# S3 NORTE
SMART SPECIALISATION STRATEGY

## NORTE REGION SMART SPECIALISATION STRATEGY
## SYNTHESIS OF THE MONITORING REPORT

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CCDRn
Comissão de Coordenação e Desenvolvimento Regional do Norte
NORTE2020
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PORTUGAL 2020
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## 1. RIS3 NORTE: concepts, priority domains, vision and goals

The smart specialisation paradigm is based on the principle that innovation and competitiveness promotion strategies should be based on the characteristics and assets of the respective regions. Therefore, it is up to the regions and their institutions and governance models to define an R&D and Innovation strategies that concentrate their resources on a limited number of priorities, on which it is possible to achieve an overall competitive critical mass.

These strategic investments should combine a vertical perspective of value chain with a horizontal perspective of a related variety, exploring the potential of different cross-sectoral technological and entrepreneurial bases, promoting inter- and intra-sectoral (intra-industry) spillover and the internationalisation of the regional innovation system . Building such a strategy requires the application of the following set of principles set out in the 'Guide to Research and Innovation Strategies for Smart Specialisations' (Foray et al., 2012), published by the European Commission:

- **Choices and critical mass** – identifying a limited and specific set of priorities, which should not be sectors or vertical value chains, but rather multi-sectoral domains coordinated in accordance with a specialisation rationale, which should concentrate the majority of the financial resources for public policies;
- **Related variety** – diversifying the regional specialisation profile, by exploring cross-sectoral synergies and combining cognitive and productive bases and vertical and horizontal views, thus avoiding lock-in risks arising from excessive specialisation;
- **Competitive advantages** – coordinating capabilities in the areas of science, technology and innovation with the needs of the regional economy, through an entrepreneurial process of discovery;
- **Connectivity and clusters** – promoting internal and international connectivity and the related variety in economic activities;
- **Quadruple helix** – adopting a collaborative and open innovation approach, engaging companies (technology producers and advanced users), universities, institutions and users.

To formulate the Smart Specialisation Strategy for the Norte Region (RIS3 NORTE), it was adopted a six-step approach, set out in the aforementioned guide, which comprises the following activities: (i) analysis of the regional context and potential for innovation; (ii) set up of a sound and inclusive governance structure; (iii) production of a shared vision about the future of the region and the strategic goals; (iv) selection of a limited number of priorities for regional development; (v) establishment of a suitable policy mix; and (vi) integration of monitoring and evaluation mechanisms.

Based on the paradigm and its concepts, as well as on the methodology set out in the aforementioned guide, the starting point for RIS3 NORTE was the construction of a conceptual framework that allowed identifying the respective priority domains for smart specialisation (Figure 1.1).

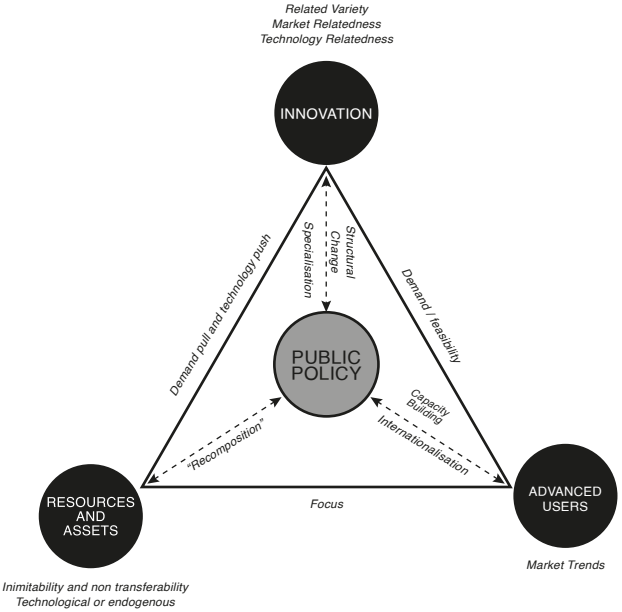



**Figure 1.1 – Analytical framework for the definition ofpriority domains for smart specialisation**
Source: adapted from CCDR-N (2014)

A particular domain is considered a priority when there are, or it is possible to achieve, relevant regional critical masses in the three vertices of a triangle, corresponding roughly to (i) the regional entities of the scientific and technological system, (ii) technology producers, and (iii) advanced users of this technology. At the centre of this triangle is established the public policy rationale from which the interaction of these three vertices can be developed in the context of the ecosystem of each priority domain.

Based on the analytical model described above and the methodology that was developed, eight priority domains were identified for RIS3 NORTE, categorised as Nuclear, Emerging and Wild Card (Figure 1.3).

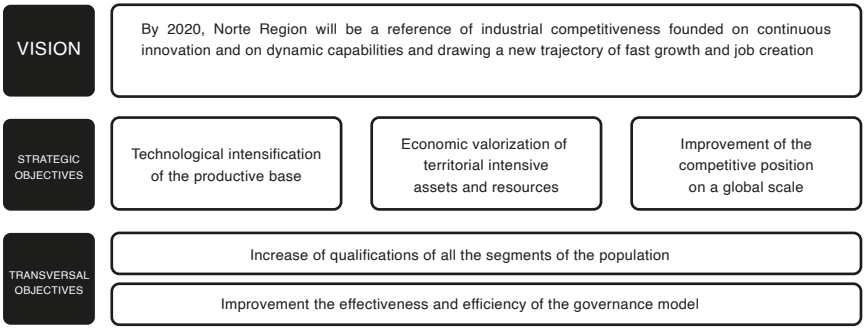

**Figure 1.2 – RIS3 NORTE priority domains and respective hierarchy**
Source: adapted from CCDR-N (2014)

At the core of RIS3 NORTE there are four nuclear domains, namely (i) Culture, Creativity and Fashion; (ii) Mobility Industries and Environment; (iii) Advanced Manufacturing Systems, and (iv) Food and Environmental Systems. The domains classified as emerging are (i) Health and Life Sciences and (ii) Symbolic Capital, Technology and Tourism Services. Lastly, the priority domains (i) Marine technologies and economy and (ii) Human Capital and Specialised Services are considered the regional investments involving a higher risk (wild cards).

Nuclear priority domains have a strong industrial character, corresponding to strongly consolidated areas of the regional economy, with a potential for coordination with each other and with other priority domains (emerging and wild card),

functioning as structuring elements of RIS3 NORTE. Emerging domains are related to economic areas that need to be consolidated, offering an important resource and asset base, as well as relevant economic opportunities whose value is still below their potential. Lastly, wild cards correspond to areas that, taking into account the expression of their resources and assets, can represent opportunities for future regional development and latent competitive advantages.

Once the vision and the strategic and cross-cutting goals of RIS3 NORTE were set (Figure 1.4), the exercise was completed with the definition of their relation with the different priority domains.




The strategic goal 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 finished goods, as well as engineering knowledge and services, in domains such as Advanced Manufaturing Systems; Mobility Industries and Environment; Culture, Creativity and Fashion; Health and Life Sciences, or Human Capital and Specialised Services. The strategic goal of the economic enhancement of territorially intensive assets and resources is more closely associated with other domains, such as Symbolic Capital, Technology and Tourism; Food and Environmental Systems, or Marine technologies and economy Activities.

11. However, not all domains make identical contributions to each of the strategic goals. The Advanced Manufaturing Systems, Mobility Industries and Environment, Health and Life Sciences domains are expected to make a more significant

contribution than the others to the strategic goal of technological intensification. The Symbolic Capital, Technology and Tourism domain is also expected to make a more relevant contribution than the others to the goal of economic enhancement of territorially intensive assets and resources.

This separation of domains according to their main contributions to strategic goals is more analytical than empirical. For example, domains such as Food and Environmental Systems or Marine technologies and economy also make contributions to the strategic goal of technological intensification. On the other hand, the contributions of domains such as Culture, Creativity and Fashion or Health and Life Sciences to the strategic goal of economic enhancement of territorially intensive resources and assets is not negligible.

What separates these contributions is the mobilisation of different types of resources and assets from each priority domain: when technological resources and assets (analytical and synthetic knowledge) are mobilised, contributions are more associated with the first goal; when non-technological resources and assets (such as symbolic capital) are mobilised, contributions are more associated with the second goal.

Furthermore, this strategic definition has two cross-cutting goals. One is aimed at improving human capital, particularly in the advanced training area related to RIS3 NORTE, while the other is focused on the regional governance model, with a view to promoting permanent interactions between companies, research and development institutions, public R&I policy and planning authorities, and innovation users or entities representing the demand and innovation consumer dimension, based on the quadruple helix model.

## 2. RIS3 NORTE Monitoring Model

### 2.1. Monitoring Model

Monitoring public policies, and RIS3 NORTE in particular, is a consistent way of gathering, processing and systematising information. This information is important in itself and allows for different uses. One of the main uses is evaluation exercises. Public policy monitoring and evaluation use the same information; it is the way it is used and the purposes for which it is used that are different, albeit complementary.

According to Community regulations, compliance with this ex ante conditionality requires the definition of monitoring mechanisms for the regional smart specialisation strategy. The monitoring system should keep up with the development of the priority areas and analyse how the implementation of the strategy is coordinated with its strategic goals and its cross-cutting goals in order to achieve the vision that has been defined.

Developing a monitoring system is crucial to assess whether the regional smart specialisation strategy is being implemented according to plan, thereby supporting decision-making on proposals for action lines, on the maintenance of priority domains or on the possible need for adjustments, thus representing a step towards in-depth evaluations. It also enables the dissemination of information on the implementation of the strategy, fostering the construction of transparent interactions with the stakeholders involved in its governance model.

The indicator system is therefore the main tool for monitoring and evaluating the implementation of smart specialisation strategies. However, the RIS3 NORTE monitoring exercise is not limited to checking compliance with the output, outcome and input indicators associated with Norte Regional Operational Programme 2014-2020 (NORTE 2020). As noted in 'Monitoring Mechanisms for Smart Specialisation Strategies' (Gianelle & Kleibrink, 2015), the concentration of inputs, outputs and outcomes in the priority areas that have been set out is one of the main differences between monitoring a smart specialisation strategy and an operational programme, i.e., the indicators may be the same, but there is a difference in terms of their distribution by priority areas for smart specialisation.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In this context, monitoring a smart specialisation strategy requires the NORTE 2020 results, output and input indicators to be broken down according to the RIS3 NORTE priority areas. Therefore, the NORTE 2020 information system must ensure the production of the information required for the proper monitoring of the implementation of RIS3 NORTE, both from an overall perspective and with regard to each priority area for smart specialisation.

Monitoring a strategy such as RIS3 NORTE consists of checking the extent to which its goals are being achieved. Since it is a strategy, there are different goals and these goals are not all at the same hierarchical level. Although they are all important, delivering the strategy as a whole implies the existence of goals that, due to their wide-ranging nature, are relatively more important than others.

It is therefore a matter of consistently monitoring different public policy goals which are not always at the same hierarchical level in the strategy's 'goal tree' and implementing the respective funding instruments. Indicators and their targets take on an instrumental dimension: they are used to check whether the goals are being achieved at different levels.

The figure below (Figure 2.1) shows the RIS3 NORTE monitoring system structure.

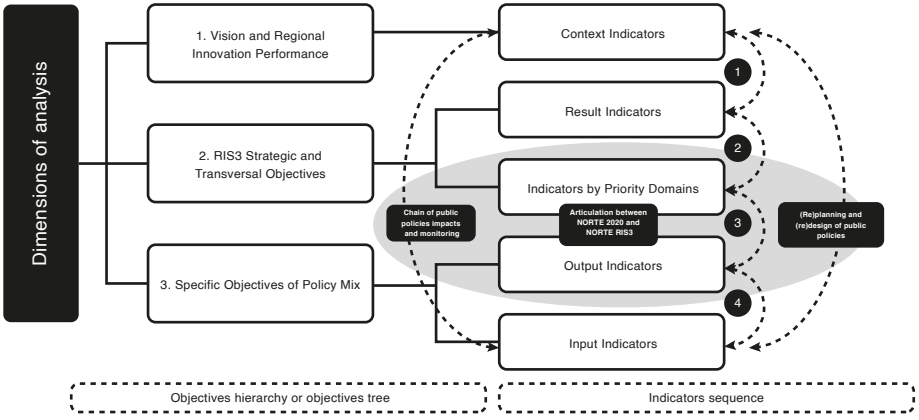


**Figure 2.1 – RIS3 NORTE monitoring system structure**
Source: Monteiro, Santos, Guimarães & Silva (2018)

On the left we see a hierarchical arrangement of the goals, or the 'goal tree'. The first two levels correspond to the two groups of goals referred to when the RIS3 NORTE strategy was outlined. Since this strategy does not have its own budget, making it necessary to mobilise those of Norte Regional Operational Programme 2014-2020, which it is an ex-ante conditionality, below these two levels, there is one last level that corresponds to the goals of public policy instruments that are mobilised to fund RIS3 NORTE.

On the right, it is presented the indicator sequence, where each type of indicator corresponds to a specific level of the goal hierarchy: 'Vision and Regional Innovation Performance' corresponds to 'Context Indicators'; 'RIS3 Strategic and `Transversal Objectives' corresponds to 'Result Indicators' and 'Indicators by Priority Domains'; 'Specific Objectives of Policy Mix results' corresponds to 'Result Indicators' and 'Input Indicators".

In the exercise of preparing the RIS3 NORTE strategy, as in any other planning exercise, we privilege a top-down approach. There is a diagnosis, based on context indicators to identify weaknesses, strengths, opportunities and threats, of the regional innovation system, which allows preparing the strategic vision. Achieving this vision implies achieving strategic and cross-cutting goals, and this achievement is assessed based on relevant result indicators.

The fact that RIS3 NORTE has different priority domains raises the need to include another type of indicator, aimed at assessing the relative importance given to each of these domains. This specificity stems from the fact that not all priority domains contribute equally to the achievement of the first- and second-level goals that have been set. On the other hand, achieving strategic and cross-cutting goals implies achieving specific policy mix goals, and this achievement is assessed based on input and output goals.

Monitoring is a bottom-up exercise and, therefore, the opposite of the planning exercise. It starts by checking whether the specific policy mix goals are being achieved, based on the input and output indicators. Then, procedes by cheking whether transversal objectives are being achieved, based on the result indicators and priority domain indicators. Lastly, the exercice tries to ascertain whether the desired vision is being achieved, checking the potential for structural changes to the regional economy based on the context indicators.

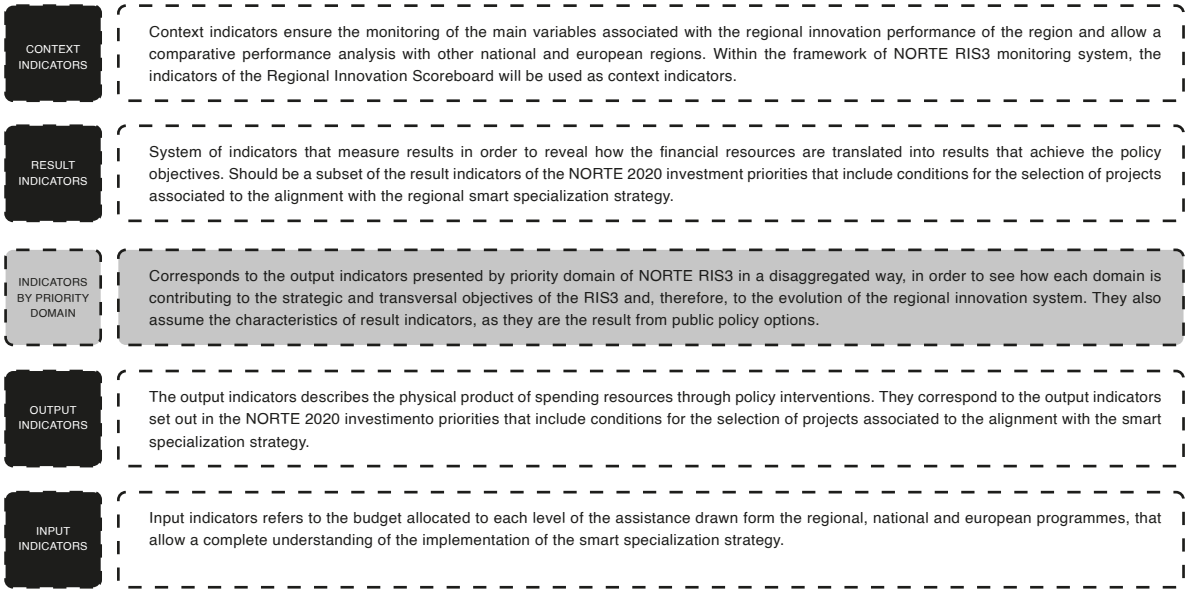


**Figura 2.2 - RIS3 NORTE Monitoring Indicators**

The monitoring exercise is primarily aimed at checking for gaps between the implementation of the strategy and what had been planned. If there are gaps, management decisions must be made that enable implementing the strategy according to plan. If there are no gaps and the first- and second-level goals are not being achieved, it will be necessary to overhaul the strategy, adjusting it to the current circumstances and considering constraints and capabilities that had not been taken into account when it was being prepared.

Monitoring is therefore not an end in itself. It is used to support management or strategic decisions. The bottom-up and top-down approaches are complementary and coordinated over time. Public policy and planning monitoring exercises support each other throughout the strategy's implementation life cycle.

RIS3 NORTE stands out for the fact that its thematic and sectoral investments in the priority domains for smart specialisation allow achieving better results with the same public policy mix, shown in the respective indicators, and speeding up the process of inducing structural changes to the regional economy, shown by changes in the respective context indicators. Therefore, the output indicators associated with each priority domain for smart specialisation allows to analyse the strategic dimension and the goals that have been set for it. They also take on the characteristics of result indicators, as they are the outcome of public policy options.

Monitoring the indicators associated with RIS3 NORTE priority domains is absolutely critical in this exercise. Whilst implementing policies, we may be allocating more resources than planned to certain domains, and this will force us to correct our management trajectory. The fact that we are allocating resources according to plan does not always allow us to reach the desired results, and this will force us to change our strategy.

As mentioned above, the bottom-up and top-down approaches are complementary, and the indicators associated with the priority domains are the nodal point for the entire monitoring model. It is the information obtained at this level that makes it possible to constantly fine-tune public policies.

**2.2. RIS3 NORTE and public policy programming**

The development of Regional Smart Specialisation Strategies is an ex ante conditionality set out in Community regulations for the 2014-2020 programming period. This smart specialisation paradigm establishes the rationale for public policy investments and interventions within the scope of the Europe 2020 Smart Growth Strategy. Consequently, RIS3 NORTE, developed based on the smart specialisation paradigm, is a reference for the application of NORTE 2020 resources.

Since RIS3 NORTE is an ex ante conditionality for NORTE 2020, the framework and degree of alignment of its priority domains is a condition for admissibility (Exclusive Alignment) and a criterion for the analysis of the merits of different types of projects (Preferential Alignment), namely in the following TO (Thematic Objectives) and IP (Investment Priorities):


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• TO 1 – 'Strengthening research, technological development and innovation', namely 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 investment in R&D companies, developing connections and synergies between companies, research and development centres and the higher education sector' (ERDF);

• TO 10 – 'Investing in education, training and lifelong learning', namely IP 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 disadvantaged groups' (ESF).

Despite the fact that they are not subject to the Exclusive Alignment condition, there are other types of projects whose framework and degree of alignment with RIS3 NORTE priority domains are a criterion for merit analysis (Preferential Alignment), namely:

• TO 3 – 'Enhancing the competitiveness of SMEs', namely IP3.1 – '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 – 'Developing and implementing new business models for SMEs, in particular with regard to internationalisation' (ERDF), and IP 3.3 – 'Supporting the creation and the extension of advanced capacities for product and service development' (ERDF);

• TO 8 – 'Promoting sustainable and quality employment and supporting labour mobility', namely IP 8.5 – 'Adaptation of workers, enterprises and entrepreneurs to change' (ESF); IP 8.3 – 'Self-employment, entrepreneurship and business creation including innovative micro, small and medium-sized enterprises' (ESF), and IP 8.8 – 'Supporting the development of business incubators and supporting self-employment, micro enterprises and the creation of enterprises' (ERDF);

• TO 10 – 'Investing in education, training and vocational training for skills and lifelong learning by developing education and training infrastructure', including 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 summarises the main policy instruments mobilised by RIS3 NORTE through NORTE 2020, their relative budget and alignment conditions (see list of major TOs and IPs in the Annex). Overall, these public policy instruments represent around 1.6 billion euros of co-financing by the NORTE 2020 European Structural and Investment Funds (ESIF), approximately 50% of their allowance.

| THEMATIC OBJECTIVE | INVESTMENT PRIORITY |
|---|---|
| 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. Enhancimedium-sizedng the competitiveness of small and 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 |

**Figure 2.2 – RIS3 NORTE Policy Instruments**

In this context, the monitoring and evaluation of RIS3 NORTE is significantly linked to the monitoring and evaluation of NORTE 2020, which means that its input, output and result indicators and their targets are also key instruments for monitoring and evaluating the smart specialisation strategy

## 3. RIS3 NORTE Monitoring

### 3.1 Synthesis

Until 31th december 2018, a total of 4,362 projects in the eight priority domains of RIS3 NORTE have been approved, involving an eligible investment of approximately 3,554 million euros, co-financed by NORTE 2020 (42%) and Competitiveness and Internationalisation Operational Programme 2014-2020 (COMPETE 2020) (58%) (Table 3.1).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 110 | 3% | 142,211,158 | 4% |
| 1.2 | Incentive Systems for R&D; Incentive System for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 453 | 10% | 1,112,884,752 | 31% |
| 3.1 | Incentive System for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 74 | 2% | 61,996,874 | 2% |
| 3.2 | Incentive System for Internationalisation; Support System for Collective Actions – Internationalisation | 1,476 | 34% | 493,890,889 | 14% |
| 3.3 | Incentive System for Innovation; Incentive System for Qualification; Support System for Collective Actions – Qualification | 1,451 | 33% | 1,714,940,413 | 48% |
| 8.5 | Incentive System for Training; Hiring of Highly Qualified Human Resources | 765 | 18% | 17,088,836 | 0% |
| 10.2 | Doctoral Programmes | 33 | 1% | 10,766,250 | 0% |
| Overall Total [3=1+2] | | 4,362 | 100% | 3,553,779,173 | 100% |
| | NORTE 2020 [1] | 3,244 | 74% | 1,504,781,487 | 42% |
| | COMPETE 2020 [2] | 1,118 | 26% | 2,048,997,686 | 58% |

**Table 3.1 – Approvals in RIS3 NORTE priority domains**
Source: CCDR-N, RIS3 NORTE Monitoring System

However, the transformation of RIS3 NORTE, as a strategic document, into normative documents capable of allowing for an analysis of admissibility and project merit criteria, is not indifferent to the various types. This transformation implies considering, on the one hand, concepts such as that of related variety and, on the other hand, the greater mobility of resources in the area of human capital.

Technological Specialisation Courses (CETs) and Higher Education Professional Technical Courses (TeSPs), as well as the respective equipment can be framed in various ways in different priority domains, and there are 54 projects approved corresponding to an eligible investment of approximately 42 million euros co-financed exclusively by NORTE 2020 (Table 3.2). Consolidating this information with that of Table 3.1, we conclude that 4,416 projects framed within RIS3 NORTE have been approved, involving an eligible investment of around 3,596 million euros, co-financed by NORTE 2020 (43%) and COMPETE 2020 (57%).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 10.2 | Higher Education Professional Technical Courses (TeSP) | 30 | 56% | 19,897,783 | 47% |
| 10.4 | Technological Specialisation Courses (CET) | 19 | 35% | 7,903,268 | 19% |
| 10.5 | Equipment for Higher Education Professional Technical Courses (TeSP) | 5 | 9% | 14,271,754 | 34% |
| Overall Total | | 54 | 100% | 42,072,805 | 100% |

**Table 3.2 – Approvals in multiple RIS3 NORTE priority domains**
Source: CCDR-N, RIS3 NORTE Monitoring System

Whether or not the projects are framed within RIS3 NORTE is a condition for admissibility only in IPs 1.1, 1.2, and 10.2 of NORTE 2020, while the other IPs included in its policy mix, as well as in COMPETE 2020 can be approved without this condition. So, a total of 695 projects that are not framed within RIS3 NORTE have been approved, involving an eligible investment of approximately 399 million euros, co-financed by NORTE 2020 (49%) and COMPETE 2020 (51%) (Table 3.3).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.2 | Incentive Systems for R&D; IS for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 16 | 2% | 29,314,063 | 7% |
| 3.1 | IIncentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 24 | 3% | 11,207,862 | 3% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 313 | 45% | 108,526,629 | 27% |
| 3.3 | Incentive Systems for Innovation; IS for Qualification; Support System for Collective Actions – Qualification | 205 | 29% | 248,194,452 | 62% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 137 | 20% | 2,232,395 | 1% |
| Overall Total [3=1+2] | | 695 | 100% | 399,475,400 | 100% |
| | NORTE 2020 [1] | 531 | 76% | 196,008,787 | 49% |
| | COMPETE 2020 [2] | 164 | 24% | 203,466,613 | 51% |

**Table 3.3 – Approvals outside the RIS3 NORTE framework**
Source: CCDR-N, RIS3 NORTE Monitoring System

Consolidating the information in Tables 1, 2 and 3, it reachs to 5,111 projects approved, involving an eligible investment of approximately 3,995 million euros of the policy mix of RIS3 NORTE, co-financed by NORTE 2020 (44%) and COMPETE 2020 (56%). The number of projects and the eligible investment framed in RIS3 NORTE represent, respectively, 86% and 90% of the total (Table 3.4).

[1] In this exercise, the TR&D Vouchers (IP 1.2) typology is not considered. It involves 127 approved projects and an eligible investment amount of 2,462,124 euros. This typology respects the simplified application model, implying simplified analysis of its framework in RIS3 NORTE, which is not comparable to that performed in the others.

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 110 | 2% | 142,211,158 | 4% |
| 1.2 | Incentive Systems for R&D; IS for NSME Innovation; Support System for Collective Actions – Knowledge Transfer | 469 | 9% | 1,142,198,814 | 29% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 98 | 2% | 73,204,736 | 2% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 1,789 | 34% | 602,417,518 | 15% |
| 3.3 | Incentive Systems for Innovation; Incentive System for Qualification; Support System for Collective Actions – Qualification | 1,656 | 32% | 1,963,134,865 | 49% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 902 | 17% | 19,321,231 | 0% |
| 10.2 | Doctoral Programmes; Higher Education Professional Technical Courses (TeSP) | 63 | 1% | 30,664,033 | 1% |
| 10.4 | Technological Specialisation Courses (CET) | 19 | 0% | 7,903,268 | 0% |
| 10.5 | Equipment for Higher Education Professional Technical Courses (TeSP) | 5 | 0% | 14,271,754 | 0% |
| Overall Total [3=1+2] | | 5,111 | 100% | 3,995,327,378 | 100% |
| NORTE 2020 [1] | | 3,829 | 75% | 1,742,863,079 | 44% |
| COMPETE 2020 [2] | | 1,282 | 25% | 2,252,464,299 | 56% |
| Framed in RIS3 NORTE | | 4,416 | 86% | 3,595,851,979 | 90% |

Table 3.4 – Approvals registered in the context of the RIS3 NORTE policy mix
Source: CCDR-N, RIS3 NORTE Monitoring System

### 3.2. Monitoring by priority domains

#### 3.2.1 Synthesis

In terms of approved eligible investment, nuclear domains are the most representative ones, in particular 'Culture, Creativity and Fashion' (36%); 'Mobility Industries and Environment' (19%), and 'Advanced Manufacturing Systems' (15%).

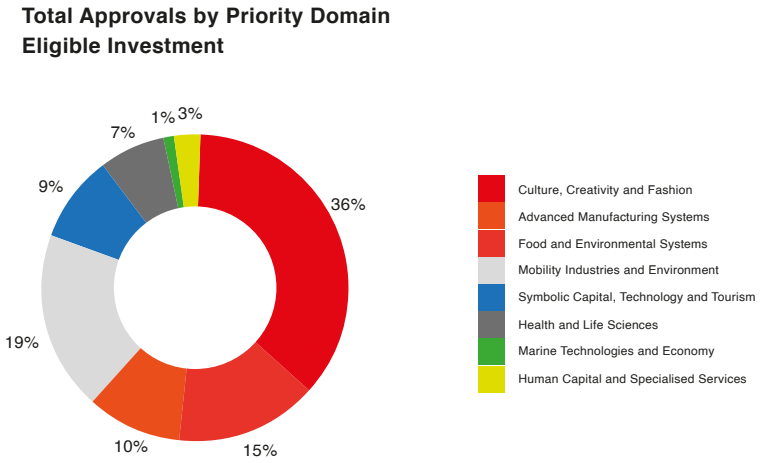



**Figure 3.1 Overall approvals by RIS3 NORTE priority domains (Eligible investment)**
Source: CCDR-N (2019), RIS3 NORTE Monitoring System

'Wild Card' domains have very little expression, with only 3% of eligible investment in 'Human Capital and Specialised Services' and 1% in 'Marine Technologies and Economy'. These data deserve reflection in view of the national and European priority given to the new blue economy and the importance of IT in nearshore outsourcing and e-government operations.

In short, the distribution of the projects that have been approved by priority domains is consistent with their relative importance as defined in RIS3, geared towards a higher concentration of investment in nuclear domains, i.e., those with the largest critical mass of resources and assets and entrepreneurial base.

46. With regard to policy instruments, in the Scientific and Technological Research Support System (SAICT) the 'Health and Life Sciences' (47%) predominates over the others. Under the Incentive Systems for TR&D, there is a greater balance among the most expressive domains, and once again the 'Health and Life Sciences' (29%) stands out. However, in Enterprise Incentive Systems (Incentive Systems for Innovation and Incentive Systems for SMEs), 'Culture, Creativity and Fashion' is the most relevant domain (40%), followed by 'Mobility Industries and Environment' (20%) and 'Advanced Manufacturing Systems' (14%).

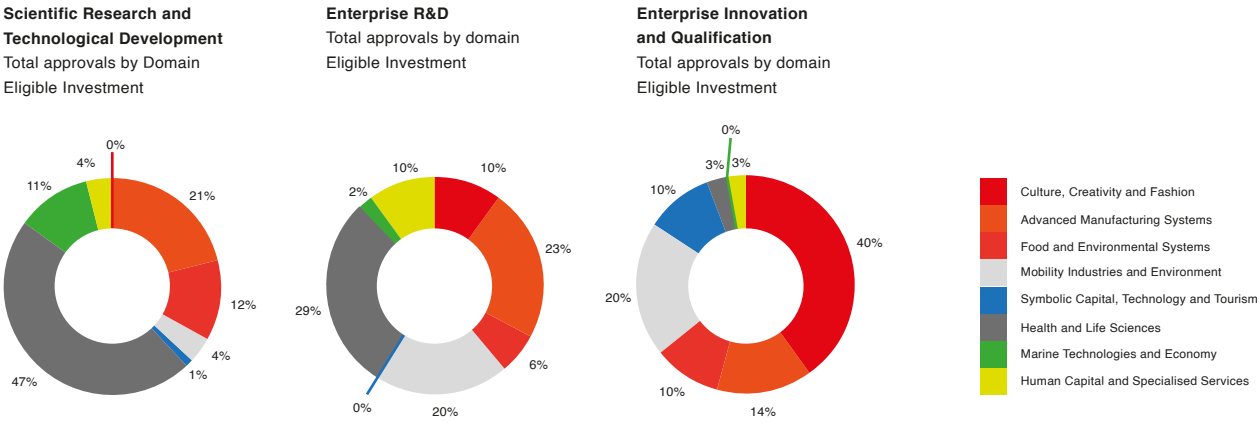



**Figure 3.2 – Overall approvals for SAICT + IS for TR&D + IS for RIS3 NORTE priority domains (Eligible investments)**
Source: CCDR-N (2019), RIS3 NORTE Monitoring System

A comparison of this information may reveal problems related to policy mix coordination. Emerging or wild card domains, such as 'Health and Life Sciences' and 'Marine Technologies and Economy', appear to have a very significant expression in the investment in R&D, more on the public side than on the private side, and, on the other hand, nuclear domains, in particular 'Culture, Creativity and Fashion', are the ones with highest levels of corporate investment in innovation.

The following sections present the main results of the monitoring and evaluation exercises concerning the implementation of RIS3 NORTE by priority domain.

### 3.2.2 Advanced Manufacturing Systems

The key enabling technologies have a cross-cutting nature, enabling the promotion of innovation in multiple technology-using sectors and leading to significant productivity gains. In the case of Norte of Portugal, there is potential for assertion in the field of information and communication technologies, production technologies, and nanotechnologies. This priority domain is based on the promotion of advanced production systems and on the integration of complementary knowledge bases, fostering the transfer of vertical and horizontal technology.

The public policy rationale for the Advanced Manufacturing Systems priority domain is as follows: '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). Its analytical framework is detailed in the next figure (Figure 3.3).

## Advanced Manufacturing Systems

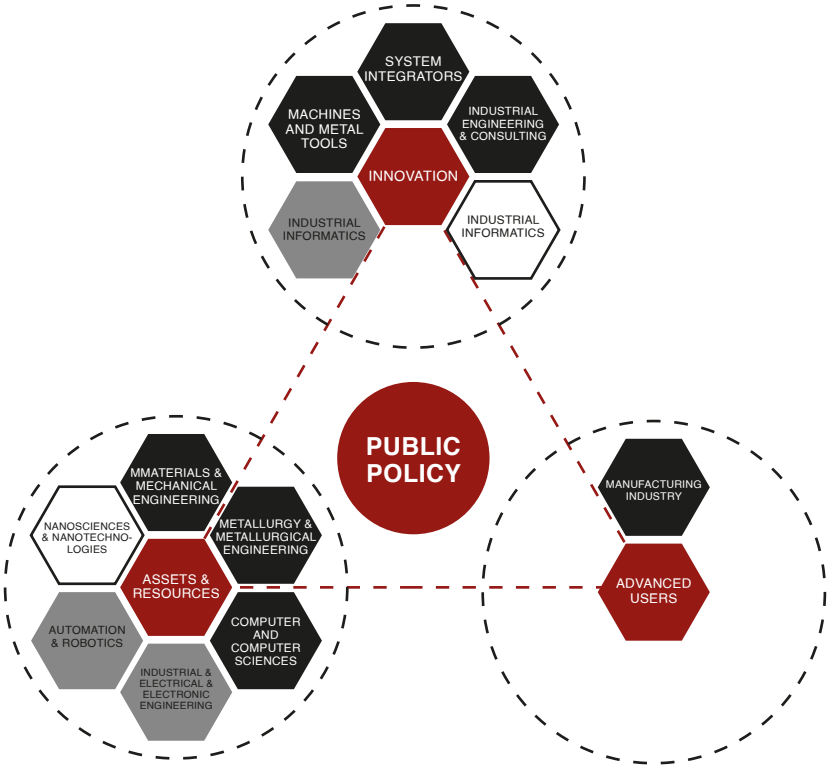



**Figure no. 3.3 – Analytical framework in the domain of Advanced Manufacturing Systems**
Source: adapted from CCDR-N (2014)

In the domain of Advanced Manufacturing Systems, 613 projects have been approved, involving an eligible investment of nearly 535 million euros, co-financed by NORTE 2020 (46%) and COMPETE 2020 (54%) (Table no. 3.5)

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 17 | 3% | 29,688,353 | 6% |
| 1.2 | Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 93 | 15% | 167,153,582 | 31% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 9 | 1% | 10,782,553 | 2% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 168 | 27% | 51,128,658 | 10% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 227 | 37% | 271,178,937 | 51% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 90 | 15% | 2,007,194 | 0% |
| 10.2 | Doctoral Programmes | 9 | 1% | 3,192,750 | 1% |
| Overall Total [3=1+2] | | 613 | 100% | 535,132,028 | 100% |
| | NORTE 2020 [1] | 442 | 72% | 248,088,706 | 46% |
| | COMPETE 2020 [2] | 171 | 28% | 287,043,322 | 54% |

**Table no. 3.5 – Approvals in the domain of Advanced Manufacturing Systems**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentive Systems, 572 projects have been approved, involving 495 million euros of eligible investment, co-financed by NORTE 2020 (42%) and COMPETE 2020 (58%). With regard to their different modalities, the breakdown is as follows:

- Incentive Systems for R&D – 72 projects, 71 million euros of eligible investment and 24% of co-financing from NORTE 2020 and 76% from COMPETE 2020;
- Incentive Systems for Innovation and Entrepreneurship – 218 projects, 362 million euros of eligible investment and 41% of co-financing from NORTE 2020 and 59% from COMPETE 2020;
- Incentive Systems for Qualification and SME Internationalisation – 282 projects, 62 million euros of eligible investment and 66% of co-financing from NORTE 2020 and 34% from COMPETE 2020.

### 3.2.3 Mobility and Environment Industries

The industrial base of the Norte Region includes activities of medium technological intensity linked to the specialised supply for the automotive industry, notably the manufacturing of moulds and plastic injection, the manufacture of electronic components and equipment and the development of polymers, composites and other advanced materials, such as technical textiles, for example. The accumulation of human capital and scientific skills in the areas of mechanics, electronics and metalwork, and supply contracts in aeronautics, therefore constitute opportunities to elevate the added value of the region's productive capacity, promoting the upgrading of certain companies for the supply of more sophisticated and demanding customers.

The public policy rationale for the Mobility and Environment Industries priority domain is the following: 'Creating value from accumulated scientific expertise in the areas of production technologies and materials, underpinned by supply contracts with important aeronautics international firms, upgrading the automotive components and moulds production industries to supply more sophisticated clients (e.g. aeronautics).'
Its analytical framework is detailed in the figure below (Figure no. 3.4).

## Mobility and Environment Industries

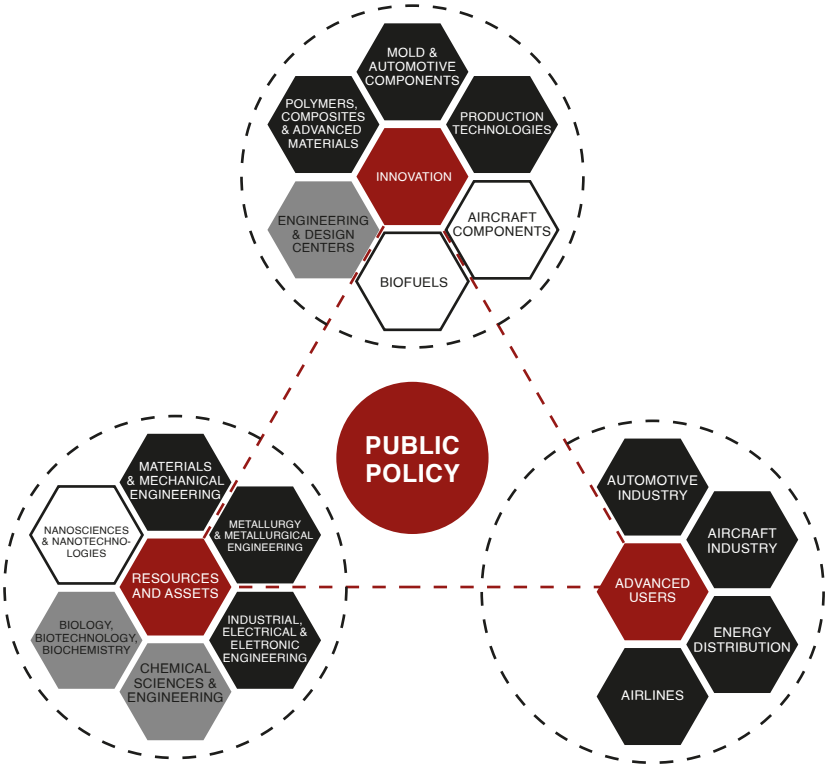



**Figure no. 3.4 – Analytical framework in the domain of the Mobility and Environment Industries**
Source: adapted from CCDR-N (2014)

In the domain of Mobility and Environment Industries, 325 projects have been approved, involving an eligible investment of nearly 675 million euros, co-financed by NORTE 2020 (16%) and COMPETE 2020 (84%) (Table no. 3.6).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 6 | 2% | 5,319,612 | 1% |
| 1.2 | Incentive Systems for R&D; Incentive Systems for NSME Innovation; Support System for Collective Actions – Knowledge Transfer | 81 | 25% | 436,075,349 | 65% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 5 | 2% | 6,183,835 | 1% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 50 | 15% | 15,273,241 | 2% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 118 | 36% | 207,526,833 | 31% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 64 | 20% | 4,084,526 | 1% |
| 10.2 | Doctoral Programmes | 1 | 0% | 148,500 | 0% |
| Overall Total [3=1+2] | | 325 | 100% | 674,611,896 | 100% |
| | NORTE 2020 [1] | 174 | 54% | 108,290,956 | 16% |
| | COMPETE 2020 [2] | 151 | 46% | 566,320,940 | 84% |

**Table no. 3.6 – Approvals in the domain of Mobility and Environment Industries**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 316 projects have been approved, involving 669 million euros of eligible investment, co-financed by NORTE 2020 (15%) and COMPETE 2020 (85%). With regard to their different modalities, the breakdown is as follows:


• Incentive Systems for R&D – 42 projects, 62 million euros of eligible investment and 8% of co-financing from NORTE 2020 and 92% from COMPETE 2020;

• Incentive Systems for Innovation and Entrepreneurship – 165 projects, 582 million euros of eligible investment and 15% of co-financing from NORTE 2020 and 85% from COMPETE 2020;

• Incentive Systems for SME Qualification and Internationalisation – 109 projects, 25 million euros of eligible investment and 46% of co-financing from NORTE 2020 and 54% from COMPETE 2020

### 3.2.4 Culture, Creativity and Fashion

The domain of Culture, Creativity and Fashion, the aim is to coordinate cultural and creative activities and the region's expressive industrial base specialised in the production of design-intensive goods and services. Recognising the importance of culture for the genesis of the creative process and taking advantage of the pioneering nature of the Norte Region, namely in the launch of a cluster of creative industries, in this domain, the aim is to stimulate innovation based on symbolic knowledge, with a particular impact on traditional specialisation industries.

58. The public policy rationale for the Culture, Creativity and Fashion priority domain is the following: '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.' Its analytical framework is detailed in the figure below (Figure no. 3.5).

## Culture, Creativity and Fashion

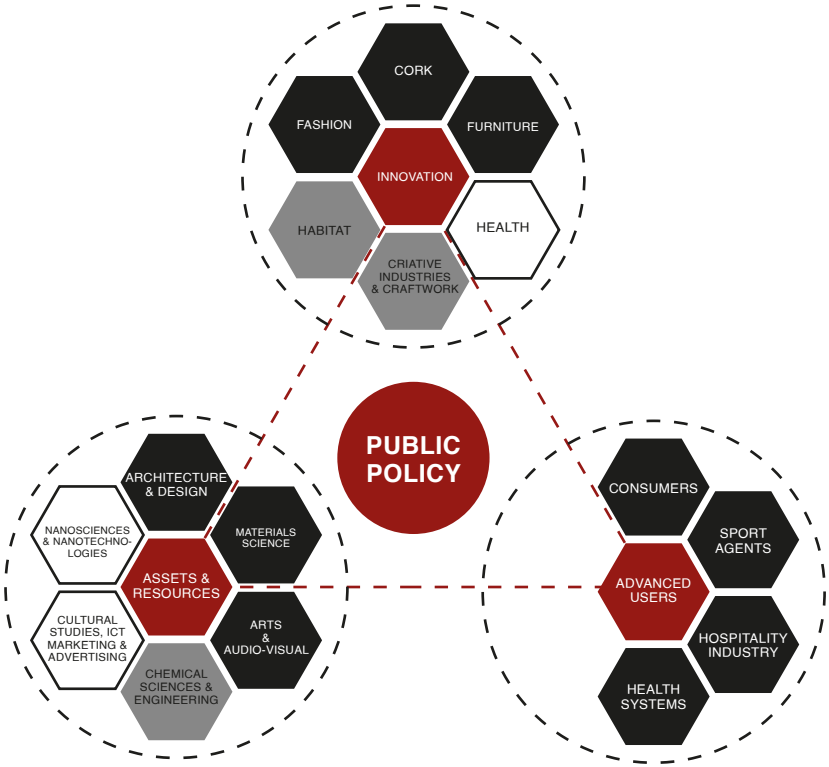



**Figure no. 3.5 – Analytical framework in the domain of Culture, Creativity and Fashion**
Source: adapted from CCDR-N (2014)

In the domain of Culture, Creativity and Fashion, 2193 projects have been approved, involving an eligible investment of nearly 1,261 million euros, co-financed by NORTE 2020 (53%) and COMPETE 2020 (47%) (Table no. 3.7).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 1 | 0% | 220,072 | 0% |
| 1.2 | Incentive Systems for R&D; Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 90 | 4% | 166,338,836 | 13% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 19 | 1% | 12,183,146 | 1% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 822 | 37% | 287,479,522 | 23% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 793 | 36% | 786,646,313 | 62% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 467 | 21% | 7,885,078 | 1% |
| 10.2 | Doctoral Programmes | 1 | 0% | 297,000 | 0% |
| Overall Total [3=1+2] | | 2,193 | 100% | 1,261,049,966 | 100% |
| | NORTE 2020 [1] | 1,646 | 75% | 672,975,377 | 53% |
| | COMPETE 2020 [2] | 547 | 25% | 588,074,589 | 47% |

**Table no. 3.7 – Approvals in the domain of Culture, Creativity and Fashion**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 2,159 projects have been approved, involving 1,243 million euros of eligible investment, co-financed by NORTE 2020 (53%) and COMPETE 2020 (47%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D – 57 projects, 30 million euros of eligible investment and 37% of co-financing from NORTE 2020 and 63% from COMPETE 2020;

• Incentive Systems for Entrepreneurship – 693 projects, 870 million euros of eligible investment and 48% of co-financing from NORTE 2020 and 52% from COMPETE 2020;

• Incentive Systems for Qualification and Internationalisation – 1,409 projects, 343 million euros of eligible investment and 67% of co-financing from NORTE 2020 and 33% from COMPETE 2020.

### 3.2.5 Food and Environmental Systems

In the priority domain of Food and Environmental Systems, the aim is to explore the potential of economic valuation resulting from the combination of research and scientific assets with research and natural and symbolic assets. Considering the productive dimension of the region, anchored in activities of agricultural and animal production and the agri-food industry, the strategic positioning must target more sophisticated market segments and explore the growth potential associated with symbolic knowledge, in line with the trends of growing appreciation for roots, tradition and product authenticity. Additionally, the intersection of the multisectoral regional business base gains relevance, becoming thematically aligned and strengthening cross innovation and the diversification of local populations' sources of revenue.

The public policy rationale for the Food and Environmental Systems priority domain is the following: 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.' Its analytical framework is detailed in the figure below (Figure no. 3.6).

## Food and Environmental Systems

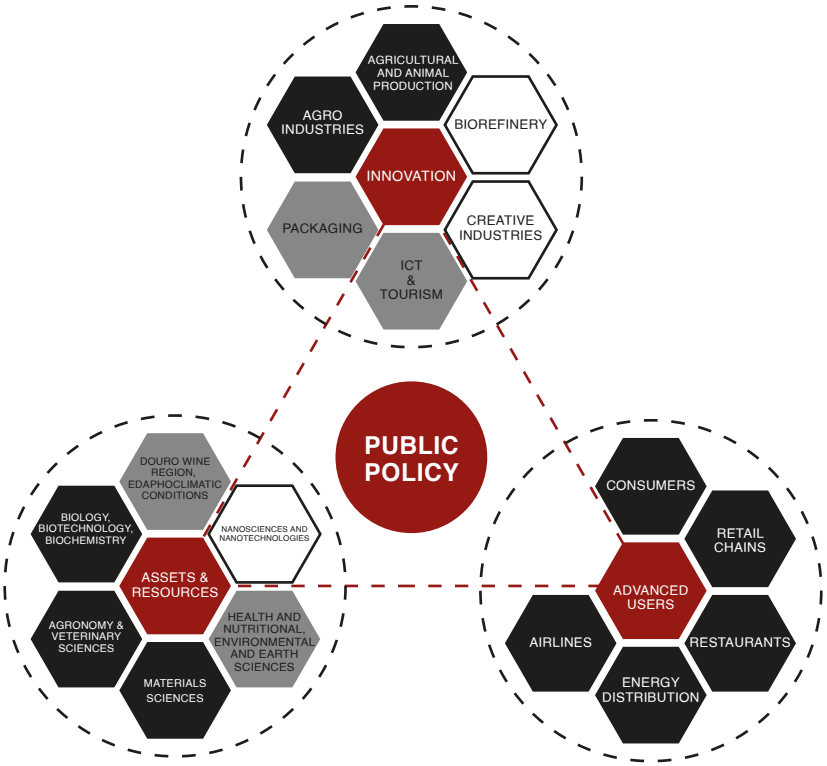



**Figure no. 3.6 – Analytical framework in the domain of Food and Environmental Systems**
Source: adapted from CCDR-N (2014)

In the domain of Food and Environmental Systems, 492 projects have been approved, involving an eligible investment of 361 million euros, co-financed by NORTE 2020 (43%) and COMPETE 2020 (57%) (Table no. 3.8).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 10 | 2% | 17,582,701 | 5% |
| 1.2 | Incentive Systems for R&D; Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 53 | 11% | 78,236,386 | 22% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 12 | 2% | 8,653,731 | 2% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 209 | 42% | 60,824,480 | 17% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 131 | 27% | 192,137,874 | 53% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 69 | 14% | 909,197 | 0% |
| 10.2 | Doctoral Programmes | 8 | 2% | 2,895,750 | 1% |
| Overall Total [3=1+2] | | 492 | 100% | 361,240,118 | 100% |
| | NORTE 2020 [1] | 387 | 79% | 156,402,479 | 43% |
| | COMPETE 2020 [2] | 105 | 21% | 204,837,639 | 57% |

**Table no. 3.8 – Approvals in the domain of Food and Environmental Systems**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 422 projects have been approved, involving 313 million euros of eligible investment, co-financed by NORTE 2020 (35%) and COMPETE 2020 (65%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D – 33 projects, 18 million euros of eligible investment and 45% of co-financing from NORTE 2020 and 55% from COMPETE 2020;

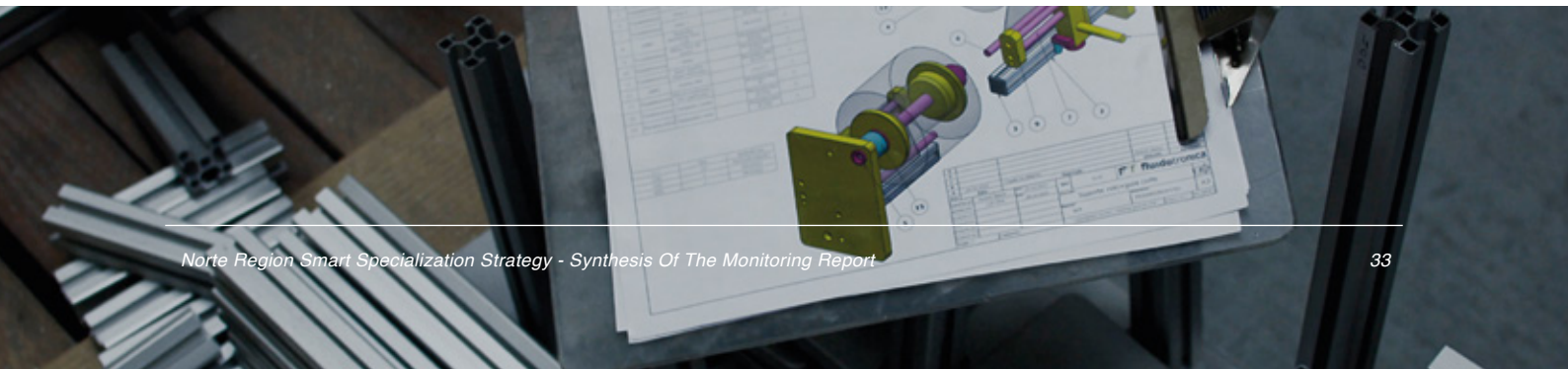
• Incentive Systems for Innovation and Entrepreneurship – 90 projects, 224 million euros of eligible investment and 22% of co-financing from NORTE 2020 and 78% from COMPETE 2020;

• Incentive Systems for SME Qualification and Internationalisation – 299 projects, 72 million euros of eligible investment and 70% of co-financing from NORTE 2020 and 30% from COMPETE 2020.

### 3.2.6 Health and Life Sciences

The Norte Region brings together resources and assets with relevant critical mass to anchor the development of a health economy based on the related variety of innovative products and services, combining different cognitive bases and in alignment with social issues and global demand trends. In this regard, the underlying specialisation focus of this area is largely defined by the emergence potential of economic activities supported by the specialisation and critical mass of existing resources and activities and the viability of the emergent internationally competitive economic activities.

The public policy rationale for the Health and Life Sciences priority domain is the following: '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).' Its analytical framework is detailed in the next figure (Figure no. 3.7).



## Health and Life Sciences

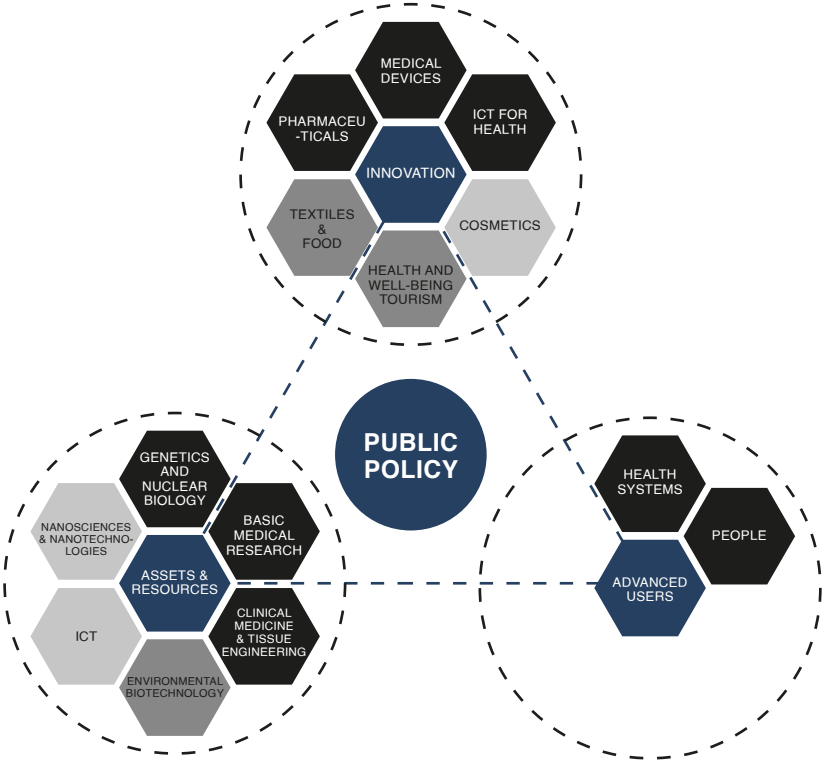



**Figure no. 3 – Analytical framework of the domain of Health and Life Sciences**
Source: adapted from CCDR-N (2014)

In the domain of Health and Life Sciences, 245 projects have been approved, involving an eligible investment of nearly 259 million euros, co-financed by NORTE 2020 (52%) and COMPETE 2020 (48%) (Table no. 3.9).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 53 | 22% | 67,269,175 | 26% |
| 1.2 | Incentive Systems for R&D; Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 60 | 24% | 117,822,245 | 46% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 2 | 1% | 1,135,927 | 0% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 41 | 17% | 11,344,944 | 4% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 53 | 22% | 56,531,934 | 22% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 24 | 10% | 759,141 | 0% |
| 10.2 | Doctoral Programmes | 12 | 5% | 3,712,500 | 1% |
| Overall Total [3=1+2] | | 245 | 100% | 258,575,867 | 100% |
| | NORTE 2020 [1] | 212 | 87% | 135,008,611 | 52% |
| | COMPETE 2020 [2] | 33 | 13% | 123,567,255 | 48% |

**Table no. 3.9 – Approvals in the domain of Health and Life Sciences**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 169 projects have been approved, involving 181 million euros of eligible investment, co-financed by NORTE 2020 (32%) and COMPETE 2020 (68%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D - 48 projects, 87 million euros of eligible investment and 23% of co-financing from NORTE 2020 and 77% from COMPETE 2020;

• Incentive Systems for Innovation and Entrepreneurship – 41 projects, 79 million euros of eligible investment and 32% of co-financing from NORTE 2020 and 68% from COMPETE 2020;

• Incentive Systems for SME Qualification and Internationalisation – 80 projects, 15 million euros of eligible investment and 84% of co-financing from NORTE 2020 and 16% from COMPETE 2020

### 3.2.7 Symbolic Capital, Technology and Tourism

Tourism is an economic activity that generates high added value for the country, and above all, employment, based on the enhancement, almost exclusively, of territory-intensive assets. The Norte Region is witnessing a growing tourist appeal that contributes to the development of its different sub-spaces. It is important to integrate specific regional resources and seek to develop related variety of economic activities. It is worth highlighting the connection with agri-food, with IT and creative industries to which tourism can contribute, and increase the value of its products.

The public policy rationale for the Symbolic Capital, Technology and Tourism priority domain is the following: '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.'. Its analytical framework is detailed in the figure below (Figure no. 3.8).

## Symbolic Capital, Technology and Tourism

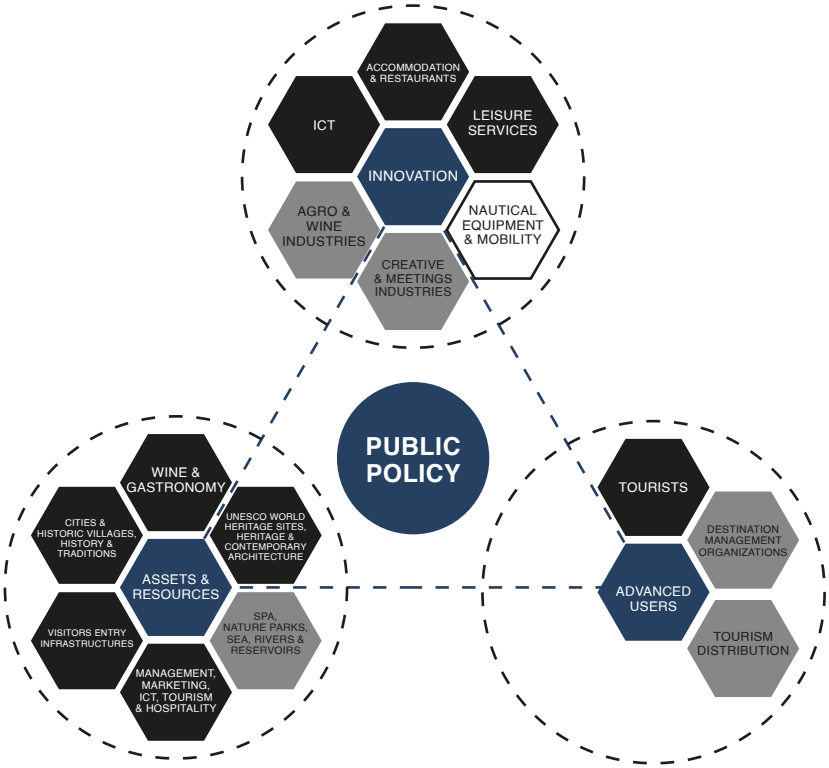



**Figure no. 3.8 – Analytical framework of the domain of the Symbolic Capital, Technology and Tourism**
Source: adapted from CCDR-N (2014)

Under the domain of Symbolic Capital, Technology and Tourism Services 200 projects have been approved, involving an eligible investment of almost 312 million euros, co-financed by NORTE 2020 (32%) and COMPETE 2020 (68)% (Table no. 3.10).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 5 | 3% | 1,139,027 | 0% |
| 1.2 | IIncentive Systems for R&D; ncentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 8 | 4% | 75,426,326 | 24% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 22 | 11% | 20,034,857 | 6% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 78 | 39% | 31,135,050 | 10% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 75 | 38% | 183,703,480 | 59% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 12 | 6% | 304,892 | 0% |
| 10.2 | Doctoral Programmes | 0 | 0% | 0 | 0% |
| Overall Total [3=1+2] | | 200 | 100% | 311,743,631 | 100% |
| | NORTE 2020 [1] | 168 | 84% | 99,000,392 | 32% |
| | COMPETE 2020 [2] | 32 | 16% | 212,743,239 | 68% |

**Table no. 3.10 – Approvals in the domain of Symbolic Capital, Technology and Tourism Services**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 164 projects have been approved, involving 291 million euros of eligible investment, co-financed by NORTE 2020 (27%) and COMPETE 2020 (73%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D – 1 project, 0.5 million euros of eligible investment with co-financing from NORTE 2020;
• Incentive Systems for Innovation Entrepreneurship – 84 projects, 272 million euros of eligible investment and 22% of co-financing from NORTE 2020 and 78% from COMPETE 2020;
• Incentive Systems for SME Qualification and Internationalisation – 79 projects, 19 million euros of eligible investment and 91% of co-financing from NORTE 2020 and 9% from COMPETE 2020.

### 3.2.8 Marine Technologies and Economy

From this priority domain, the intention is to create, expand and encourage sea-related economic activities, seeking to enhance this specific resource. The economy of the sea includes multiple activities, from the most traditional, such as: fishing and the transformation and commercialisation of fish, the naval industry, ports and maritime transport and logistics, to those that are more recent, relating to the European Blue Growth strategy, such as: aquaculture, coastal tourism, marine biotechnology, oceanic energy, and the exploration of marine mineral resources. This diversity is what makes up the economy of the sea, although the latest activities related to the exploration of new activities associated with the economic enhancement of the sea-related resources are the focus of this RIS3 NORTE priority domain.

The public policy rationale for the Marine Technologies and Economy priority domain is the following: '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.).' Its analytical framework is detailed in the next figure (Figure no. 3.9).

## Marine Technologies and Economy

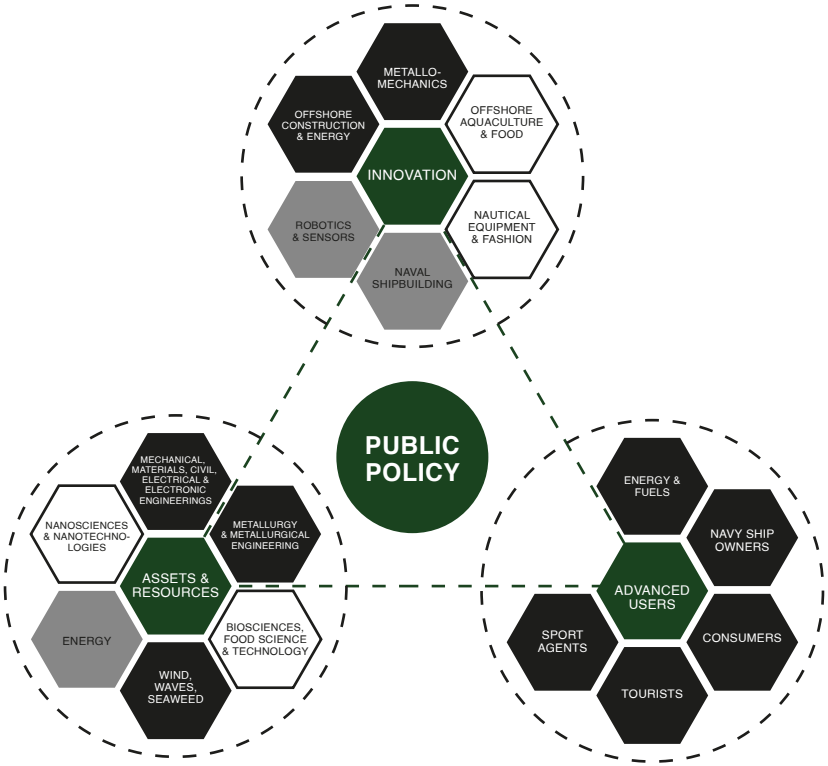



**Figure no. 3.9 – Analytical framework of the domain of Marine Technologies and Economy**
Source: adapted from CCDR-N (2014)

In the Marine Technologies and Economy domain, 43 projects have been approved, involving an eligible investment of nearly 29 million euros, co-financed by NORTE 2020 (91%) and COMPETE 2020 (9%) (Table no. 3.11).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 10 | 23% | 15,703,795 | 55% |
| 1.2 | Incentive Systems for R&D; Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 10 | 23% | 7,444,866 | 26% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 0 | 0% | 0 | 0% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 12 | 28% | 2,509,036 | 9% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 5 | 12% | 2,265,351 | 8% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 4 | 9% | 65,266 | 0% |
| 10.2 | Doctoral Programmes | 2 | 5% | 519,750 | 2% |
| Overall Total [3=1+2] | | 43 | 100% | 28,508,064 | 100% |
| | NORTE 2020 [1] | 36 | 84% | 25,962,530 | 91% |
| | COMPETE 2020 [2] | 7 | 16% | 2,545,534 | 9% |

**Table no. 3.11 – Approvals in the Marine Technologies and Economy domain**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 29 projects have been approved, involving 12 million euros of eligible investment, co-financed by NORTE 2020 (79%) and COMPETE 2020 (21%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D - 9 projects, 5 million euros of eligible investment and 58% of co-financing from NORTE 2020 and 42% from COMPETE 2020;

• Incentive Systems for Innovation and Entrepreneurship – 7 projects, 5 million euros of eligible investment and 100% of co-financing from NORTE 2020;

• Incentive Systems for SME Qualification and Internationalisation – 13 projects, 2 million euros of eligible investment and 71% of co-financing from NORTE 2020 and 29% from COMPETE 2020.

### 3.2.9 Human Capital and Specialised Services

The Human Capital and Specialised Services domain is one of the wildcards of RIS3 NORTE. It is a domain in which the region holds a critical mass of resources and assets that can potentially respond to an international trend of nearshoring of Business Process Outsourcing (BPO), of software factories, engineering centres and, increasingly, of Knowledge Process Outsourcing (KPO) operations. The specialisation rationale aims to attract specialised service international operations that contribute to strengthening and retaining human capital trained in the region. There is an added growing potential that these operations can foster in retraining and using resources and assets not aligned with the demand for qualifications.

The public policy rationale for the Human Capital and Specialised Services priority domain is the following: 'Promotion of ICT accumulated 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)'. Its analytical framework is detailed in the figure below (Figure no. 3.10).

## Human Capital and Specialised Services

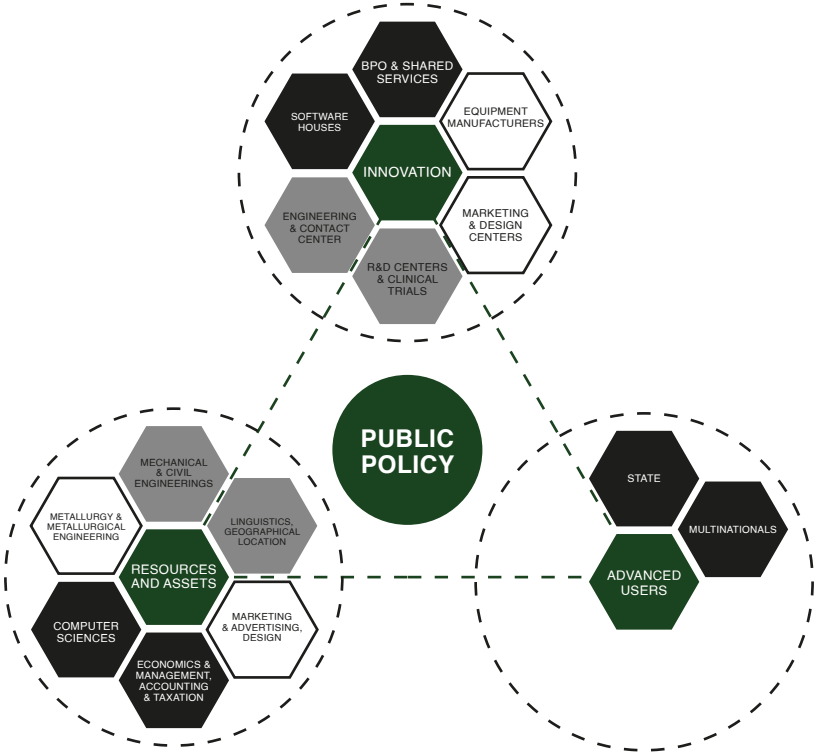



**Figure no. 3.10 – Analytical framework of the domain of Human Capital and Specialised Services domain**
Source: adapted from CCDR-N (2014)

In the Human Capital and Specialised Services domain, 251 projects have been approved, involving an eligible investment of nearly 123 million euros, co-financed by NORTE 2020 (48%) and COMPETE 2020 (52%) (Table no. 3.12).

| Investment Priorities (IP) and Public Policy Instruments (PPI) | | Projects | | Eligible Investment | |
|---|---|---|---|---|---|
| | | (no.) | (%) | (euros) | (%) |
| 1.1 | Scientific and Technological Research Support System (SAICT) | 8 | 3% | 5,288,424 | 4% |
| 1.2 | Incentives Systems for R&D; Incentive Systems for NPME Innovation; Support System for Collective Actions – Knowledge Transfer | 58 | 23% | 64,387,162 | 52% |
| 3.1 | Incentive Systems for Entrepreneurship; Support System for Collective Actions – Entrepreneurship | 5 | 2% | 3,022,825 | 2% |
| 3.2 | Incentive Systems for Internationalisation; Support System for Collective Actions – Internationalisation | 96 | 38% | 34,195,958 | 28% |
| 3.3 | Incentive Systems for Innovation; Incentive Systems for Qualification; Support System for Collective Actions – Qualification | 49 | 20% | 14,949,692 | 12% |
| 8.5 | Incentive Systems for Training; Hiring of Highly Qualified Human Resources | 35 | 14% | 1,073,542 | 1% |
| 10.2 | Doctoral Programmes | 0 | 0% | 0 | 0% |
| Overall Total [3=1+2] | | 251 | 100% | 122,917,603 | 100% |
| | NORTE 2020 [1] | 179 | 71% | 59,052,436 | 48% |
| | COMPETE 2020 [2] | 72 | 29% | 63,865,167 | 52% |

**Table no. 3.12 – Approvals in the domain of Human Capital and Specialised Services**
Source: CCDR-N, RIS3 NORTE Monitoring System

Under the Incentives System, 228 projects have been approved, involving 112 million euros of eligible investment, co-financed by NORTE 2020 (43%) and COMPETE 2020 (57%). With regard to their different modalities, the breakdown is as follows:

• Incentive Systems for R&D - 54 projects, 31 million euros of eligible investment and 38% of co-financing from NORTE 2020 and 62% from COMPETE 2020;

• Incentive Systems for Innovation and Entrepreneurship – 13 projects, 40 million euros of eligible investment and 18% of co-financing from NORTE 2020 and 82% from COMPETE 2020;

• Incentive Systems for SME Qualification and Internationalisation – 161 projects, 41 million euros of eligible investment and 72% of co-financing from NORTE 2020 and 28% from COMPETE 2020.

**4. RIS3 NORTE, governance and entrepreneurial discovery**

RIS3 NORTE's design process was completed and approved, under the order issued by the Secretaries of State for Regional Development, Innovation, Investment and Competitiveness and Science, in December 2014. Said order approved the Portuguese Research and Innovation Strategy for Smart Specialisation (ENEI), the national strategy, and the seven regional strategies of the continent and autonomous regions, as well as the multi-level governance model, the strategy's overall monitoring mechanism and the overall framework of budgetary resources available for its implementation.

In the ENEI (Portuguese state, 2014) it is assumed that, at any given time, a territorial scale of optimal intervention is found, coordinating national and multi-regional initiatives, favouring the thematic proximity with others that are confined to certain territories, enhancing geographic proximity. This assumption also requires the establishment of a multi-level governance model, with increased levels of interaction and coordination, combining bottom-up perspectives with top-down perspectives.

The governance of ENEI is, therefore, based on coordination at national and regional levels, in a multi-level logic, based on cooperation and the will to share between the multiple players that are involved in the collective and systematic process of R&D&I activity development, as well as in the follow-up and evaluation process. This model was adopted by the Regional Development and Coordination Commissions (CCDR) and the Governments when designing the regional strategies for smart specialisation. The aim was to reproduce it, with adaptations, in the strategy implementation stage, involving increased levels of interactions between players, whether they were part of the CCDR, entities of the R&D&I System, technology producers or advanced users of those technologies.

This model assumes, in the operational phase, the creation of a Regional Innovation Council (CRI), with the objective of ensuring active participation in the monitoring and continuous evaluation of the regional strategies' implementation and contributing to the decision-making process. Following proposals by the Presidency of each CCDR, the constitution and the competences of this board will be considered at a Regional Council, as established in Article 7 of Decree Law no. 228/2012 of 25 October, thus gaining enhanced institutional legitimacy.

This advisory board is chaired by each CCDR, being integrated, namely by technology producers and advanced users, entities of the scientific and technological system, universities, business associations, competitiveness clusters and national entities for planning and managing R&I policies and local authorities. The CRI gathers in plenary meetings or in sections directed at regional smart specialisation priority areas, which constitute Regional Smart Specialisation Platforms. These platforms aim to ensure a regional, multi-institutional and multi-sectoral response to the monitoring and evaluation of the progress of the implementation of the respective strategies, seeking to boost cooperation and networks, innovation and internationalisation. In practice, they constitute entrepreneurial discovery spaces.

In accordance with the aforementioned governance model, there is a Management Team, who takes on, across various platforms and supporting the CRI, the timely monitoring and evaluation of the pursuit of the different smart specialisation area strategies, with respect to their execution by the funding Operational Programmes, elaborating monitoring reports.

In a more cross-sectional way, it is also up to this Management Team to collect, process and provide qualitative and quantitative information, relevant to the follow-up on the execution of each regional smart specialisation strategy. Regarding the previous conditionality, it becomes necessary to carry out reports to the European Commission for the implementation of each of these smart specialisation strategies and for their contribution to the multi-level strategy. Its work should be followed up by an expert. This model is systematised in the following figure (Figure no. 7.1).

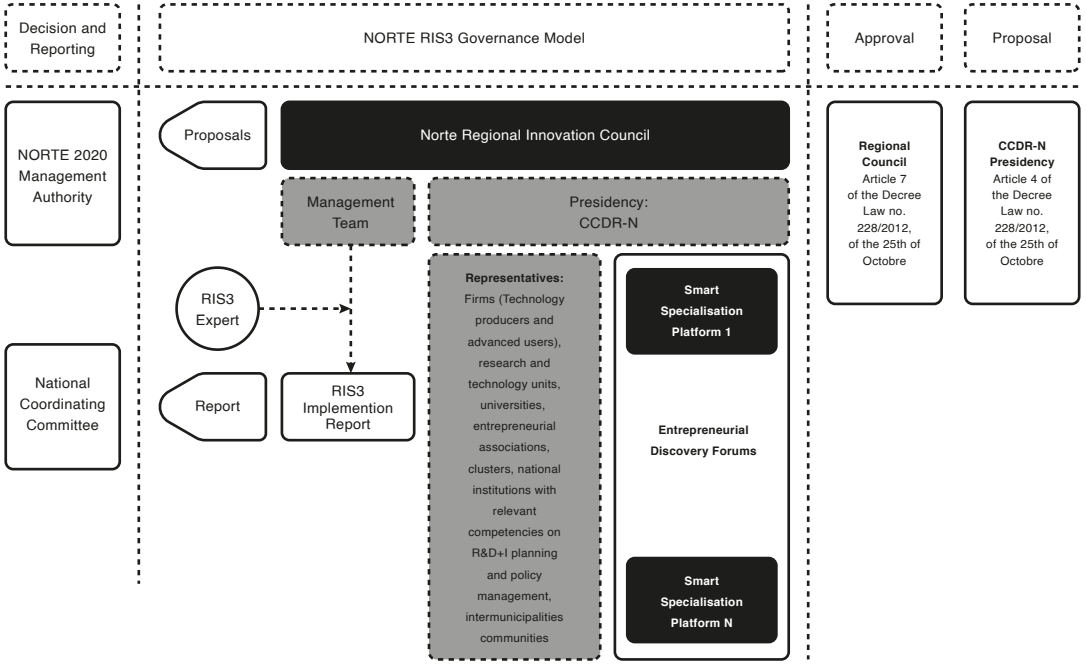



**Figure no. 4.1 – Governance model of RIS3 NORTE in the context of the ENEI**
Source: adapted from CCDR-N (2014)

One of the main changes resulting from the RIS3 NORTE in the R&D&I strategy development process in the Norte Region was the strong involvement of stakeholders in the policy drafting and development process. The methodology adopted in RIS3 NORTE for the involvement of stakeholders was considered a good practice in Implementing Smart Specialisation: A Handbook (Gianelle, Kyriakou, Cohen & Przeor, 2016); a guide issued by the European Commission. This methodology is a good example of the use of the Entrepreneurial Discovery Process (EDP) as a mechanism for prioritising and identifying regional investment priorities, as an inclusive and evidence-based process, led by stakeholders and with a focus on market dynamics.

The RIS3 NORTE governance model establishes, for the first time, the creation of a Regional Innovation Council. This advisory board follows the quadruple helix model, including technology producers and advanced users, entities of the scientific and technological system, universities, business associations, competitiveness clusters and national entities dedicated to the planning and managing of R&I policies and local authorities. The Norte Regional Innovation Council (CRIN) was formally established at the end of 2017 and shall hold plenary meetings or section meetings directed at the priority areas of regional smart specialisation, which constitute Regional Smart Specialisation Platforms (Figure no. 4.2).

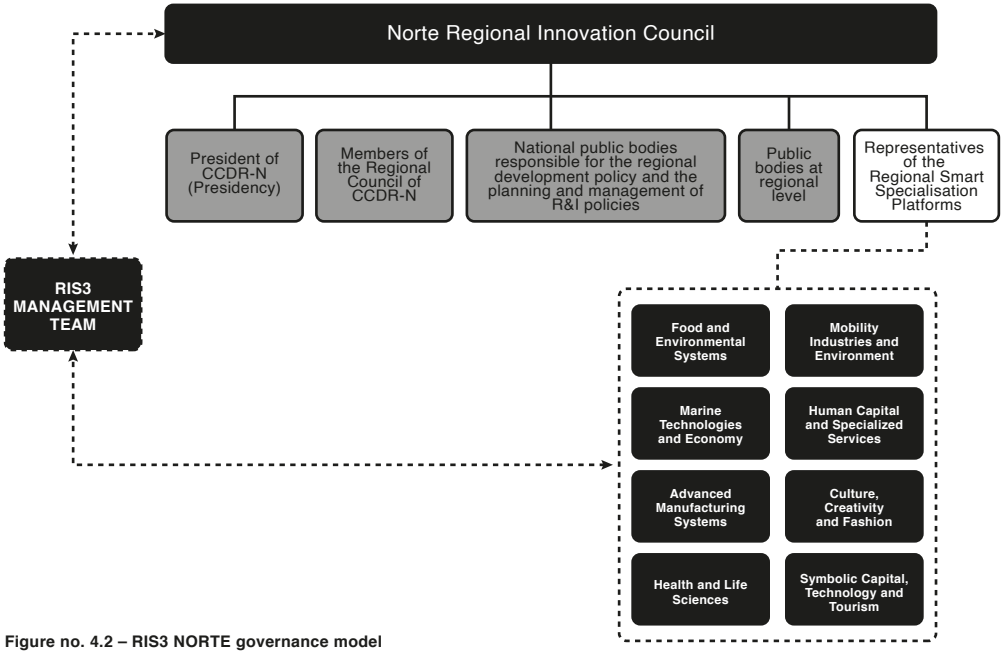



**Figure no. 4.2 – RIS3 NORTE governance model**
Source: adapted from CCDR-N (2014)

Taking into consideration the guidelines for the governance model implementation issued by the ENEI, RIS3 NORTE and listed in the guide issued by the European Commission, the CRIN and its Smart Specialisation Platforms comply with the following principles:

- Quadruple Helix – to allow widened participation of key regional players, based on the quadruple helix model, involving company representatives, teaching and research and development institutions, public R&I policy planning and management entities and users of innovation or entities that represent the aspect of demand, as well as innovation consumers;
- Collaborative Leadership – upholding the principle of collaborative leadership, implementing sufficiently flexible decision processes to offer each involved the possibility of playing a proactive role, by leading certain projects or areas, according to their skills and knowledge;
- Multi-level Governance – ensuring, in the framework of multi-level governance, cross-participation of national institutions responsible for the implementation of research and innovation policies in CRIN and CCDR-N, the entities responsible for the territorialisation of those policies in the NORTE region, in ENEI's Coordinating Council;
- Entrepreneurial Discovery Spaces – creating thematic and regional spaces for interaction and coordination between institutional players and stakeholders, whether in academic, scientific and technological, or business settings, that bring about the development of Entrepreneurial Discovery Processes;
- Suitable Size – ensuring that the CRIN has a suitable size to carry out its duties, namely guaranteeing an effective model for involvement of key stakeholders.

The Entrepreneurial Discovery Processes (EDP) is formed of a bottom-up approach in which different types of stakeholders (companies and their associations, universities, research centres, public institutions, etc.) interact in order to identify new opportunities for economic development, whilst the potential to successfully develop public policies is evaluated. Thus, this process aims at reducing market failures, that result namely from asymmetric information (adverse selection and moral hazards), from player coordination problems (mainly in emerging activities), from regulation needs or from differences between private and social return in knowledge production. The activities and methodologies to be developed depend on

(i) market failures to overcome and the conditions to overcome them and (ii) the RIS3 implementation phase (design or implementation), involving, for example, the development of mechanisms for stakeholder interaction, carrying out seminars, workshops and other public actions for information dissemination, networking activities or support to demonstrator projects.

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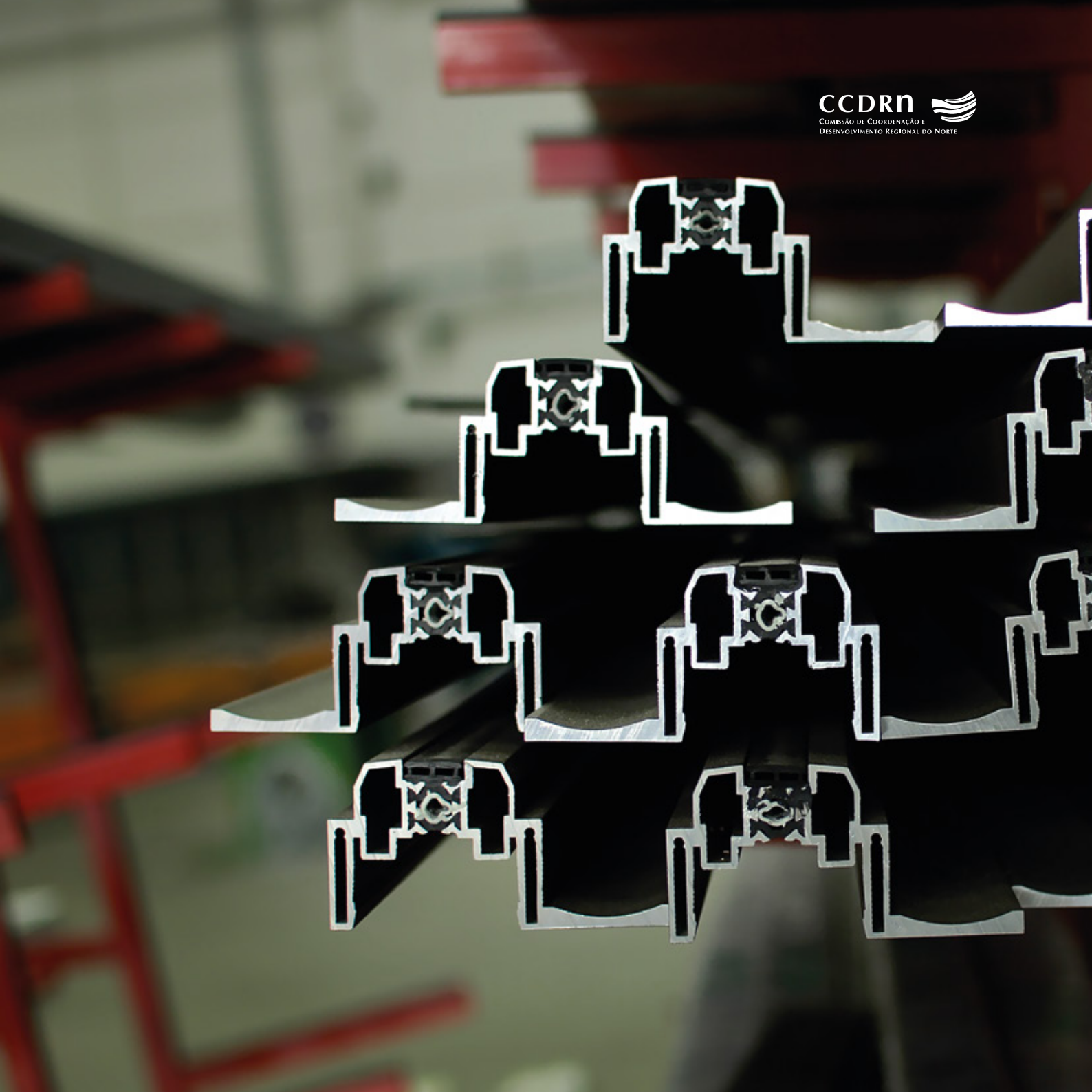


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