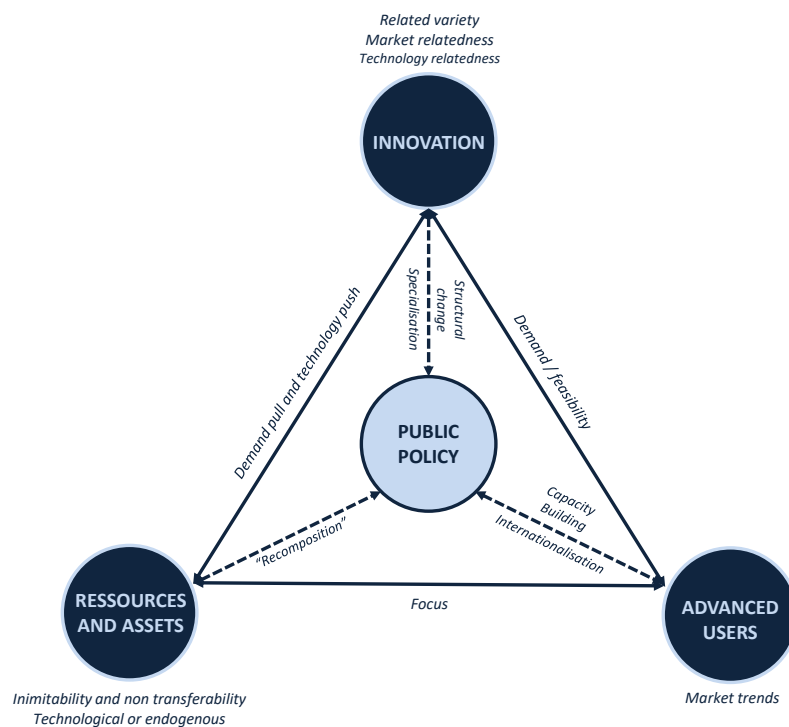
Figure 1 – Theoretical framework for the definition of the smart specialisation priority domains
Source: Adapted from CCDR-N (2013)

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 14/63 -

10. With the first vertex of the triangle, it was assumed that the S3 should be founded on the regional capacities regarding resources and assets with characteristics such as inimitability and non-transference, upon which tradable goods and services could be constructed, at a global scale. Those assets and resources could be technological (analytical and synthetic knowledge) or not (for example, symbolic capital). This way, it was proceeded a quantitative analysis of the assets and resources, analysing the human resources, the scientific disclosures and publications and the R&D infrastructures. The non-technological assets and resources were also identified as inimitable and non-transferable, given their nature. Based on this analysis, areas with critical mass were identified, technological and non-technological, that enable knowledge creation and innovation promotion.

In the second vertex of the model, it was found the entrepreneurial base that plugs in and gives focus to those resources and assets, through the production of tradable and innovative goods and services, namely the ones with technological nature and with the aim of satisfying the intermediate demand. In this context, the regional entrepreneurial basis (dominant and emerging) was analysed, with the purpose of evaluate how resources and assets are integrated in the productive process and its economic value. Through the identification of the nodal points with the biggest potential articulation between these two vertices, it was made an evaluation exercise of the technology relatedness and the market relatedness that, starting from the quantitative evaluation of the resources and assets, allowed to reveal the innovation opportunities, by vertical and horizontal combinations of cognitive and productive bases, and to pre-identify possible priority domains to invest (nuclear, emerging and wildcards). This exercise was supported by several studies[5], in the technical competences and knowledge of CCDR-N and in frequent interaction with the main regional stakeholders.

In the third vertex, advanced users arise, which are fundamental to the accomplishment of the prospective exercise of international demand evolution, given that they are constituted by companies and other organisations that produce

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[5] Studies developed in the context of the Norte Region of Portugal Competitiveness Pact (NORTE 2015), namely: Norte of Portugal Innovation Action Plan (CCDR-N, 2008), Norte of Portugal Digital Action Plan (CCDR-N, 2009), Norte of Portugal Creative Industries Action Plan (CCDR-N, 2008), Norte of Portugal Sea Action Plan (CCDR-N, 2009), Norte of Portugal Tourism Action Plan (CCDR-N, 2008).

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 15/63 -

goods and provide services, public and private, especially the ones designed to the final demand. This exercise was fundamental to evaluate the viability of the S3 domains, given the market tendencies (international and domestic and proximity demand) and the potential of the innovative public procurement, also enabling the recognition of the public policy intervention needs regarding the support of the rearrangement of the resources and assets basis and the promotion of a structural change in the regional economy.

11. After this work that allowed to pre-identify the eight priority domains of NORTE RIS3, the principal regional stakeholders were engaged, through the promotion of thematic workshops, one for each priority domain. In those workshops, it was reproduced the quadruple helix model, involving namely companies (technology producers and advanced users), universities, R&D and interface institutions in the process of collaborative leadership and entrepreneurial discovery. In addition, it was tested and described in detail the rational of each priority domain, identifying the areas of Norte Region with more potential regarding the construction of competitive advantages. These work sessions were complemented with surveys that allowed the fine tuning of the vertices of each domain (Figure 2).
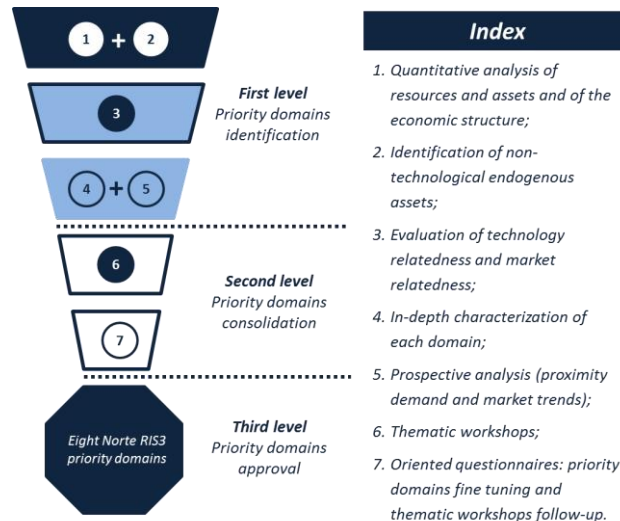
Figure 2 – Methodology for identification and characterisation of the NORTE RIS3 priority domains
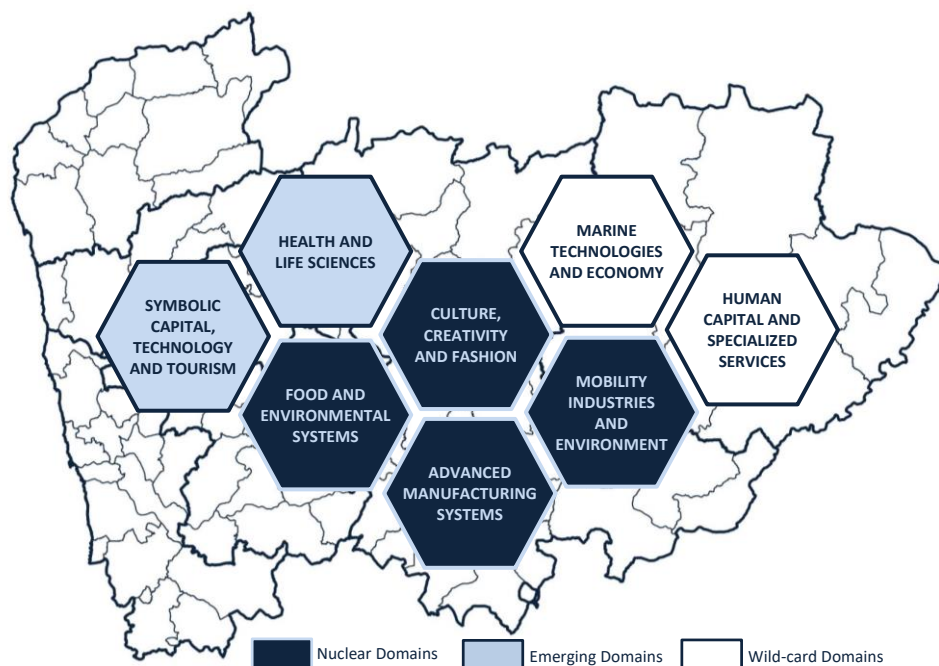Source: Adapted from CCDR-N (2013)

12. Finally, it was also broadened the public consultation process, which was concluded with the approval of the priority domains by the Steering Committee of NORTE 2020 Initiative, created to monitor the achievement of the NORTE RIS3 and the regional

preparation of the European Structural and Investment Funds programming period, within the Regional Council of CCDR-N, a legitimate forum of authorities, institutions and regional interests' representation.

2.2 Priority Domains, Vision and Objectives

13. Based on the above described analytical model, eight priority domains for the RIS3 were identified and categorised as "Nuclear", "Emerging" and "Wild Card" (Figure 3). "Nuclear domains" are those with a strong business and research/technology presence, as well as advanced users in the region; "Emerging domains" are present but with a smaller critical mass; while "Wild Card" domains are good opportunities in the future with assets identified, but so far with limited activity deployed in the region.

Figure 3 – NORTE RIS3 priority domains
Source: Adapted from CCDR-N (2013)

The rationale for the public policy intervention concerning the eight priority domains were defined as follows:

- **Mobility industries and environment:** Creating value from accumulated scientific expertise in the areas of production technologies and materials, underpinned by supply contracts with important aeronautics international firms,

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 17/63 -

upgrading the automotive components and moulds production industries to supply more sophisticated clients (e.g. aeronautics).

- **Culture, creativity and fashion:** Exploring the potential of creative industries (especially in the areas of design and architecture), new materials and innovative production technologies, creating new competitive advantages in sectors linked to the production of consumer goods with a strong design component (design based consumer goods), namely in traditional industries such as textiles and clothing, footwear, accessories, furniture, jewellery, etc.

- **Advanced manufacturing systems:** Development of clusters associated to key enabling technologies, such as advanced manufacturing systems, nanotechnologies, materials and ICT, by combining the existent scientific and technological capacities and infrastructures with the presence of advanced users sectors, in order to strengthening the existing business structure (in the case of production technologies and ICT) or the creation of new companies (especially in the field of nanotechnology and the production of new materials).

- **Food and environmental systems:** Linking the regional agricultural potential in high added value products (wine, olive oil, nuts, etc.) with the scientific and technological knowledge (oenology, engineering, biology, biotechnology, etc.) and the existent industrial knowledge (milk and dairy products, viticulture, etc.) for the development of associated products, namely functional food and local gastronomy, aiming towards more dynamic demand segments.

- **Symbolic capital, technology and tourism:** Creating value from cultural and intensive resources in the territory, taking advantage of the scientific and technological capacities, namely in the areas of management, marketing and ICT, and the relevant tourism offer, promoting routes and itineraries as a way to take advantage of the main infrastructures for visitors.

- **Health and life sciences:** Consolidate and promote interactions between the regional research capabilities (namely on tissue engineering, cancer, neurosciences and surgical techniques) and companies in the health industries and general services (pharmaceuticals, medical devices, provision of health services, health tourism, and wellness and cosmetics).

- **Marine technologies and economy:** Development of links between the engineering areas (civil, mechanics, naval, robotics, energy, life sciences, ICT, new materials), natural resources of the sea (wind, waves, algae, beaches) and existing or emerging economic activities (shipbuilding, offshore construction, nautical tourism, fishing and aquiculture, bio-fuels, etc.).

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 18/63 -

- **Human capital and specialised services:** Promotion of ICT skills (namely in the development of multimedia applications and systems for programming and engineering) for the development of e-government solutions, dematerialisation of processes and, in association with professional retraining, leveraging trends for nearshore outsourcing (engineering, shared service and contact centres).

14. This process ended with the definition of the vision and the strategic and transversal objectives of NORTE RIS3 (Figure 4).
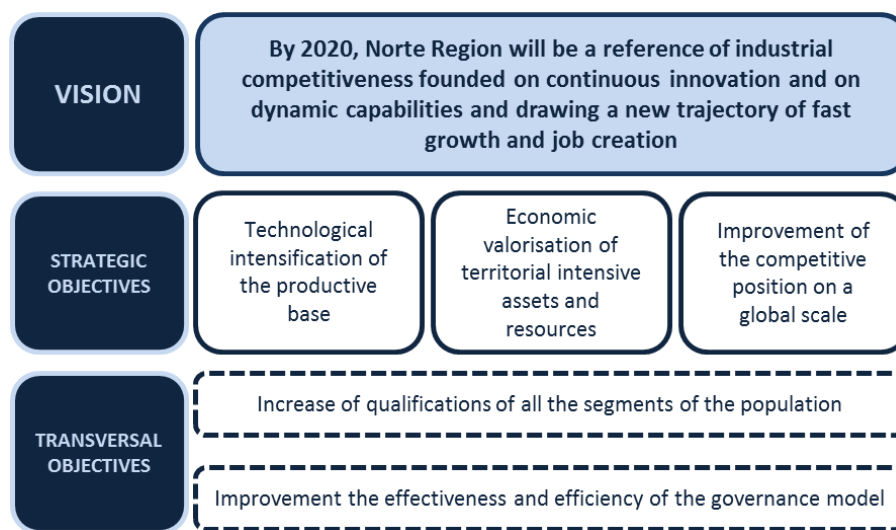
Figure 4 – NORTE RIS3 Vision and Objectives
Source: Adapted from CCDR-N (2013)

The strategic objective of technological intensification is more closely associated with the regional industrial base, both in the production of technologies (namely capital goods) and in the production of final goods and of knowledge and services in engineering areas, in domains such as "Advanced manufacturing systems", "Mobility industries and environment", "Culture, creativity and fashion", "Health and life sciences" or "Human capital and specialised services". The strategic objective of economic valorisation of territorial intensive assets and resources is more associated with other domains such as "Symbolic capital, technology and tourism", "Food and environmental systems" or "Marine technologies and economy".

However, not all domains contribute equally to each strategic objective. It is expected that the "Advanced manufacturing systems", "Mobility industries and environment", "Health and life sciences" domains have a more significant

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 19/63 -

contribution than the others to the strategic objective of technological intensification. It is also expected the "Symbolic capital, technology and tourism" domain to have a more relevant contribution than the others to the objective of economic valorisation of territorial intensive assets and resources.

This arrangement of domains by their main contribution to strategic objectives is more analytical than empirical. For example, domains such as "Food and environmental systems" or "Marine technologies and economy" are also contributing to the strategic objective of technological intensification and, at the same time, "Culture, creativity and fashion" or "Health and life sciences" present non-negligible contributions to the strategic objective of economic valorisation of territorial intensive assets and resources. What determinates these contributions is the mobilisation of different types of resources and assets of each priority domain: when resources and technological assets are mobilised (analytical and synthetic knowledge) the contributions are more associated with the first objective; when resources and non-technological assets are mobilised (such as symbolic capital), the contributions are more associated with the second objective.

This strategic definition has also two cross-cutting objectives, one aiming to improve human capital, particularly in the area of advanced training related with the RIS3; other concerning regional governance, providing more permanent interactions between enterprises, education and research and development institutions, public R&D&I policy-making authorities and innovation users or entities representing the demand dimension and innovation consumers, on the basis of the quadruple helix model.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 20/63 -

3. RIS3 Main Policy Instrument

15. The development of Regional Smart Specialisation Strategies constitutes an ex ante conditionality established by community regulations for the 2014-2020 programming period. The smart specialisation paradigm determines the rationale for the public policy interventions in the field of Smart Growth of the Europe 2020 Strategy. Therefore, the Smart Specialisation Strategy of Norte Region (NORTE RIS3) developed on the basis of the principle of smart specialisation is a strategic referential of the Norte Regional Operational Programme (NORTE 2020).

Considering that RIS3 is an ex ante conditionality of the Norte Regional Operational Programme (NORTE 2020), the alignment with RIS3 was defined as an admissibility condition and a selection criteria for some typologies of projects, namely for the following Thematic Objectives (TO) and Investment Priorities (IP): (i) TO 1 "Strengthening Research, Technological Development and Innovation" that comprises the IP 1.1 "Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest" (ERDF) and IP 1.2 "Promoting business investment in R&D, developing links and synergies between enterprises, research and development centres and the higher education sector" (ERDF); and (ii) TO 10 "Investing in education, training and vocational training for skills and lifelong learning" with the IP 10.2 "Improving the quality and of, and access to, tertiary and equivalent education with a view to increasing participation and attainment levels, especially for disadvantage groups" (ESF).

The alignment with RIS3 was also defined as a selection criteria for other typologies of projects of the Regional Operational Programme, namely for the following: (i) TO 3 "Enhancing the Competitiveness of Small and Medium Enterprises" that is composed of IP such as IP 3.1 "Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators" (ERDF), IP 3.2 "Development and implementation of new business models for SMEs, in particular with regard to internationalisation" (ERDF) and IP 3.3 "Supporting the creation and extension of advanced capacities for product and service development" (ERDF); (ii) TO 8 "Promoting sustainable and quality employment and supporting labour mobility" with the IP 8.5 "Adaptation of workers, enterprises and entrepreneurs to change" (ESF); and (iii) TO 10 "Investing in education and vocational training for skills and

lifelong learning" with the IP 10.4 "Improving the labour market relevance of education and training systems" (ESF) and IP 10.5 "Investing in education, training and vocational training for skills and lifelong learning by developing education and training infrastructure" (ERDF).

The following table (Figure 5) provides a summary of the main policy instruments that NORTE RIS3 mobilizes through NORTE 2020 Regional Operational Programme 2014-2020, the respective relative budget and the alignment conditions with the regional smart specialisation strategy (see the list of the main TO and IP in annex I).

		Investment Priorities (IP)											Fund (%)
		1	2	3	4	5	6	7	8	9	10	11	
Thematic Objectives (TO)	1	1.1.	1.2.										12%
	2	2.1.	2.2.	2.3.									1%
	3	3.1.	3.2.	3.3.	3.4.								38%
	4	4.1	4.2.	4.3.	4.4.	4.5.	4.6.	4.7.					11%
	5	5.1.	5.2.										0%
	6	6.1.	6.2.	6.3.	6.4.	6.5.	6.6.	6.7.					8%
	7	7.1.	7.2.	7.3.	7.4.	7.5.							0%
	8	8.1.	8.2.	8.3.	8.4.	8.5.	8.6.	8.7.	8.8.	8.9.	8.10.	8.11.	6%
	9	9.1.	9.2.	9.3.	9.4.	9.5.	9.6.	9.7.	9.8.	9.9.	9.10.		9%
	10	10.1.	10.2.	10.3.	10.4.	10.5.							13%
	11	11.1.	11.2.	11.3.									1%

Strict alignment ▪ Preferred alignment ▪ Non alignment ▪ Out of NORTE2020

Figure 5 – NORTE 2020 Operational Programme vs NORTE RIS3
Source: Adapted from Estado português (2014)

In this context, the monitoring and evaluation of NORTE RIS3 is substantially linked to the monitoring and evaluation of the Norte Regional Operational Programme 2014-2020, meaning that the input, output and outcome (results) indicators and their targets will be a key monitoring instruments of the smart specialisation strategy.

4. RIS3 Governance Model

4.1 Governance context

16. The Research and Innovation Strategy for Smart Specialisation of Portugal (ENEI) was approved on December 2014, through an order issued by the Secretary of State for Regional Development, the Secretary of State for Innovation, Investment and Competitiveness and the Secretary of State for Science. This order included the approval of the national strategy and the 7 regional strategies of the continent and autonomous Portuguese regions, as well as the multilevel governance model, the global strategy monitoring mechanism and the indicative budgetary resources available for its implementation.

    Portugal's Research and Innovation Strategy for Smart Specialisation[6] (Estado português, 2014) aims to assume the optimum territorial scale of intervention in each moment, combining national and multi-regional initiatives, favouring thematic proximity, with others that are confined to a given territory, valuing the geographical proximity. This assumption requires the constitution of a multilevel governance model also with high levels of interaction and coordination, combining "bottom up" and "top down" perspectives.

    The governance of this strategy is grounded on the articulation between the national and regional levels, in a multilevel logic, based on the cooperation and willingness of sharing among multiple actors that intervene in the collective and systemic process of development of R&I activities, as well as in the process of follow-up and evaluation. The national and regional components of the multilevel governance model are characterized in the strategy. The regional governance model is reproduced, with the necessary adaptations, in the Smart Specialisation Strategy of Norte Region.

17. The regional governance established in RIS3 respects the quadruple helix model and the entrepreneurial discovery process, foreseen in the "Guide on Research and Innovation Strategies for Smart Specialisation" (Foray, Goddard & Beldarrain, 2012), published by the European Commission. It involves companies, educational,

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[6] This document is available at:
https://www.portugal2020.pt/Portal2020/Media/Default/Docs/EstrategiasEInteligente/ENEI_Versão%20final.pdf

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 23/63 -

research and development institutions, public planning and management entities of R&I policies and innovation users or entities representing the demand dimension or innovation consumers (one and the other referred to as advanced users).

This model is based on the principle of "collaborative leadership", implying a decision process that is flexible enough to allow each actor involved to play a proactive role, taking the lead in certain projects or themes, according to their skills and knowledge. The creation of working groups for specific themes or projects should be encouraged. This collaborative leadership implies the existence of a management team available to encourage and coordinate meeting agendas, as well as the monitoring and evaluation process. It is intended a model that allows, simultaneously, intense interactions between actors, indispensable for the production of innovation, and high levels of effectiveness in the decision.

This model was adopted by different CCDR and Regional Governments in the design phase of the regional smart specialisation strategies. It is intended to be reproduced, with adaptations, in the implementation phase of these strategies, involving high levels of interactions between actors, the CCDR, the entities of the R&I System, the producers of technologies or the advanced users.

18. The model is based on two principles: (i) to continue to ensure the broad participation of key regional actors, based on the quadruple helix model, to promote alignment of interventions around the vision, objectives and priority areas of smart specialisation in each region; (ii) to reduce the risk of creating new entities and bodies, which often tend to increase the transaction costs of policies, decreasing their effectiveness and efficiency.

Therefore, this model presupposes, in the operational phase, the creation of a Regional Innovation Council, aiming to ensure active participation in the monitoring and continuous evaluation of the strategy's implementation and to contribute to the strategic decision-making process in the region. Based on each CCDR Presidency proposal, the constitution and competencies of this body will be assessed in the Regional Council, established in Article 7 of Decree-Law no. 228/2012, of October 25, thus gaining enhanced institutional legitimacy.

This advisory body is expected to be chaired by each CCDR. It will be composed of representatives of companies, technology producers and advanced users, entities of the scientific and technological system, universities, business associations, poles

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project
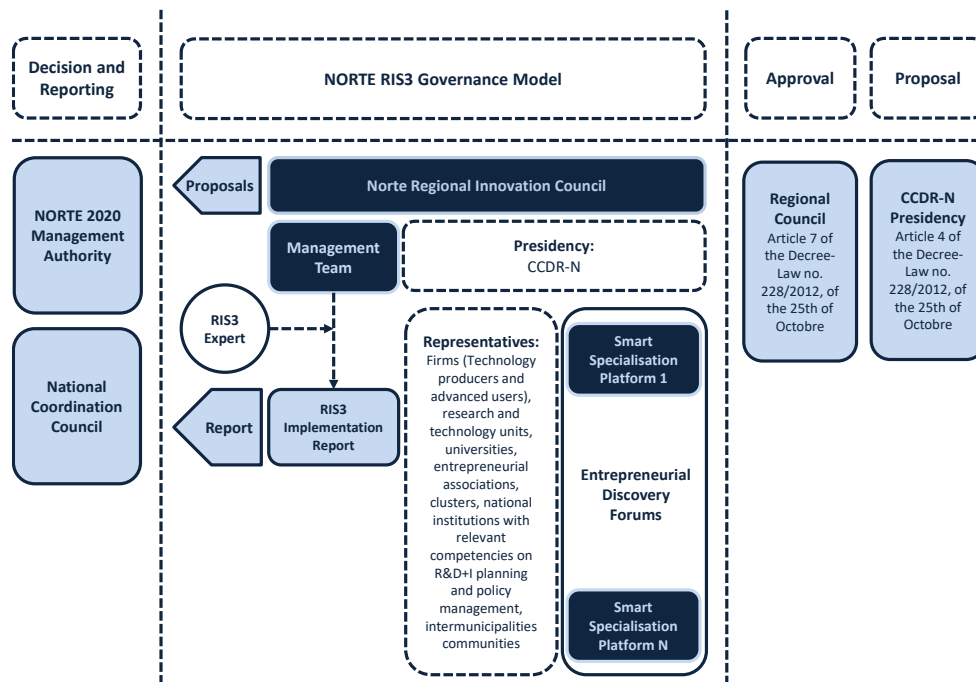
- 24/63 -

and clusters and national entities of planning and policy management of R&I and inter-municipal entities.

The Regional Innovation Council will meet in plenary or in sections oriented to the priority areas of regional smart specialisation, which will be constituted as Regional Smart Specialisation Platforms. These platforms aim to ensure a multi-institutional and multi-sectoral regional response for the monitoring, evaluation and evolution of their strategies, seeking to boost cooperation and networks, innovation and internationalisation. They are, in practice, spaces of entrepreneurial discovery. The Regional Innovation Council will have as competences, in particular, the appreciation and approval of recommendations and proposals of lines of action of the regional platforms of specialisation. This regional collaborative leadership process should result in proposals to be submitted to the relevant Operational Programme Management Authority, particularly regarding the thematic content of the tender calls and their timing.

According to the governance model, a Management Team should be created, assuming the timely monitoring and evaluation of the strategies of the different smart specialisation domains with regard to its execution by the Operational Programmes, by issuing periodic monitoring reports across the various platforms and in support of the Regional Innovation Council.

On a more transversal basis, the Management Team will also be responsible for collecting, processing and providing qualitative and quantitative information relevant to the monitoring of the execution of each regional smart specialisation strategy. As it is an ex ante conditionality, it is necessary to periodically report to the European Commission on the implementation of each of these smart specialisation strategies and their contribution to the multilevel strategy. This work should be followed by the expert appointed by the European Commission to make the "assessment" of the regional strategy.

This model is systematized in the following figure (Figure 6).

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 25/63 -

Figure 6 – RIS3 governance model
Source: Adapted from CCDR-N (2013)

19. In order to align and validate the regional strategy with the latest international developments in each area, it is mentioned in the governance model that will be pertinent that regional platforms can rely on an international expert as well as on a regional expert/rapporteur (representative of the CCDR), responsible for writing the summary of the recommendations and proposals.

In line with the recommendations of the European Commission in the field of smart specialisation and the need to produce information to support decision-making by the Regional Innovation Council and the Managing Authorities (MA) of the relevant Operational Programmes (OP), it is foreseen the creation of a Regional Observatory that assumes the timely monitoring and evaluation of the implementation of the strategies of the different fields of smart specialisation by the Regional Operational Programmes, issuing periodic monitoring reports.

4.2 Regional Innovation Council

20. One of the main changes that RIS3 brought in the process of strategy development for R&D&I in Norte Region was the strong stakeholder engagement in terms of policy design process. The methodology adopted in NORTE RIS3 for the stakeholders' engagement was considered a good practice in the Guide

"Implementing Smart Specialisation: A Handbook", published by the European Commission (Gianelle, Kyriakou, Cohen & Przeor, 2016)[7]. This methodology illustrates a good example of using Entrepreneurial Discovery Process (EDP) as a prioritisation mechanism and how this practice has led to the identification of the regional investment priorities, based on an inclusive and evidence-based process driven by stakeholders' engagement and attention to market dynamics.

Regarding the implementation of RIS3, regional stakeholders have played a relevant role at three levels: (i) first, the strong involvement in the S3 elaboration process; (ii) second, the important role as beneficiaries of RIS3, namely as promoters of projects to the Regional Operational Programme policy instruments in which NORTE RIS3 is a condition of admissibility and / or merit, and (iii) third, the contribution to the process of internationalisation of RIS3 by participating in different programmes (INTERREG, HORIZON 2020, etc.) and in international networks (e.g. the Vanguard Initiative).

The main challenge in the implementation of RIS3 is to ensure the mobilisation and permanent involvement of stakeholders, in a collaborative and entrepreneurial discovery process, namely companies, technology producers and advanced users, universities and R&D and interface institutions. Therefore, one of the main purposes of NORTE RIS3 governance model is to maintain a strong stakeholder involvement in the implementation of the S3.

The methods to ensure the participation of stakeholders are defined in the RIS3 governance model. The NORTE RIS3 governance model establishes, for the first time, the creation of a Regional Innovation Council. This advisory body should respect the quadruple helix model, including representatives of companies, technology producers and advanced users, entities of the scientific and technological system, universities, business associations, poles and clusters and national planning and management entities of R&D&I policies and inter-municipal entities.

21. Thus, taking into account the guidelines for the implementation of the governance model set out in the Portugal's Research and Innovation Strategy for Smart

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[7] This document is available at:
http://s3platform.jrc.ec.europa.eu/documents/20182/154972/Implementing+Specialis ation+Strategies+A+Handbook/2a0c4f81-3d67-4ef7-97e1-dcbad00e1cc9

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 27/63 -

Specialisation, in the Smart Specialisation Strategy of Norte Region and also in the European Commission's Guide, the Regional Innovation Council was formally constituted in the end of 2017.

The constitution of the Regional Innovation Council considered the following principles:

- **Quadruple Helix -** Enable a broad participation of key regional actors, based on the "quadruple helix" model, involving representatives of companies, education, research and development institutions, planning and management of R&I public entities and innovation users or entities representing the demand dimension or innovation consumers;
- **Collaborative Leadership -** Ensure the principle of "collaborative leadership," implying a decision-making process that is flexible enough to allow each actor involved to play a proactive role, taking the lead in certain projects or themes, according to their competencies and knowledge;
- **Multilevel Governance -** Ensure cross-participation by national bodies responsible for the implementation of research and innovation policies in the management bodies of the Regional Strategies and the bodies responsible for the territorialisation of such policies in the management bodies of the National Strategy;
- **Entrepreneurial Discovery Spaces -** Create thematic and regional spaces of interaction and articulation between institutional actors and stakeholders, both from the academic, scientific and technological environment, and from the business environment, established as "Entrepreneurial Discovery Spaces";
- **Adequate dimension -** Ensure that the Regional Innovation Council has an adequate dimension to the exercise of its competences, namely to guarantee an effective model of involvement of the main actors, as recommended in the European Commission's Guide.

22. Based on the above principles, the Norte Regional Innovation Council assumed a suitable dimension for the exercise of its competences and has the following composition:

- **President of CCDR-N,** who chairs the Regional Innovation Council, as defined in the governance model of the National Strategy for Smart Specialisation;

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project
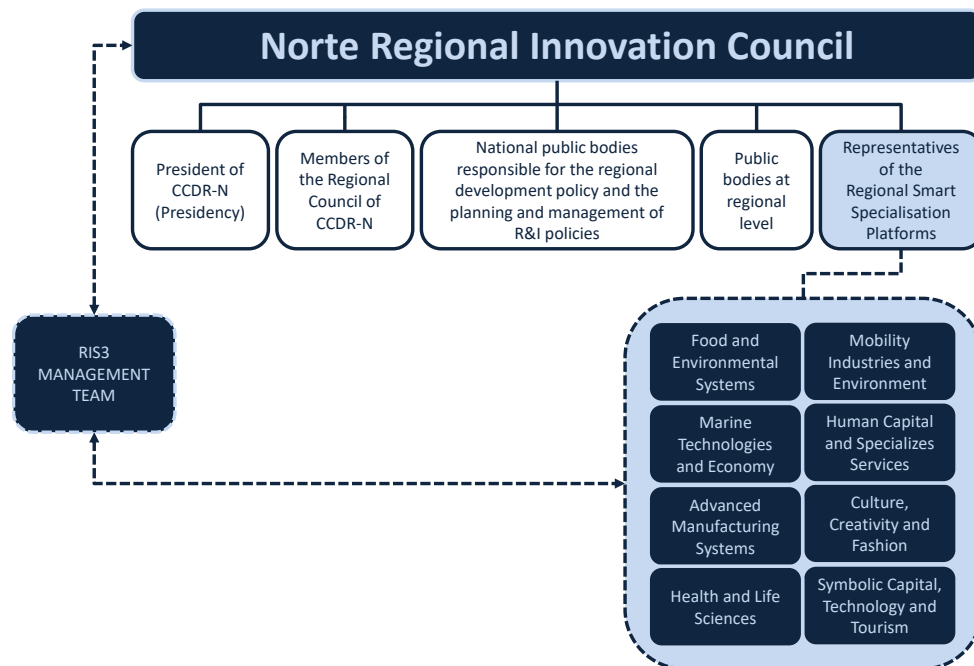
- 28/63 -

- **Members of the Regional Council of CCDR-N.** In the case of the municipalities they are represented by the Inter-Municipal Entities of the Norte Region;
- **National public bodies** responsible for the Regional Development policy and the planning and management of R&I policies;
- **Public bodies at regional level;**
- **Representatives of the Regional Smart Specialisation Platforms.**

Other institutions will also participate in the Norte Regional Innovation Council, with observer status, in particular, managing authorities of the operational programmes of PORTUGAL 2020, HORIZON 2020 promotion office, national and regional organisations in the field of innovation, international organisations and experts. Entities or personalities whose participation are considered relevant may be invited to attend and participate in the meetings of the Council, taking into account the nature of the matters on the agenda.

23. In accordance with NORTE RIS3, the Norte Regional Innovation Council should assume the following competencies:

- Approve its own operating regulations;
- Appraise and approve the recommendations and proposals for lines of action for the priority areas of the Norte Regional Strategy for Smart Specialisation, including proposals of thematic content of Calls and their timing to submit to the Managing Authority of the relevant Operational Programmes;
- Appraise and approve the annual monitoring reports of the Norte Regional Strategy for Smart Specialisation;
- Appraise and approve the proposals for the revision of the Norte Regional Strategy for Smart Specialisation.

The governance model of the Norte Regional Smart Specialisation Strategy further defines that the Regional Innovation Council will meet in plenary or in sections oriented to the priority areas of regional smart specialisation, which will be constituted as Regional Platforms of Smart Specialisation (Figure 7).

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 29/63 -

Figure 7 – NORTE RIS3 governance model
Source: Adapted from CCDRN (2013)

These platforms aim to ensure a multi-institutional and multi-sectoral regional response for the monitoring, evaluation and evolution of their respective strategies, seeking to boost cooperation and networks, innovation and internationalization. They are, in practice, spaces of entrepreneurial discovery. From this regional collaborative leadership process, it should result proposals to present to the Managing Authority of the relevant Operational Programmes, namely the thematic content of the Calls for Proposals and their timing.

In what concerns the management team of RIS3, the option was not to create new structures but to internalize these functions in the existing structure of CCDR-N, seeking to assign a permanent character to the function of coordinating, in technical terms, the activities of promotion, monitoring and evaluation of the RIS3 in Norte Region.

24. The NORTE RIS3's governance model was also considered as a good practice in the European Commission Guide "Implementing Smart Specialisation: A Handbook". The creation of stable platforms for regular discussion between research and business, such as the S3 platforms in Norte, is a good example of a regionally appropriate and inclusive governance arrangement that enables the S3 approach to become 'embedded' in the region, increasing the chances that S3 can withstand

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 30/63 -

future changes in the political environment. The platforms include a large number of firms, the regional science and technology community and cluster and sector associations. The participation of an international expert is envisaged in order to reduce the risk of interest group capture. The platforms are intended to lead to proposals for calls from the regional operational programme.

The comprehension of the RIS3 governance model is important to better understand that the monitoring system has to produce timely and relevant information to be the basis for discussion within the Regional Platforms of Smart Specialisation and the Regional Innovation Council, sustaining the decisions to be taken in these forums. A substantial effort has to be made to extend monitoring activities in order to integrate a range of strategic functions with the goal of better informing the decision-making process and keeping stakeholders engaged.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 31/63 -

5. RIS3 Monitoring System

5.1 Initial considerations

25. According to Community regulations, compliance with "ex ante" conditionality presupposes the definition of a mechanism for monitoring the regional strategy for smart specialisation. The monitoring system must track the development of the prioritized areas and show how the implementation of the strategy articulates with its strategic and transversal objectives in order to achieve the shared vision.

    The development of a monitoring system is essential to assess if the regional strategy of smart specialisation is being implemented as planned, thus supporting decision making on proposals for action lines, on the maintenance of priority areas or the eventual need of adjustments, being a step towards a deeper evaluation. It also serves the purpose of disseminating the achievements with the implementation of the strategy, as it is important to maintain a transparent process of information and communication with the stakeholders involved in the governance model of the strategy.

    This system will have to be linked either with the model proposed in the national strategy for smart specialisation, given the complementarity with the regional strategies, and with the methodology defined by the European Commission namely in the "Guide to Research and Innovation Strategies for Smart Specialisations (RIS3)". On the other hand, considering that RIS3 is an "ex ante" conditionality of PORTUGAL 2020 Operational Programmes, the monitoring system of NORTE RIS3 will necessarily have to be aligned with the monitoring indicators of Norte Region Operational Programme 2014-2020 (NORTE 2020).

26. The Cohesion Policy framework for the period 2014-2020 reflects a new approach focused on results. This answers to the growing demand to be more result/outcome-oriented and counteracts "the understandable tendency of policy makers and the public alike to concentrate on highly aggregated, easily communicable measures and on means rather than ends" (Barca & McCan, 2011)[8]. For shifting the focus towards outcomes, the new logical framework for the

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[8] This document is available at:
http://ec.europa.eu/regional_policy/sources/docgener/evaluation/doc/performance/outcome_indicators_en.pdf

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 32/63 -

purposes of programming, monitoring and evaluation can be summarised as follows: policy actions, by allocating (spending) financial resources (the inputs), are aimed at producing planned outputs through which intended outcomes (results) in terms of people's well-being are expected to be achieved.

This new framework has clear and profound implications for the monitoring and evaluation systems. Without giving up the traditionally expected monitoring responses, these systems will have to be able to clearly and accurately evidence the progress made towards the desired results. This additional requirement is particularly relevant with regard to the system of indicators, namely the result and output indicators, and it is necessary to ensure that Information Systems have the capacity to contain credible, robust and up-to-date information on the achievements and results at the operations level, allowing a clear and rigorous evidence of the progress made towards the expected results of public interventions.

In the "Guidance Document on Monitoring and Evaluation for the Programming Period 2014-2020" (Regio, 2011)[9], the European Commission established key concepts and terms that should be considered in the monitoring system methodological approach. As the monitoring of outputs and results are essential to follow the principle of results orientation, the system is built on three type of indicators: (i) input indicator – indicator that refers to the budget allocated to each level of the assistance; (ii) output indicator - indicator describing the "physical" product of spending resources through policy interventions; and (iii) result indicator - indicator describing a specific aspect of a result, a feature that can be measured. Result is defined as the specific dimension of the well-being of people that motivates policy action, i.e. that is expected to be modified by the interventions designed and implemented by a policy.

27. The system of indicators is the main tool for monitoring and evaluating the implementation of smart specialisation strategies. However, the NORTE RIS3 monitoring exercise is not restricted to verifying compliance with the result, output or input indicators associated with the regional operational programme. As mentioned in the document "Monitoring Mechanisms for Smart Specialisation Strategies" (2015), published by the European Commission (Gianelle & Kleibrink,

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[9] This document is available at:
http://ec.europa.eu/regional_policy/sources/docoffic/2014/working/wd_2014_en.pdf

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 33/63 -

2015)[10], one of the main differences between the monitoring of a smart specialisation strategy and of an operational programme is the focus on the priority areas.

In this sense, the monitoring of the smart specialisation strategy presupposes that result, output and input indicators of operational programmes associated with smart specialisation strategies are presented by priority areas of NORTE RIS3. To this end, the Norte Regional Operational Programme Information System 2014-2020 must ensure the production of information that permits adequate monitoring of the implementation of the strategy, both in global terms and in each area of smart specialisation.

As for the proposed structure of indicators of NORTE RIS3, several references have been taken into account, in particular the recommendations contained in the Commission's Guide, the indicators in the Norte Regional Operational Programme 2014-2020 and the global indicators of the national strategy for smart specialisation.

5.2 Proposed structure of the monitoring system

28. The monitoring of a strategy such as NORTE RIS3 consists in monitoring the level of achievement of its objectives. The indicators and their goals assume an instrumental dimension: they serve to monitor the level of achievement of these objectives. There are different objectives and these objectives are not all at the same hierarchical level.

     All the dimensions are important but the implementation of the strategy as a whole implies the existence of objectives that have a relative importance higher than others. Therefore, it is a matter of consistently monitoring different public policy objectives, which are not always at the same hierarchical level in the strategy's "objectives tree", and the implementation of the corresponding financing instruments.

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[10] This document is available at:
http://s3platform.jrc.ec.europa.eu/documents/20182/114948/JRC95458_Monitoring_Mechanisms_S3_Policy_Brief.pdf/ce74fd68-cd17-4574-950d-4551582655d2

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 34/63 -

29. The next figure (Figure 8) presents the NORTE RIS3 monitoring system structure. The left side represents the goal hierarchy or "goal tree". The first two levels represent the two sets of objectives established in the definition of NORTE RIS3 strategy (see Section 2.2). As this strategy does not have a budget it is necessary to mobilize NORTE 2020 budget, considering that constitutes an ex ante conditionality. Below these two levels, there is a last level that corresponds to the objectives of the NORTE 2020 public policy instruments that are mobilized to funding NORTE RIS3.
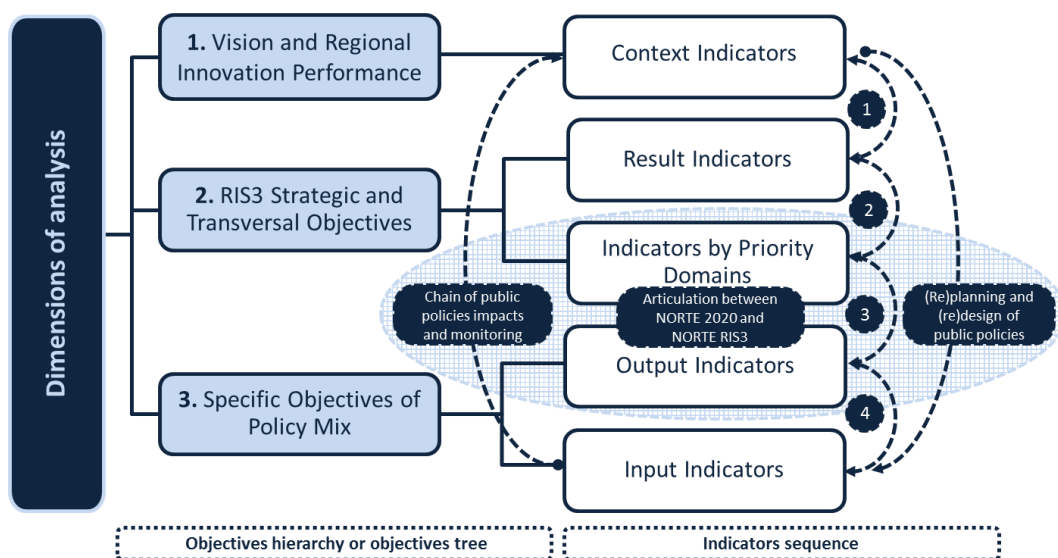
Figure 8 – NORTE RIS3 monitoring system structure

The right side of the figure represents the sequence of indicators. Each indicator correspond to a certain level of the hierarchy of objectives: the dimension "Vision and Regional Innovation Performance" corresponds to the "Context Indicators"; the "RIS3 Strategic and Transversal Objectives" corresponds to the "Result Indicators" and "Indicators by Priority Domains"; the "Specific Objectives of Policy Mix" corresponds to the "Input Indicators" and "Output Indicators".

30. In the preparation of NORTE RIS3, as in other planning exercises, it was assumed a top-down approach. An assessment based on context indicators was used to identify the strengths, weaknesses, opportunities and threats of the regional innovation system, allowing the elaboration of the strategic vision. The achievement of this vision presupposes the achievement of strategic and cross-cutting objectives, which are measured by relevant result indicators. The existence

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 35/63 -

of different priority domains of NORTE RIS3 requires the inclusion of another type of indicators, which intends to evaluate the relative importance assigned to each of these domains. This specific issue of RIS3 results comes from the fact that not all priority domains contribute equally to the achievement of the first and second level objectives. At the bottom, the achievement of the strategic and transversal objectives presupposes the achievement of the specific objectives of the "policy mix", measured by "input" and "output" indicators.

Monitoring is a bottom-up exercise and therefore inverse to the exercise of RIS3 planning. It begins by monitoring whether the specific objectives of the policy mix are being achieved through the "input" and "output" indicators. Next, it is verified whether the strategic and cross-cutting objectives are being achieved through the result indicators and the indicators per priority domain. Finally, the context indicators allow to monitor the overall level of achievement of RIS3 and its vision, assessing the potential of structural change of the regional economy.

31. The monitoring exercise is mainly used to identify deviations in the implementation of the strategy from the planned one. If there are deviations, it becomes necessary to take management decisions that allow to adjust the implementation to the planning. If there are no deviations but the first and second level objectives are not being achieved it is necessary to review the strategy, adjusting it to the current circumstances and to the constraints or potentialities that were not considered in its elaboration.

Monitoring is not an end in itself. It serves to support the management or the strategic decision. The ascending and descending perspectives are complementary and articulated in time. Public policy and planning monitoring exercises mutually support each other throughout the strategy's execution life cycle.

32. In this context, the RIS3 is considered a distinct strategy by the fact that thematic and sectoral bets in the priority domains of smart specialisation allow, with the same mix of public policies, to achieve better results, expressed in the respective indicators, and to accelerate the process of structural change in the regional economy, expressed in the context indicators. The output indicators associated to each priority domain of smart specialisation allow to do the analysis of the strategic dimension and defined objectives. They also assume the characteristics of result indicators as well, as they are the result of public policy options.

The monitoring of the indicators associated with the RIS3 priority domains is critical for this exercise. In the implementation of public policies, if the conclusion is that

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 36/63 -

the allocation of resources is higher than planned to certain domains than to others, this situation may force to changes in the management trajectory. On the other hand, the allocation of resources may be adequate in relation to the planned but the results are not always the expected, forcing also changes in the strategy. The bottom-up and top-down logical approaches are thus complementary. The indicators associated to the priority domains are the nodal points of the whole monitoring model. It is the information obtained at this level that allows, in every moment, to improve the fine tuning of public policies.

5.3 Monitoring the regional innovation performance

33. The context indicators ensure the monitoring of the main variables associated with the regional innovation performance of the region and allow a comparative performance analysis with other national and European regions, as S3 strategies are, by definition, outward oriented policy agendas. The context indicators provide a picture of the competitiveness of the regional economy and the evolution of the regional innovation system as a whole, monitoring if the region is achieving or not its goals.

Within the framework of the NORTE RIS3 monitoring system, the indicators of the Regional Innovation Scoreboard (Hollanders & Es-Sadki, 2017))[11] will be used as context indicators. It is an analytical tool that allows, from a set of indicators, to identify the strengths and weaknesses of the regional innovation systems, as well as to produce synthetic information in the form of a composite index that measures the quality of each region's overall innovation performance.

The 2017 edition of the Regional Innovation Scoreboard is based on 18 indicators that are organized in four domains: the basic conditions, the investments, the innovation activities and the economic impacts (the list of indicators is presented in Annex II).

Best Practice: Regional Innovation Scoreboard (RIS) as context indicators for S3
What is the Regional Innovation Scoreboard?
• The Regional Innovation Scoreboard (RIS) is a regional extension of the European Innovation Scoreboard (EIS). It provides a comparative assessment of regional

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[11] This document is available at: http://ec.europa.eu/docsroom/documents/23881

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 37/63 -

innovation systems performance, replicating the EIS methodology to the extent possible in terms of data availability. Compared to the EIS, the RIS has a stronger focus on the performance of small and medium-sized enterprises (SMEs).

- The RIS 2017 edition covers 220 regions across 22 EU countries with Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta included at the country level. In addition, the Regional Innovation Scoreboard also covers regions from Norway, Serbia, and Switzerland.

Regional performance groups

- Europe's regions have been classified into four innovation performance groups: regional Innovation Leaders (53 regions), regional Strong Innovators (60 regions), regional Moderate Innovators (85 regions), and regional Modest Innovators (22 regions).

- A more detailed breakdown of these performance groups is obtained by splitting each group into a top one-third (assigned with a '+'), middle one-third, and bottom one-third (assigned with a '-') regions.

- The most innovative regions will be Innovation Leaders + and the least innovative regions will be Modest - Innovators.

How do the regions from the Monitoris3 project classify within the RIS?

- The regions involved in the MONITORIS3 project perform quite diversely in the 2017 edition of the Regional Innovation Scoreboard.

- **Nordland** (in Norway) is a NUTS 3 level region which is part of Nord-Norge, which in turn is classified as a "regional Strong Innovator".

- **Norte** (in Portugal) and **Veneto** (in Italy) are both classified as "regional Moderate + Innovators".

- **Galicia** (in Spain) is classified as a "regional Moderate Innovator".

- **Dubrovnik and Neretva** (in Croatia) is a NUTS 3 level region which is part of Jadranska Hrvatska, which in turn is classified as a "regional Moderate - Innovator".

- **Vest** (in Romania) is classified as a "regional Modest – Innovator".

- In Annex II, these comparisons are presented, as well as those that result from the analysis of each of the partial indicators that constitute the Regional Innovation Scoreboard

5.4 Monitoring RIS3 strategic and transversal objectives

34. The follow-up and monitoring of smart specialisation strategies presupposes the existence of a system of indicators that measure results in order to reveal how the financial resources are translated into results that achieve the policy objectives. The benchmarking of results should be operationalized through a coherent indicators system that is anchored in the outlined strategy.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 38/63 -

Considering that the smart specialisation strategy is an ex ante conditionality of the Regional Operational Programme, the NORTE RIS3 result indicators system should be a subset of the result indicators of the investment priorities that include conditions for the selection of projects associated to the alignment with the regional strategy of smart specialisation (see the list of result indicators in Annex III).

In this section of the monitoring system, the indicators need to be presented by priority domains of NORTE RIS3 in a disaggregated way, namely the output indicators, in order to see how each domain is contributing to the strategic and transversal objectives of the RIS3 and, therefore, to the evolution of the regional innovation system. Additionally, it is considered interesting to benchmark the development of the priority domains with other regions that prioritize the same areas.

5.5 Monitoring the policy mix

35. The monitoring of the S3 presupposes the existence of input and output indicators to ensure operational monitoring and thus enable an assessment of the progress of S3 implementation. The first set of indicators corresponds to the output indicators set out in the NORTE 2020 investment priorities that include conditions for the selection of projects associated to the alignment with the regional smart specialisation strategy (see the list of output indicators in Annex IV).

In addition to the indicators for the implementation of the regional operational programme, it is necessary for the RIS3 monitoring system to have a set of input indicators (see the list of input indicators in Annex V) drawn from the Regional, National and European Operational Programmes that allow a complete understanding of the implementation of the smart specialisation strategy.

Currently, a substantial number of regional, national and European policy programmes and instruments exist to promote innovation, growth and jobs or interregional cooperation. A better linkage of these policies and instruments across different governance levels is needed to increase their impact in delivering key European priorities.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 39/63 -

As stated by the European Commission (2017)[12], stronger strategic inter-regional cooperation and sustainable linkages between regional ecosystems along smart specialisation priority areas can increase competitiveness and resilience, as illustrated by Vanguard Initiative for New Growth through Smart Specialisation[13], the Thematic Smart Specialisation Platforms[14] and the Galicia - Norte de Portugal Smart Specialisation Strategy (RIS3T) (GAIN & CCDR-N (2015))[15], the first cross - border RIS3 at European level.

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[12] This document is available at:
http://ec.europa.eu/regional_policy/sources/docoffic/2014/com_2017_376_2_en.pdf

[13] More information available at: https://www.s3vanguardinitiative.eu/

[14] More information avaliable at: http://s3platform.jrc.ec.europa.eu/s3-thematic-platforms

[15] This document is available at: http://www.ris3galicia.es/wp-content/uploads/2016/07/RIS3T_INGLES.pdf

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 40/63 -

6. RIS3 Evaluations

36. The monitoring of public policies and RIS3, in particular, is a coherent way of collecting, processing and systematizing information. This information is important in itself, allowing different uses. One of the main uses are the evaluation exercises. The monitoring and evaluation of public policies use the same type of information. The way it is used and the purposes are different, although complementary. There is no good evaluation if there is no good monitoring as well.

In the Global Assessment Plan of PORTUGAL 2020, two evaluations are planned for national and regional research and innovation strategies for smart specialisation, namely: (i) "Evaluation of the process of establishing RIS3 strategies: network and first results" (2017) and (ii) "Evaluation of the contribution of PORTUGAL 2020 to the implementation of the RIS3 Strategies" (2018).

The first is a process evaluation, with the following objectives: (i) to evaluate how S3 was integrated into the PORTUGAL 2020 implementation process, namely in the selection of operations and follow-up and monitoring (including capacitation and dynamisation); (ii) to evaluate the governance model adopted that, in a multilevel logic, integrates S3 governance with the governance established in the Partnership Agreement and (iii) to identify the integration dimensions of the R&I Strategies for a Smart Specialisation in the PORTUGAL 2020 that need to be adjusted and improved.

The second is an impact assessment with the following objectives: (i) to evaluate the impact of the application of the European Structural and Investment Funds (ESIF) in the implementation of the regional S3 and in the consolidation and development of the 7 Regional Research and Innovation Systems; (ii) to evaluate the impact of the application of the ESIF in the implementation of the national S3 and in the consolidation and development of the National Research and Innovation System; (iii) to evaluate the relevance and effectiveness of the mechanisms for governance and monitoring and evaluation of the ESIF and its articulation with the S3.

37. Beyond these evaluations, the European Commission carried out a first assessment about the state of play concerning the implementation of the RIS3 in Portugal (Technopolis Group, 2017). The purpose of the study was to assess how the Smart Specialisation Strategies were being translated into selection criteria in the

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 41/63 -

evaluation of proposals that are submitted to European Structural and Investment Funds (ESIF) OP 2014-2020 in Portugal and also to appraise the functioning of the different RIS3 governance systems that have been put in place. The selected programmes for analysis included one national programme (COMPETE 2020) and two regional programmes (NORTE 2020 and CENTRO 2020).

Concerning the governance model, the study found that despite a number of challenges in the governance of RIS3, particularly at the national level, the institutional set-up is well adapted for achieving the RIS3 objectives. In the Centro and Norte regions, local stakeholders have significantly been involved in the full RIS3 development and implementation process, including selection of priority areas, participation in smart specialisation platforms and involvement in governance bodies.

Regarding the selection criteria/procedures, the study concluded that the policy instruments that are being used for the implementation of RIS3 strategies use different selection criteria according to the specific instruments and project typologies. The challenge lies in designing the selection criteria and procedures that reward the excellence and avoiding that evaluating the alignment with RIS3 does not become an administrative exercise. Likewise, the role of regions in the selection process could be strengthened in the future. Promoting thematic calls designed for specific thematic priority areas could be interesting as it would help to unlock the innovation potential.

The findings of this assessment suggested to introduce some changes to achieve a greater concentration of funding in some selected thematic areas characterised by the highest innovation potential. They also noted that there was still limited information available to appraise the actual outcomes and the two forthcoming evaluation studies led by the National Innovation Agency should shed additional light on developments taking place within the specific priority areas. There was a general agreement among the consulted stakeholders about the need of improving the RIS3 monitoring framework.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 42/63 -

7. Closing Remarks

38. NORTE RIS3 is a strategy. The monitoring system must reflect this strategic nature and therefore be comprehensive. It is not a matter of monitoring a specific public policy objective and its financial instrument. It is a matter of consistently monitoring different public policy objectives, which are not always at the same hierarchical level in the strategy's "objectives tree", and the implementation of the corresponding financing instruments.

   To build a monitoring model it is necessary to understand the strategy to be monitored. It is necessary to understand the methodology that determined public policy choices and options. It is necessary to understand these choices and options, which have resulted in the selection of eight priority domains of smart specialisation with different relative importance for the development of Norte Region. Supporting one or another domain has consequences on the achievement of the objectives and vision of NORTE RIS3.

39. NORTE RIS3 monitoring is not an end in itself. The monitoring serves to verify if the objectives of the strategy for smart specialisation are being pursued, providing information about possible deviations, which is fundamental for making choices and changes in the path initially established. At the limit, deviations can be so significant that it becomes necessary to review the strategy, namely if it is considered that the initial assumptions are no longer valid in the current context.

   The monitoring serves to support the decision on the public policies to be developed in each moment to reach its objectives. It needs to be integrated into NORTE RIS3 governance model. Monitoring is therefore critical for the governance model to work, ensuring the relevant stakeholders involvement and an informed public decision.

40. NORTE RIS3 does not have an autonomous and exclusively budgetary framework dedicated to its financing. The financing of this strategy depends on the resources provided by the Norte Regional Operational Programme 2014-2020 (NORTE 2020), which is an autonomous exercise of programming, although NORTE RIS3 constitutes its ex ante conditionality.

   It is necessary to monitor NORTE 2020 and NORTE RIS3 without risks of overlap and redundancies in the work to be developed, and also to understand the financial

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 43/63 -

instruments of NORTE 2020 that contribute to the achievement of NORTE RIS3 objectives. It is necessary to articulate NORTE 2020 and NORTE RIS3 input, output and result indicators and their targets so that the implementation of each public policy programming can be monitored. It also becomes necessary to articulate the governance model of NORTE RIS3 and NORTE 2020 as they are related in their decisions.

41. The context indicators were fundamental for the diagnosis in the preparation of RIS3. They allow to identify strengths, weaknesses, threats and opportunities for regional development. This analysis allows to identify the vision of the strategy. Based on the vision, strategic objectives are defined and its follow-up is measured by result indicators. The definition of the strategic objectives and the result indicators allows to establish the policy mix of the strategy and its input and output indicators. This represents the top-down logic in the design of any regional development strategy.

The RIS3 is a distinct strategy by the fact that thematic and sectoral bets in the priority domains of smart specialisation allow, with the same mix of public policies, to achieve better results, expressed in the respective indicators, and to accelerate the process of structural change in the regional economy, expressed in the changes in their context indicators. The output indicators associated to each priority domain of smart specialisation enables the analysis of the strategic dimension and the defined objectives. They also assume the characteristics of result indicators, as they are the result of public policy options.

42. Monitoring represents the same exercise but in a bottom-up logic. The aim is to monitor whether resources are allocated in the planned way, whether the achievements are the ones planned and are focused on the most relevant priority domains, giving rise to the expected results and to the structural change of the economy at the desired pace. The sequence starts with the "input" and "output" indicators that are associated with the monitoring of the policy mix, moving to the result indicators, including those that measure the bets in the different priority domains, allowing the monitoring of the strategic objectives. Finally, the context indicators allow to verify the overall level of achievement of RIS3 and its vision.

The monitoring of the indicators associated with the RIS3 priority domains is critical in this exercise. In the implementation of public policies, if the conclusion is that the allocation of resources is higher than planned to certain domains than to others,

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 44/63 -

this situation may force to changes in the management trajectory. On the other hand, the allocation of resources may be adequate in relation to the planned but the results are not always the expected, forcing also to changes in the strategy. The bottom-up and top-down logical approaches are thus complementary. The indicators associated to the priority domains are the nodal points of the whole monitoring model. It is the information obtained at this level that allows, in every moment, to improve the fine tuning of public policies.

43. The monitoring of public policies and RIS3, in particular, is a coherent way of collecting, processing and systematizing information. This information is important in itself, allowing for different uses. One of the main uses are the evaluation exercises. The monitoring and evaluation of public policies require the same type of information. The way it is used and the purposes are different, although complementary. There is no good evaluation if there is no good monitoring as well.

44. The RIS3 of the different regions can be key instruments for cooperation in the areas of research, development and innovation. For this cooperation to be possible, it is necessary to have similar methodological approaches and strategic planning documents for public policies. These similarities do not assume homogeneity and lack of regional specificities. They enable the identification of areas of common interest from different regions, enhancing cooperation and the promotion of joint initiatives in a wider scale.

To this end, the documents published by the European Commission are of fundamental importance. The different guides on RIS3 associated to different implementation phases and to specific themes, as well as the documents on monitoring and evaluation of the European Structural and Investment Funds (ESIF) are important working tools to improve common approaches for different regions. But, as important as the use of such documentation is also the use of common information and common indicators. As it was demonstrated in this document, the use of the Regional Innovation Scoreboard is fundamental for the comparison of the regional innovation systems of the different regions, promoting the cooperation and the development of joint initiatives.

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 45/63 -

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- 46/63 -

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- 47/63 -

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Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 48/63 -

Annex I:

NORTE 2020 Operational Programme vs NORTE RIS3

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 49/63 -

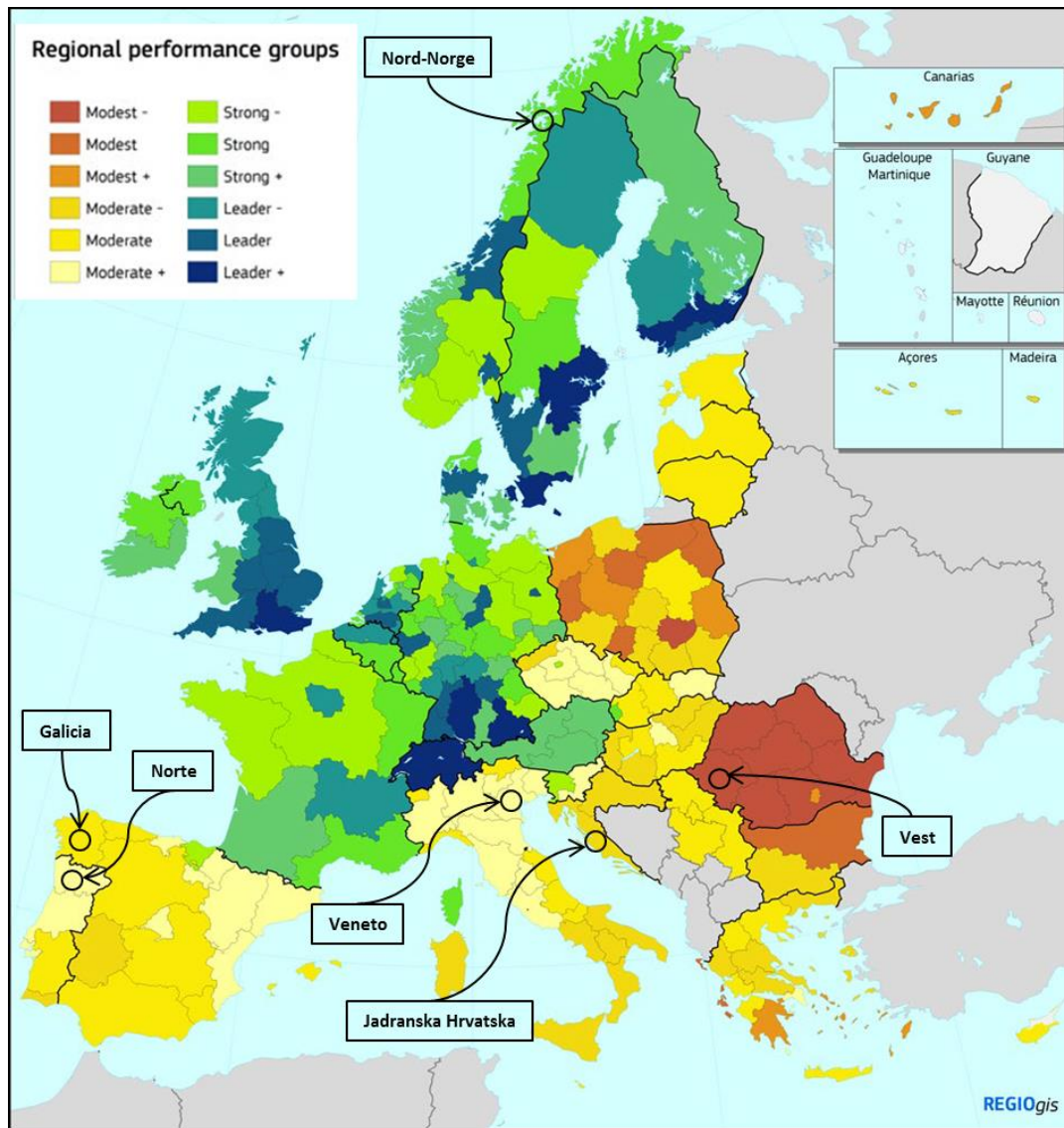**Table 1 - NORTE 2020 Operational Programme vs NORTE RIS3**

Thematic Objective (TO)	Investment Priorities (IP)
1. Strengthening research, technological development and innovation (ERDF)	1.1. Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest
	1.2. Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector
3. Enhancing the competitiveness of small and medium-sized enterprises (ERDF)	3.1. Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators
	3.2. Developing and implementing new business models for SMEs, in particular with regard to internationalisation
	3.3. Supporting the creation and the extension of advanced capacities for product and Service development
8. Promoting sustainable and quality employment and supporting labour mobility (ESF)	8.5. Adaptation of workers, enterprises and entrepreneurs to change
10. Investing in education, training and vocational training for skills and lifelong learning (ESF)	10.2. Improving the quality and efficiency of, and access to, tertiary and equivalent education with a view to increasing participation and attainment levels, especially for disadvantage groups
	10.4. Improving the labour market relevance of education and training systems
	10.5. Investing in education, training and vocational training for skills and lifelong learning by developing education and training infrastructure

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 50/63 -

Annex II:

Regional Innovation Scoreboard indicators

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 51/63 -

Table 2- Regional innovation scoreboard context indicators

Main types of indicators	Indicators	Description
Framework Conditions	Tertiary Education	Percentage of population aged 30-34 having completed tertiary education
	Lifelong learning	Percentage of population aged 25-64 participating in lifelong learning (in the four weeks preceding the interview)
	International scientific co-publications	Number of scientific publications with at least one co-author based abroad, per million population
	Most-cited scientific publications	Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications of the region
Investments	R&D expenditure public sector	R&D expenditures in the government sector and the higher education sector as percentage of GDP
	R&D expenditure business sector	R&D expenditures in the business sector as percentage of GDP
	Non-R&D innovation expenditures	Sum of total innovation expenditure for SMEs, excluding intramural and extramural R&D expenditures, as percentage of total turnover for SMEs [Source: Community Innovation Survey (CIS)]
Innovation Activities	Product or process innovations	SMEs introducing a new product or a new process to one of their markets as percentage of SMEs [CIS]
	Marketing or organisational innovations	SMEs introducing marketing or organisational innovations as percentage of SMEs [CIS]
	SMEs innovating in-house	SMEs innovating in-house as percentage of SMEs. (Innovative firms with in-house innovation activities have introduced a new product or new process either in-house or in combination with other firms. The indicator does not include new products or processes developed by other firms.) [CIS]
	Innovative SMEs collaborating	SMEs with innovation co-operation activities with other enterprises or institutions as percentage of SMEs [CIS]
	Public-private co-publications	Number of public-private co-authored research publications per million population. (The definition of the "private sector" excludes the private medical and health sector. Publications are assigned to the country/countries in which the business companies or other private sector organisations are located).
	EPO patent applications	Number of patents applied for at the European Patent Office (EPO), by year of filing, per billion regional GDP. (The regional distribution of the patent applications is assigned according to the address of the inventor).
	Trademark applications	Number of trademarks applied for at the European Union Intellectual Property Office (EUIPO) per billion regional GDP
	Design applications	Number of designs applied for at the European Union Intellectual Property Office (EUIPO) per billion regional GDP
Impacts	Employment medium and high tech manufacturing & knowledge-intensive services	Employment in medium-high/high tech manufacturing and knowledge-intensive services as percentage of total workforce
	Exports of medium and high tech manufacturing	Exports of medium-high/high tech technology-intensive manufacturing as percentage of total manufacturing exports
	Sales of new-to-market and new-to-firm innovations	Sum of total turnover of new or significantly improved products for SMEs as percentage of turnover [CIS]

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 52/63 -

Figure 9 - Regional Performance Groups
Source: Hollanders & Es-Sadki (2017).

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 53/63 -
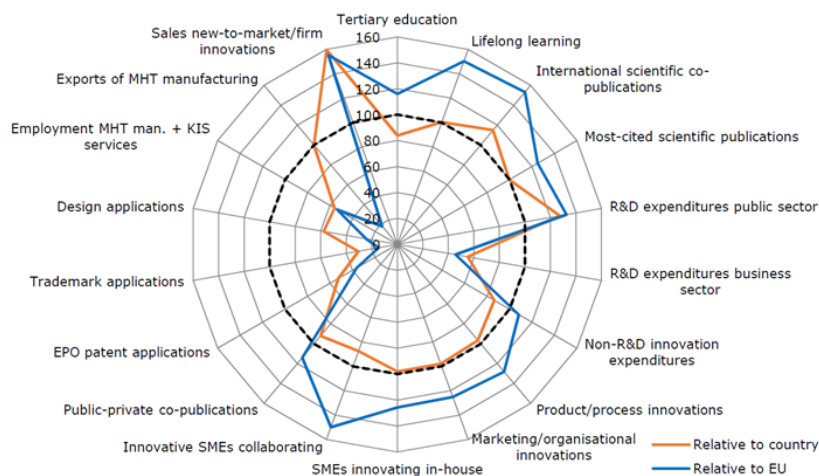
Figure 10 - Nord-Norge (which includes Nordland) Regional Innovation System
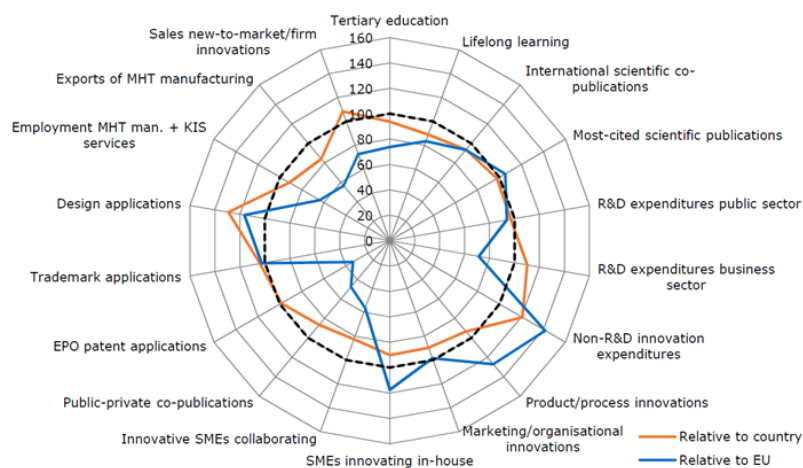
Figure 11 - NORTE Regional Innovation System
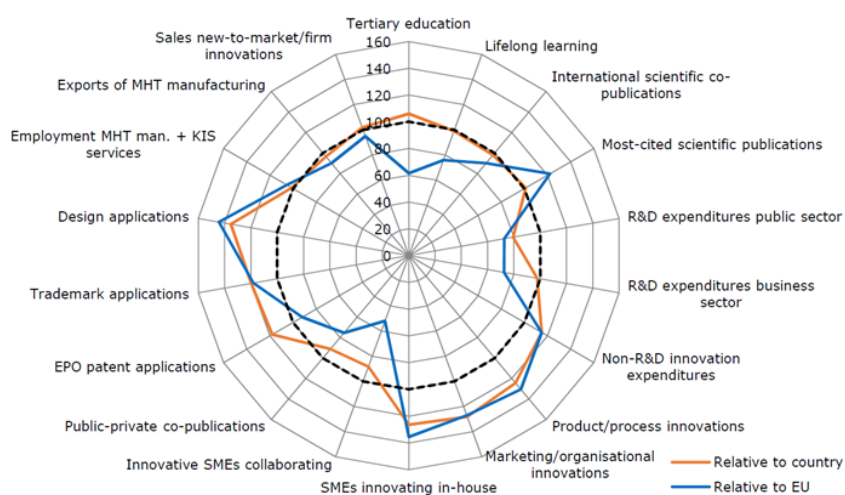
Figure 12 - Veneto Regional Innovation System

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 54/63 -
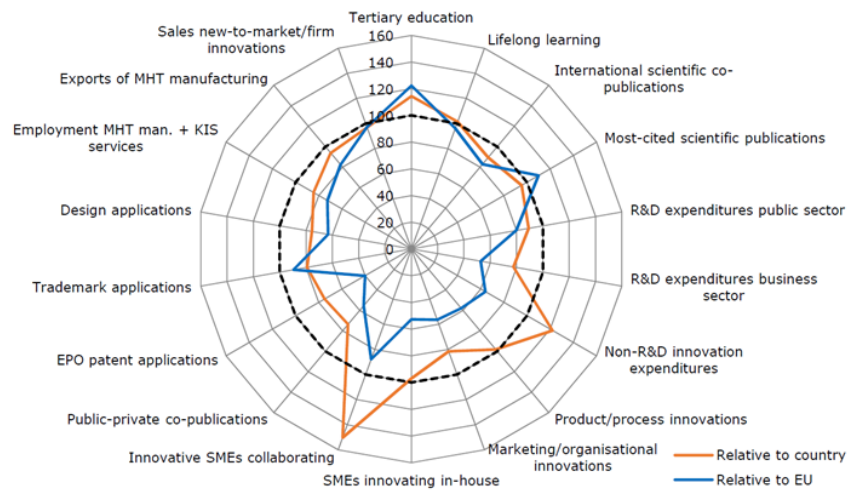
Figure 13 - Galicia Regional Innovation System
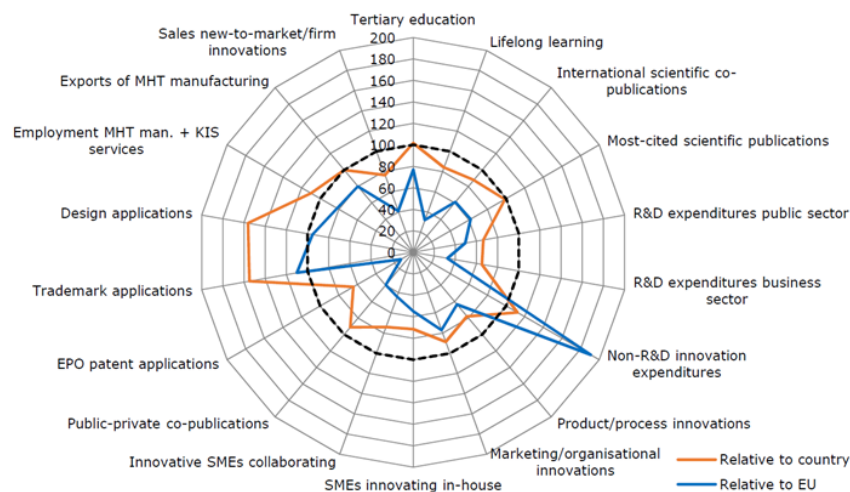
Figure 14 - Figura Jadranska Hrvatska (which includes Dubrovnik and Neretva) Regional Innovation System
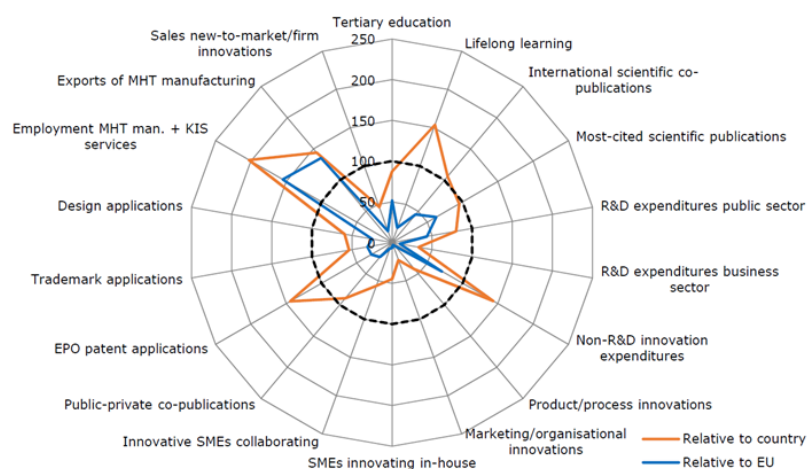
Figure 15 - Vest Regional Innovation System

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 55/63 -

Annex III:

NORTE 2020 result indicators

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 56/63 -

Table 3 - NORTE 2020 result indicators

Thematic Objectives	Investment Priorities	Result Indicators
1. Strengthening research, technological development and innovation	1.1. Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest	Patent applications to the EPO per billion GDP (in PPS)
	1.2. Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector	Proportion of gross expenditure on research and development (GERD) performed by State, higher education and private non-profit institutions financed by national and foreign enterprises funds (%)
		Proportion of gross expenditure on development of enterprises in Gross Value Added at market prices (%)
		Proportion of enterprises with 10 and more persons employed (NACE Rev. 2, B a H, J, K, M e Q) with technological innovation activities and cooperation for innovation (%)
		Proportion of turnover of enterprises with 10 and more persons employed (NACE Rev. 2, B to H, J, K, M, Q) with product innovation activities (%)
3. Enhancing the competitiveness of small and medium-sized enterprises	3.1. Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators	Proportion of births of enterprises in high and medium-high technology sectors (NACE Rev. 2 - %)
	3.2. Developing and implementing new business models for SMEs, in particular with regard to internationalisation	Proportion of turnover abroad in the turnover of companies with less than 250 persons employed (%)
	3.3. Supporting the creation and the extension of advanced capacities for product and Service development	Proportion of enterprises with 10 and more persons employed (NACE Rev. 2 B to H, J, K, M, Q) with innovation activities (%)
8. Promoting sustainable and quality employment and supporting labour mobility	8.5. Adaptation of workers, enterprises and entrepreneurs to change	Workers who consider themselves more enabled for innovation and management after training
		Proportion of PhD that remain in the company after 6 months of the end of the support (%)
10. Investing in education, training and vocational training for skills and lifelong learning	10.2. Improving the quality and efficiency of, and access to, tertiary and equivalent education with a view to increasing participation and attainment levels, especially for disadvantage groups	Certified students in ISCED 5
		PhDs completed
	10.4. Improving the labour market relevance of education and training systems	Graduated students in ISCED 4
	10.5. Investing in education, training and vocational training for skills and lifelong learning by developing education and training infrastructure	Coverage rate for rehabilitation of primary and secondary schools (% of students)

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 57/63 -

Annex IV:

NORTE 2020 output indicators

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 58/63 -

Table 4 - NORTE 2020 output indicators

Thematic Objectives	Investment Priorities	Output Indicators
1. Strengthening research, technological development and innovation	1.1. Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest	Number of R&D projects supported
		Number of research infrastructures supported
		Number of researchers working in improved research infrastructure facilities
	1.2. Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector	Number of projects of transference and use of knowledge
		Number of enterprises cooperating with research institutions
		Number of enterprises supported to introduce new products to the market
		Number of enterprises receiving grants
		Private investment matching public support to enterprises (grants)
		Number of enterprises receiving support
		Employment increase in supported enterprises
3. Enhancing the competitiveness of small and medium-sized enterprises	3.1. Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators	Number of new enterprises supported
		Number of enterprises receiving support
		Number of enterprises receiving grants
		Employment increase in supported enterprises
	3.2. Developing and implementing new business models for SMEs, in particular with regard to internationalisation	Number of enterprises receiving grants
		Private investment matching public support to enterprises (grants)
		Number of enterprises receiving support
		Employment increase in supported enterprises
	3.3. Supporting the creation and the extension of advanced capacities for product and Service development	Number of enterprises supported to introduce new products to the firm
		Number of enterprises receiving grants
		Number of enterprises receiving financial support other than grants
		Private investment matching public support to enterprises (grants)
		Number of enterprises receiving support
		Employment increase in supported enterprises
8. Promoting sustainable and quality employment and supporting labour mobility	8.5. Adaptation of workers, enterprises and entrepreneurs to change	Workers supported by training activities in a business context
		Highly qualified human resources hired by supported companies
10. Investing in education, training and vocational training for skills	10.2. Improving the quality and efficiency of, and access to, tertiary and equivalent education with a view to increasing participation and attainment levels, especially for disadvantage groups	Students supported in ISCED 5
		PhD scholarship holders supported
	10.4. Improving the labour market relevance of education and training systems	Young people supported in ISCED 4

Thematic Objectives	Investment Priorities	Output Indicators
and lifelong learning	10.5. Investing in education, training and vocational training for skills and lifelong learning by developing education and training infrastructure	Capacity of the childcare or education infrastructures supported

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 60/63 -

Annex V:

NORTE 2020 input indicators

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 61/63 -

Table 5 - NORTE 2020 input indicators

Indicators	Themes
Number of projects approved by type of instrument	Type of instrument
Total investment in projects approved by type of instrument	
Eligible investment in projects approved by type of instrument	
Incentive in projects approved by type of instrument	
Fund execution by type of instrument	
Number of beneficiary companies (under the incentives system, financial instruments and support for training and hiring)	Beneficiary companies
New companies/start-ups supported (under the incentives system, financial instruments and support for training and hiring)	New companies supported
Number of projects approved by entity type and dimensional ranking	Entity type and dimensional ranking
Total investment in projects approved by entity type and dimensional ranking	
Eligible investment in projects approved by entity type and dimensional ranking	
Incentive in projects approved by entity type and dimensional ranking	
Number of projects approved by sector of activity (under the incentives system, financial instruments and support for training and hiring)	Sector of activity
Total investment in projects approved by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Eligible investment in projects approved by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Incentive in projects approved by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Fund execution by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Number of beneficiary companies by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
New companies/start-ups supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Pre-project turnover of companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Post-project turnover of companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Pre-project Gross Value Added generated by companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Post-project Gross Value Added GVA generated by companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Pre-project turnover abroad of companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Post-project turnover abroad of companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Pre-project number of jobs in companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	

Norte Region Smart Specialisation Strategy (NORTE RIS3). A Monitoring System Methodological Approach for MONITORIS3 Project

- 62/63 -

Indicators	Themes
Post-project number of jobs in companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Pre-project number of jobs by level of qualification in companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	Level of qualification
Post-project number of jobs by level of qualification in companies supported by sector of activity (under the incentives system, financial instruments and support for training and hiring)	
Number of projects approved by scientific and technological area (under the incentives system, financial instruments and support for training and hiring)	Scientific and technological area
Pre-project R&D expenditure (under the incentives system, financial instruments and support for training and hiring)	R&D expenditure
Post-project R&D expenditure (under the incentives system, financial instruments and support for training and hiring)	
Number of projects approved by NUTS III	NUTS III
Total investment in projects approved by NUTS III	
Eligible investment in projects approved by NUTS III	
Incentive in projects approved by NUTS III	
Fund execution in projects approved by NUTS III	