



S3 Governance Lessons from 2014-2020

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1. Introduction

The term "smart specialisation" refers to a policy concept that seeks to enhance regional or national innovation by focusing on the unique strengths and competitive advantages of a particular region or nation. By identifying niche areas of expertise and concentrating resources on them, regions or countries can better foster innovation and competitiveness in the global market. This approach advocates a more tailored strategy and policy-mix, contrasting with a broadband approach trying to be good at everything, which can dilute resources and reduce overall effectiveness.

The governance of the Smart Specialisation Strategy (S3) provides a comprehensive examination of regional innovation policies across various regions, highlighting the mechanisms and challenges inherent to S3's governance between 2014-2020. **Political commitment** emerges as a defining factor, with regions displaying consistent political support and considerable autonomy, such as Catalonia (ES), successfully tailoring their S3 strategies to cater to local needs and challenges. In contrast, other regions, such as Norte (PT), with intermittent political support and limited autonomy, struggle with aligning S3 directives with regional goals. Institutional capacity emerges as another critical determinant in the success of S3 governance. Catalonia's strong **institutional framework** appears to support its navigation of the intricacies of S3 in a more nuanced and effective manner. On the other hand, regions such as the Azores (PT) have encountered challenges, possibly influenced by institutional aspects and levels of interconnectedness. These challenges have resulted in vertical and static priorities, with very limited capacity to adapt the policy-mix and to implement a participatory governance that could stimulate and benefit from a continuous S3 dynamism.

The centrality of the **Entrepreneurial Discovery Process** (EDP) to the success of S3 is underlined throughout the analysis. An active and inclusive EDP fosters a vibrant S3 ecosystem. Pomorskie (PL) exemplifies this with its commitment to continuous feedback and broad-based stakeholder participation. This participative approach has underpinned its dynamic S3 strategy formulation and implementation. However, the **role of the European Regional Development Fund** (ERDF) in S3 governance is multifaceted, and the results of support of chosen niches are not satisfying. While its financial support is invaluable, an excessive dependency can cloud the overarching, transformative vision of S3. Azores (PT) and Norte (PT) provide an example, where the urgency tied to ERDF execution weakened a more holistic S3 vision.

The varying degrees of political commitment, regional autonomy and institutional capacity across the regions create a mosaic of challenges and opportunities, especially when considering emerging and transition regions where the institutional landscape is also evolving. The analysis suggests that regional autonomy might be conducive to a more tailored approach to innovation policy and, potentially, an effective S3 implementation. In parallel, political commitment is of paramount importance even though it is observed that this pillar was missing in some of the regions, severely hampering the relevance of S3 for regional policy.

Drawing together these findings, the lessons learned are manifold. Effective S3 governance requires a balanced approach that integrates political commitment, institutional robustness, multi-level governance, and broad stakeholder engagement, all underpinned by a pronounced inclination towards common objectives. Additionally, while external funding sources like ERDF are beneficial, an over-reliance can distort priorities, emphasising the need for a balanced, vision-centred approach to S3 strategy formulation and implementation.

2. Examining the Evolution of S3 Governance conditionality

Smart Specialisation Strategy (S3)¹ is an approach to territorial development based on knowledge and innovation, officially launched in the **Cohesion Policy 2014-2020**, which is an ex-ante condition for Member States' access to the ERDF (Regulation (EU) No 1303/2013). This perspective is inspired by the recommendations of the Expert Group on Knowledge for Growth (Foray et al., 2009) and implies as a key factor in the implementation of the Entrepreneurial Discovery Process (EDP), in which actors identify their main value creation capacities, as originally conceptualised by Hausmand and Rodrick (2003). However, this model has been utilised by the European Commission to foster a process that encourages significant participation from stakeholders representing the quadruple helix (Foray et al., 2012). The scope of the EDP is gradually expanding. Initially used to identify priority areas for investment and the consequent transformation of the territory, it has been adapted to accompany the entire implementation of S3 through the direct involvement of stakeholders in the fine-tuning of financial instruments, governance models and monitoring and evaluation systems (Guzzo & Perianez-Forte, 2019; Pontikakis et al., 2022).

In recent years, S3 has been a defining factor in the European innovation policy landscape, providing a framework for territorial innovation policy based on a region's capacity to create industries by identifying opportunities and converging resources in these areas. This model has challenged the traditional R&D-centred approach in Europe, encouraging public authorities to embrace the complexity of assets by combining current and future potential and reorienting existing and emerging industries (Laranja et al. 2022). Kleibrink (2016) describe four major advances in industrial policy brought about by S3. Firstly, instead of focusing on sectors, processes are established to identify cross-cutting emerging activities. Second, the activities identified are limited in number. Thirdly, priorities are set based on evidence and stakeholder involvement. Finally, monitoring systems are put in place to promote learning, coherence and sustainability of the policy cycle implemented.

Hence, the development of the S3 strategy required a thorough analysis of the regional/national research and innovation system to identify the areas where the region/country has the highest potential for a competitive advantage and identify a limited number of priority areas for investment. A key principle was to involve stakeholders from

¹ “The acronym S3 may refer in the text to either ‘Smart Specialisation’ or ‘Smart Specialisation Strategy’ depending on the context. The term ‘Smart Specialisation Strategy’ (S3) is also used as a synonym of ‘Research and Innovation Strategy for Smart Specialisation’ (RIS3)” (Gianelle et al., 2016: 11).

academia, business, NGO and the public sector (quadruple helix) throughout the process to ensure that the strategy was both relevant and evolving.

Governance in S3 is pivotal as it influences how strategies are formulated, implemented, monitored, and adjusted. An effective governance structure ensures that policies are not only reactive, responding to immediate challenges and opportunities, but also proactive and complete in anticipating shifts in the innovation landscape and adjusting strategies accordingly (Rodríguez-Pose, 2018). In the absence of coherent governance, regions run the risk of fragmented efforts, misaligned resources, and underutilisation of their innovation potential (McCann & Ortega-Argilés, 2015). Several aspects underlie the governance of S3.

First, stakeholder engagement and motivation are paramount. Comprehensive and meaningful engagement of all stakeholders and local partners, from academia and industry to civil society and policymakers, ensures that S3 strategies are inclusive and attuned to the realities of the region (Asheim et al., 2013).

Second, the balance between centralisation and decentralisation of governance is crucial. While centralised decision-making can ensure consistency across regions, it may overlook regional specificities. It may happen that looking at smart specialisations of individual regions from a country perspective comes down to aggregating individual sectors instead of focusing on technologies that can constitute a global competitive advantage. Conversely, a fully decentralised approach, though responsive to local needs, may face challenges in terms of broader strategic alignment (Gianelle et al., 2016). In some countries, S3 governance has adopted primarily a top-down, centralised model, which could imply enhanced coordination of national policies using S3 as an overarching framework while possibly overlooking regional specificities (McCann & Ortega-Argilés, 2015). In other countries, a bottom-up, decentralised model was adopted, emphasising local dynamics but potentially facing challenges in broader coordination (Rodríguez-Pose, 2018).

A third typology introduced a multi-level governance framework that integrates national directives with regional autonomy, as seen in Italy's S3 approach (Gianelle et al., 2016).

The balance between centralised governance and regional autonomy was further nuanced by economic considerations. In the follower regions, the underlying structural fragility of the innovation system and the potentially greater dependence on ERDF for policy design and implementation influenced the governance mechanisms and the institutional landscape in terms of power dynamics (Radosevic et al., 2017). The governance challenge here was to harmonise regional objectives with ERDF compliance without sacrificing them (McCann & Ortega-Argilés, 2016). Some regions, once their S3 had been established, showed resistance to iterative change, with the governance of policy instruments being decoupled from the governance of S3. This reduced the influence of the S3 in the design and coordination of policy instruments to address the strategic focus and, in many cases, crystallised the S3, hindering their ability to take advantage of new opportunities or effectively address new challenges (Foray et al., 2018). In other words, once set, the priorities did not evolve over time despite the occurrence of several external shocks.

During the 2014-2020 programming period, a compliance-driven approach ensured that regions met certain S3 formulation standards, which sometimes led to a checkbox mentality. As a result, regions often focused on meeting conditions rather than tailoring innovative strategies, perceiving the S3 as a bureaucratic burden instead of an opportunity

for novel policy design. Therefore, the focus during this period was largely on setting priorities and ensuring stakeholder engagement, sometimes at the expense of fostering adaptive and resilient strategies that could respond to changing regional dynamics (McCann & Ortega-Argilés, 2015).

The new **Cohesion Policy for 2021-2027** is accompanied by new requirements for the design of S3, such as articulation with the green and digital transition (twin transformation²) or orientation towards major emerging social challenges. At the same time, it requires establishing synergies and strategic articulation in order to benefit from the opportunities of NextGenerationEU, whose correlation and consistency has already been demonstrated with S3 (Marques Santos, 2021).

For the new programming period of 2021-2027, S3 has moved from being an 'Ex-ante Conditionality' to an 'Enabling Condition', which is to be reviewed throughout the whole period and not statically met in the beginning. Also acknowledging the challenges around governance and its critical role, the new enabling condition places **greater emphasis on the governing mechanism and institutions**, as summarised in the table below (Table 1).

Table 1. S3: from an ex-ante conditionality to an enabling condition.

Programming Period	2014-2020	2021-2027
Nature	Ex-ante Conditionality: Static and one-off. Once the conditions were met, there was no inherent mechanism for ongoing verification or adaptation.	Enabling Condition: Dynamic and continuous. It encourages regular monitoring and reviews, updates, and refinements based on evolving circumstances.
Focus	Primarily concentrated on priority setting and stakeholder engagement.	Balances priority setting and continuous adaptability. Specific emphasis on governance.
Purpose	Gateway or precondition for accessing ESIF funds.	Continuous process across 2021-2027 for permanent check how the ESIF funds are distributed.

Notwithstanding these changes, the effectiveness of governance is directly related to the ability to effectively translate strategy into practice and modulate policy accordingly. This also depends on the motivation of local and regional stakeholders and the incentives for companies and institutions to adapt their modus operandi. Although seemingly straightforward, this is a major challenge, aggravated by possibly conflicting strategic goals

² Towards a green and digital future - Key requirements for successful twin transitions in the European Union, https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/twin-green-digital-transition-how-sustainable-digital-technologies-could-enable-carbon-neutral-eu-2022-06-29_en

with the key performance indicators across institutions, leading to the decoupling of strategy and policy.

In sum, governance stands at the nexus of S3 policy formulation, stakeholder engagement, resource allocation and strategy adaptation. The quality of the governance framework and the institutional milieu are key determinants of the performance of innovation policies and S3 in particular. Hence, it is important to learn from the existing myriad of experiences to draw lessons that can contribute to improving governance. Thus, starting from different regional and institutional scenarios, diverse levels of economic development and different typologies of governance framework, an analytical framework on the different dimensions of S3 and proceed was built with the analysis of four case studies: Azores (PT), Catalonia (ES), Norte (PT) and Pomorskie (PL) from which to derive insights presented as lessons learned at the end of the assessment.

3. S3 Governance: analytical framework and methodology

Analytical framework

Europe needs to change and adapt at a faster pace. S3 should stimulate participatory governance that could mobilize for a collective construction of priorities and goals, which would be accompanied by the tailoring of innovation policies. Thus, governance plays the critical role.

Given the different approaches to S3 governance in the EU regions, the purpose of this policy brief is to contribute to understanding how different governance frameworks lead to different levels of effectiveness in the implementation of S3 and to highlight the underlying factors that may justify these differences. Drawing on empirical studies and theoretical underpinnings, we propose an analytical framework comprising a set of key dimensions to support an adequate comparison across case studies.

The *first dimension*, **Centralisation**, delves into the locus of decision-making authority within S3 governance. A key question here is where the power resides and how it shapes policy outcomes. Centralised models of governance, such as those found in certain regions, can provide consistency and alignment with national objectives but can sometimes neglect regional specificities (McCann & Ortega-Argilés, 2015). More decentralised models may prioritise regional needs but grapple with broader national or supranational alignment (Rodríguez-Pose, 2018). In this regard, the political autonomy of regions and their ability to adjust the policy-mix will be assessed to understand the implications and impacts on S3.

The interplay between **Economic Development & ERDF** constitutes the *second dimension*. Regions at different stages of economic development may have distinct governance needs and strategies. To a certain extent, advanced regions have already defined and achieved their S3 economic structure, whereas convergence regions face the painful challenge of structural change. Furthermore, their reliance on ERDF further complicates the governance landscape. Over-reliance on ERDF funding can sometimes distort regional priorities, leading to strategies that are more compliance-driven rather than innovation-centred (Radosevic et al., 2017) or risk-averse due to conflicting performance indicators determining the

effectiveness of activities. Balancing intrinsic regional economic objectives with ERDF compliance becomes a challenging tightrope to walk.

Geographical Factors constitute the *third dimension*. Proximity has always played an important role in the innovate interactions' pattern. Geographical advantages or challenges, such as connectivity, infrastructure, or access to resources, can influence the strategies adopted by regions (Asheim et al., 2013) and imply different governance mechanism to address these challenges.

The *fourth dimension*, **Evolution**, recognises that governance is not static. Analysing the temporal evolution of S3 governance, in particular the transition from the 2014-2020 to the 2021-2027 phase, provides insights into how regions have adapted their strategies in response to changing global dynamics, EU policy changes, and technological advances.

Lastly, the **Framework & Institutional**, as the *fifth dimension*, looks at the structural underpinnings of S3 governance. Institutions, both in their formal mandates and informal roles, shape the governance landscape. Understanding the roles, capacities, hierarchies, and decision-making processes of these institutions provides a window into the effectiveness of governance models.

The proposed analytical framework aims to support the case study analysis based on a series of dimensions is presented in table below (Table 2).

Table 2 Analytical framework.

Dimension	Details
Centralisation	Investigate power dynamics; assess benefits and challenges.
Economic Development & ERDF	Analyse governance based on economic stages and ERDF reliance; understand balance between regional objectives and ERDF compliance. Investigate alignment between S3 strategies and ERDF; understand challenges in balancing regional needs with ERDF compliance.
Geographical Factors	Compare governance in remote vs. central regions; assess influence of geography on governance.
Temporal Evolution	Examine changes in governance from 2014-2020 to 2021-2027; assess influence of global dynamics and EU shifts.
Framework & Institutional	Analyse mandate, roles, and capacities; understand decision-making processes and hierarchies.

Using this analytical framework, the strengths and limitations of governance models in different case studies can be examined, taking into account effectiveness, responsiveness and flexibility analysis as well as potential gaps or vulnerabilities identification. By comparing different regional models, we aim to identify and highlight effective practices that have driven innovation and demonstrated adaptability. We will also seek to uncover examples of good practice in specific contexts that can provide valuable lessons for effective governance mechanisms in other regions.

Methodological approach

The methodological approach is a combination of a literature review of academic papers and reports with semi-structured interviews with key stakeholders in each region. These interviews aimed to delve deeper into the experiences, insights, and perspectives of those directly involved in S3 governance and being a part of regional processes.

To assess the influence of varying regional contexts on the governance of smart specialisation strategies, we consider several key dimensions. The geographic context encompasses factors such as continental location, coastal versus inland dynamics and proximity to economic hubs or borders. The economic context involves studying regions with differing economic and innovation profiles, focusing on their level of industrialisation, primary economic and R&D drivers, as well as unique economic challenges. The demographic context requires an examination of the region's size, population density and distribution, and urban versus rural dynamics and age demographics.

In this regard, the selection of the Azores (PT), Catalonia (ES), Norte (PT) and Pomorskie (PL) as case studies for S3 governance provides a rich diversity of regional backgrounds, each bringing its unique set of challenges, opportunities, and historical contexts, as summarised in the table below (Table 3).

Table 3 Case studies profile.

Region	Profile
Azores (PT)	<p>Geographical Context: A remote archipelago in the Atlantic, illustrating S3 strategies in isolated regions.</p> <p>Economic Profile: Reliance on tourism and fisheries showcases unique specialisation challenges.</p>
Catalonia (ES)	<p>Economic Profile: A leading Spanish region, offering insights from an advanced ecosystem standpoint.</p> <p>Political Dynamics: Unique cultural identity and autonomy movements add layers to its S3 governance.</p>
Norte (PT)	<p>Economic Profile: one of the most industrially diversified regions in Portugal showcases how areas with a varied economic base strategize their S3.</p> <p>Multilevel governance architecture and reduced autonomy may influence its S3 approach.</p>
Pomorskie (PL)	<p>Economic Profile: A coastal region, highlighting S3 in transition economies.</p> <p>Multilevel governance scenario and emerging innovation ecosystem.</p>

The findings from all contexts will then be synthesised to identify best practices, challenges unique to specific contexts and recommendations for regions aiming to refine their

governance strategies. This comprehensive approach aims to provide regions with tailor-made insights on how to design smart specialisation/specialisation policies that are both contextually relevant and effective.

4. Case studies

This section provides a brief overview of the upcoming case studies. Each one dives into a specific region's journey with S3 governance, highlighting successes, challenges and key learnings. This approach allows for a more nuanced grasp of S3 across diverse settings, all of which will be delved into in greater detail in the subsequent chapters.

Azores (PT)

The Azores, an archipelago in the North Atlantic consisting of nine volcanic islands, are designated as an outermost region and present unique challenges and opportunities for S3. With a population of approximately 245k, the Azorean economy is traditionally rooted in the primary sector, with limited industrial activities. In recent years, tourism has become a blooming sector.

Economically, the Azores, with a regional budget of 1.6 billion EUR, has a fragile innovation system, as evidenced by the 2021 European Regional Innovation Scoreboard, indicating 0.23% of GERD/GDP. Stakeholder concentration in the economy is high, with dominant players being SMEs in agriculture and dairy and the University of Azores in research. This concentration poses risks of inbreeding and resistance to change.

The Azores' Operational Program for the upcoming decade is set at 1140 million EUR, constituting 7% of the regional budget. Yet, for science and research, the region earmarks 21% of available resources for public policy. A tension exists between the European Regional Development Fund's key performance indicators and S3, with the latter occasionally viewed as a potential complication to effective project execution.

During the 2014-2020 programming period, the Azorean government legally instituted an S3 governance model. This tripartite structure involved an Executive Committee, a Regional Innovation Council (RIC), and Thematic Working Groups. The Executive Committee was responsible for supervising the S3's roll-out, with a specific emphasis on fostering cross-departmental synchronisation. The RIC, functioning as a large assembly, represented a quadruple helix model, encompassing various stakeholders such as universities, businesses, civil society, and institutional representatives. Its primary role was to endorse S3 adjustments and provide policy recommendations. However, between 2014 and 2020, the RIC convened only twice, with its first meeting occurring in the latter part of 2018, upon which were established the thematic working groups. These groups aimed to sustain entrepreneurial discovery momentum, providing policymakers with evolving challenges, although they seldom met. Their efficacy in driving strategic and policy adjustments was limited. Throughout the programming period, there were no observed changes in the priorities and no adaptation in the policy mix, which continued to follow a broadband approach.

Multilevel coordination was also a theoretically important factor for governance in Portugal and its regions. However, the approach to S3 during this period was characterised by

a multilevel governance framework with structurally inefficient design. The Portuguese National Innovation Agency (ANI) lacked a formal mandate to coordinate regional S3 initiatives, and hence, it had no capacity to influence national policies, which implied that throughout 2014-2020, the multilevel coordination was minimal. For the Azores and unlike the case study of Norte (PT), this lack of national coordination was less consequential due to its status as an autonomous region. With its elected regional government, the Azores enjoy considerable legislative and fiscal independence in the management of public policies. This autonomy theoretically provides the tools for policy coordination and institutional mobilisation. However, this potential has remained largely unrealised. Institutional challenges persisted in the Azores. Various entities had specific roles, but their strategies often diverged from the broader vision of S3. A predominant focus was ensuring project alignment with S3 and meeting regional operational goals, sidelining the broader transformative vision of S3. Given the autonomous strategies and performance metrics of individual institutions, S3's influence among policymakers was limited, relegating its execution to evaluating project compliance with specialisation priorities.

Limited political commitment appeared to hinder the effective integration of S3 into policy implementation. The Managing Authority of the Azorean Operational Program overlooked S3, favouring a conventional approach. A disconnect exists between S3's objectives and those of various government departments. The EDP, crucial for S3, was hampered by limited stakeholder interest and participation, coupled with no connection between S3's preparatory and implementation phases. The limited effectiveness of S3 in influencing policy design gradually affected its credibility among stakeholders.

In anticipation of the 2021-2027 period governance changes are underway. The 2020 general election in the Azores led to a new government prompting shifts in the governance structures overseeing science and the economy. The responsibility for S3 now lies with the vice-presidency, contrasting with the prior regional secretariat oversight. Additionally, the technical capacity of the S3 management team has been augmented, with the creation of a specific division within the Regional Directorate for Science and Technology. Despite the subsidiary role of S3 in public policy-making, there has been considerable expansion in the new management team, adopting an interdepartmental approach and creating organic linkages between S3 and vertical sectoral policies, i.e. its expansion has been based on the recruitment of civil servants from the managing authority and other relevant regional ministries, with the aim of creating boundary spanners who can break down institutional silos based on relationship capital.

Catalonia (ES)

Located in the northeastern part of Spain, Catalonia boasts a variety of landscapes, from beautiful coastal beaches to rugged mountainous terrain. As well as its natural beauty, it's a region with a significant cultural heritage. It's home to around 7.7 million people and has a GDP of €270 billion by 2022. Economically, Catalonia is diverse. It has a particularly dominant medium-tech industry. But sectors such as tourism, health and digital technology also have a significant weight in the economy. Significantly, Catalonia has been recognised as a strong innovator in the European Innovation Scoreboard 2023. The region's contribution to global scientific production is noteworthy. Despite housing just 0.1% of the global population, it accounts for 0.79% of the world's scientific output and 4% within the European Union. Within the EU funding landscape, Catalonia ranks 16th among the EU28,

placing it near Finland in terms of funding secured and ahead of countries like Portugal and Hungary.

Spain's decentralised political structure grants regions like Catalonia considerable autonomy regarding S3. This autonomy is further enhanced by Catalonia's strong innovation ecosystem. The presence of top-tier universities, research institutions, and a dynamic entrepreneurial landscape makes Catalonia a hotspot for innovative activities.

In this context, the Catalan Government promoted a S3 focused on two main challenges:

- Consolidating research and innovation as drivers to transform the production system and steer the economy towards a competitive and sustainable model that promotes employment and social cohesion
- Enabling cooperation between the stakeholders in the ecosystem (public administrations, universities, research and technology centres, companies, organisations and associations) to generate new opportunities for the creation of wealth and employment and to respond to societal challenges

Based on all this, RIS3CAT 2014-2020 was committed to combining research and innovation support mechanisms already consolidated in Catalonia with new instruments. These have involved the stakeholders (universities, research and technology centres, companies, governments and end users of innovation) in generating major initiatives and transformative research and innovation agendas.

The RIS3CAT Steering Committee, coordinated by the regional Ministry of Economy and Financed, but composed by representatives from different regional ministries, was responsible for formulating, promoting, and coordinating the RIS3CAT strategy. Its responsibilities range from approving the RIS3CAT document to ensuring alignment with budgetary policies and fostering cooperation between diverse stakeholders in research and innovation.

The RIS3CAT Steering Committee was supported by a Technical Committee, ensuring the regular monitoring of RIS3CAT actions, verifying the proper allocation of funds and the positive evolution of results indicators.

Catalonia's approach to S3 is deeply rooted in its commitment to promoting a challenge-driven model which combined with an inherent flexibility in the governance model, allows for experimentation, risk-taking and innovation. Instead of committing to over-ambitious plans, the S3 was oriented towards transformative innovation to address the most pressing environmental, social and economic challenges in the region.

RIS3CAT 2030 (2021-2027) is framed in a context of major global challenges, such as climate change, pollution, waste of resources, persistent unemployment, increasing social inequalities (including inequalities between men and women), an ageing population and the COVID-19 pandemic. These challenges require urgent and ambitious responses from governments (European, State, regional and local) and from all actors in society. In this new context, and based on the experience of the former period, RIS3CAT 2030 promotes the orientation of European funds towards research and innovation initiatives and actions that accelerate the transition towards a greener, more digital, more resilient and fairer socio-economic model which have impact throughout the territory.

In terms of the institutional framework, Catalonia's S3 has a strong governance system articulated around three pillars, coordinated by the Secretariat of Economic Affairs and European Funds:

- The Interdepartmental Commission for Economic Recovery and Governance of Next-Generation EU Funds
- The general directorate competent in matters pertaining to the ERDF
- The Opportunities Discovery Mechanism

This structure in three pillars allows for a strategic planning and coordination to enhance complementarities and synergies among funds (European, national, regional and local) aligning them to finance strategic initiatives to address the most pressing environmental, economic and social challenges in the region.

The Opportunities Discovery Mechanism requires a special mention. This new mechanism seeks to ensure that the relevant stakeholders in the system (public administrations, universities, research and technology centres, companies and civil society organisations and associations) are actively involved in the S3 discovery processes. With this purpose, the Catalan Government has hired dedicated staff integrated into different regional Ministries, working together with experts and researchers to support initiatives addressing environmental, social and economic challenges with a systemic approach. The Government has hired 18 professionals with capabilities in facilitation and experience in innovation, policy and the different RIS3CAT priorities. Working across various ministries and closely with universities and local actors, they not only collaborate with policymakers but also contribute to the RIS3CAT team, fostering the development of collaborative networks both locally and internationally.

Norte (PT)

The Norte region, located in Portugal, is the country's most populous NUTS II region, hosting approximately 3.6 million individuals, which accounts for 34.6% of Portugal's total population. As of 2021, the region contributed nearly 30% to Portugal's GDP and accounted for 29% of business turnover, 37% of exports, and 34% of national employment. Characterised as an industrial hub with a predominant export-oriented economy, Norte faces the dual challenge of sustaining its competitive advantage in traditional industries while promoting the evolution of knowledge-intensive sectors.

In the context of centralisation and autonomy, Norte's situation diverges from regions like the Azores. While Norte does not possess extensive autonomy to independently draft and execute its policies, the Commission for Regional Coordination and Development of the North (CCDR-N), a decentralised body, operates under the central government, orchestrating development policies for the region. The significance of the ERDF for Norte cannot be understated, given its role as the primary regional management instrument. The lack of a robust multilevel coordination framework, along with limited autonomy, constrained the adaptation of policy strategies to meet the specific S3 objectives of the region.

From 2014 to 2020, Norte's S3 governance model was built on two principles: promoting extensive participation from key regional actors using the quadruple helix model and

avoiding the risks associated with creating new entities that could inadvertently increase policy transaction costs. This model encompassed three primary components. Firstly, the Regional Innovation Council (RIC) comprises a diverse array of stakeholders, including technology producers, academic institutions, business associations, clusters and national entities for R&I policy planning. This Council bore the responsibility for sanctioning the overarching strategy and relevant policy recommendations. Secondly, Thematic Platforms for Smart Specialisation were introduced, each aligned to a specific priority envisaged as entrepreneurial discovery arenas and legitimised by the aforementioned council. Lastly, a Management Team was established, anchored by CCDR-N, tasked with the cross-sectional oversight of various platforms and supporting the Regional Innovation Council in monitoring and evaluating the S3 strategies. Despite its initial success and the strong natural dynamics of the region, the operationalisation of the governance model fell short of expectations, with limited entrepreneurial discovery dynamics³, a static S3 formulation and no evident impacts on policy.

Regarding the institutional framework, Norte's initial S3 commitment was driven by the potential synergies with ERDF policy tools, especially those linked to SMEs and research. However, as operational impediments emerged, the initial fervour for S3 diminished, resulting in an approach that skewed towards procedural compliance, thereby undermining the vitality essential for entrepreneurial discovery.

Economically, in the 2014-2020 period, Norte outlined eight priority sectors following a comprehensive examination of its resources, entrepreneurial strengths, and strategic projections. Nevertheless, during this period, the S3 priorities while collaboratively formulated and coordinated by CCDR-N, remained static. The governance model's operationalisation did not resonate with the region's intrinsic dynamism. Hindered by perceived undervaluation and limitations in installed technical capacity, entrepreneurial development initiatives lacked continuity and influence over the Norte OP.

However, the landscape is evolving for the 2021-2027 period. While the governance model demonstrated potential, it encountered obstacles due to its perceived marginal significance and institutional constraints. Yet, the recent appointment of a new CCDR-N presidency has infused renewed energy into S3 and innovation policy endeavours, with an emphasis on refining governance mechanisms and augmenting regional institutional capacities.

In assessing the governance system's limitations, it's evident that despite the region's dynamic innovation environment and the clarity of its governance model, multiple challenges persist. The governance model's inherent inflexibility, combined with the limited engagement from pivotal entities such as the RIC impeded its success. The exclusion of businesses from the council's composition, an undue emphasis on financial execution, and the absence of thematic calls further exacerbated these challenges. However, in anticipation of S3 2021-2027, the system is undergoing a rejuvenation. The newly appointed CCDR-N leadership displays a heightened interest in S3, emphasising the need for robust regional institutional capacities in innovation policy. Two potential pathways under consideration are the establishment of a dedicated S3 department or the inception of a regional innovation agency. Lastly, while multilevel governance was confined during the 2014-2020 period, CCDR-N's 2014 initiative to foster coordination within the Norte-

³ It is worth referring that the RIC met very rarely and its composition included only institutions, with no private companies having direct representation.

Galicia Euroregion, using INTERREG to amplify regional interactions, was a pioneering endeavour.

Pomorskie (PL)

Pomorskie, a region located in northern Poland, is one of the 16 voivodeships (regions) in the country. With a total of 2.3 million inhabitants Pomorskie plays a vital role in Poland's industrial landscape. The region is home to a diverse range of industries, including shipbuilding, maritime trade, logistics, electronics and IT.

Like Portugal, Poland presents a multilevel governance of S3, involving two tiers: a national and a regional. The first is the National S3 based on governmental policy decisions (Minister responsible for Development and Technology). The second level is the S3 conducted by 16 voivodeships. These two systems operate independently (filling separately ex-ante conditionality for Thematic Objective 1). The national system has a more horizontal character, indicating general definitions of 13 national smart specialisations (based on numerous statistical and foresight analyses) while regional specialisations are narrowed to specific technologies constituting the region's R&D potential.

In the case of Pomorskie, the Management Board of the Pomeranian Voivodeship is responsible for the implementation of regional development policy, including economic and innovation policy. The Management Board comprises 5 members who are elected by the councillors of the Regional Parliament. The Regional Parliament is composed of 33 councillors elected in direct regional elections and is responsible for taking strategic decisions on regional priorities including Regional Innovation Strategy as well as education, environment, energy, culture, tourism, rural areas, economy, EU funds, etc. The Management Board is headed by the Marshal of the Voivodeship. The Board being the executive body of the regional self-government supervises the Marshal's Office and all departments (units) implementing individual activities related to regional strategy. The Board is also playing the role of the Managing Authority of the ERDF and ESF regional operational programme.

On the basis of the Pomorskie Region Development Strategy 2030, the Management Board implemented a Regional Strategic Program in the field of economy, labour market, tourist offer and leisure time, which plays the role of S3. The Program defines the institutional management system and the rules for implementing S3 including the system for implementing the concept of smart specialisations and clusters policy. The body responsible for coordinating the implementation of the S3 strategy on behalf of the Management Board is the Department of Economic Development in the Marshal's Office. As part of the activities related to the preparation, implementation and coordination of the Regional Innovation Strategy, the Director of the Department of Economic Development of the Marshal's Office (Programme Manager) is responsible, among others, for organising the process of entrepreneurial discovery and selecting priority areas for R&D (smart specialisations), animating partners and regional stakeholders, monitoring, cooperation with higher education institutions and R&D institutions as well as ministry at national level responsible for innovation.

The implementation of S3 is externally supported by the Management Team of the Regional Strategic Program. The members of the Team are representatives of regional or sectoral chambers of commerce, associations, institutions supporting entrepreneurship operating

in the Pomeranian Voivodeship, development agencies, entrepreneurs, pro-innovative organisations, universities, and cluster initiatives. In addition, there were dedicated S3 supporting bodies running in the region. In years 2015-2022, according to the provisions of the Agreement for Smart Specialisation four Councils were functioning for the development of the 4 Pomeranian Smart Specialisations. The Councils were a direct channel of communication between business and science with the administration in relation to all innovation activities. The process of entrepreneurial discovery was also supported by activities of working groups conducted by regional leaders and clusters (autonomous ships, hydrogen, spa treatment or internationalisation of companies).

During the programming period 2014-2020 the Pomeranian Voivodeship focused on R&D priorities. The tools for implementing such priorities were clusters and smart specialisations focusing on their internal cooperation, building local ecosystems rather than cooperating internationally. The Pomeranian Voivodeship directed all its political and institutional efforts to the process of selecting smart specialisation domains in 2014-2020. Most regional R&D institutions, agencies, technology parks and higher education institutions (HEIs) were involved in the EDP process. The management of S3 focused on building a comprehensive model of supporting good quality and a large number of R&D projects. It also meant a strong inclusion of Regional Key Clusters⁴ formed in the region in the previous 2007-2013 programming period as part of a consistent policy. In 2014-2016 the Management Board announced a contest which ended with the selection of 4 smart specialisation domains.

Selecting Pomorskie Smart Specialisations was organised by the Department for Economic Development of the Pomeranian Voivodeship in a two-stage bottom-up process which allowed to include both the element of extensive consultations and networking and expert assessment. In the first step, an analysis of the economic profile of the region was carried out, identifying advantages and barriers to development, as well as areas of economic activity with high growth potential, including areas at the junction of various sectors, industries and technologies. In the second step, smart specialisations proposals were submitted by representative partnerships in the contest, bringing together stakeholders mainly from the business and science sectors. The submitted proposals were evaluated by the Competition Commission (including three members from abroad, Finland and the United States) with international business and scientific experience. In the first stage of the competition,

28 Partnerships submitted smart specialisation proposals, which were assessed in terms of their strengths, weaknesses and development potential. In the second stage of the competition, 7 smart specialisations proposals (consolidated) were finally submitted. The result of this was the approval by the Management Board of four smart specialisation areas related to: Offshore and port and logistics technologies; Interactive technologies in an information-saturated environment; Eco-efficient technologies in the production, transmission, distribution and consumption of energy and fuels and in construction and Medical technologies in the field of civilisation diseases and ageing.

⁴ In the case of financing the development of innovation, in 2007-2013 programming period, the Pomeranian Voivodeship launched special funding paths for raising regional key clusters (which were selected in 2 contests in 2009 and 2010). Support for clusters included preparation of a strategy, employment of supporting experts as well as animation and networking. This support formed the foundations for the Pomeranian Smart Specializations accumulating capital and innovative critical mass, knowledge and cooperation networks. Thus, clusters became the basis for the definition of smart specialization areas (cluster members actively participated in the competition announced by Management Board in 2014 for choosing smart specializations).

The detailed scope of four specialisations had been included in the Agreements for the Development of Pomeranian Smart Specialisations negotiated and signed in 2016 between representatives of the Pomeranian Voivodeship Self-Government and over 400 Pomeranian entities (the one that took part in the competition and others interested in developing R&D projects in the selected areas). The Agreements contained the goals of smart specialisation development agreed between the parties, the subject scope and priority research directions relating to research problems, the solution of which is crucial for a given specialisation, as well as the rules and directions of smart specialisation's support from public funds.

The key change that took place from the perspective of strategic planning and S3 government in the current programming period 2021-2027 resulted from the global conditions that occurred after 2019, i.e. the pandemic and the energy transition (new geopolitical situation), the war in Ukraine that led to the energy supply crisis. In this regard, the adaptability of enterprises within the so-called twin transformation: energy and digital, became the priority. The updated Pomorskie Voivodeship Development Strategy 2030 included new rules, such as: the digital dimension (information society and strengthening digital competencies); the principle of a positive impact on the climate and the environment (monitoring of the environment, climate neutrality, energy security); the principle of transformation towards a circular economy (lower consumption, waste prevention, eco-design). The principles had a direct impact on the criteria applicable at the stage of identification and selection of projects to be implemented under regional strategic programmes, in particular projects in the areas of smart specialisations. The "refreshed" entities representing smart specialisations had to face greater challenges than ever before increasing the effectiveness of social policies and strengthening innovations in industries related to food, logistics or energy self-sufficiency. This caused the Management Board to focus on building new consortia and working groups in those areas as well as to approach international project activities.

5. Limits and obstacles to S3 governance

This chapter dives into the challenges and barriers regions face with S3 governance. By shedding light on these obstacles, we aim to provide a comprehensive understanding not just of the challenges, but also of the opportunities they present for refinement and growth.

Autonomy in settings S3 priorities

This section delves into the pivotal role of regional autonomy in the successful governance of Smart Specialisation Strategies. Through this exploration, we aim to not only highlight the challenges posed by differing levels of autonomy but also the opportunities they present for tailored and effective strategic implementation.

Azores: The Azores enjoys a distinctive status with considerable regional autonomy due to its designation as an outermost region. This should, in principle, allow for a more tailored approach to S3, aligning it closely with local needs. However, this autonomy has been a double-edged sword. While it grants the Azores the freedom to design and implement

strategies, the fragility of its ecosystem imposes that it is aligned and connected with broader national and EU objectives. Nevertheless, in the case of the Azores, the greater political autonomy did not lead to a better implementation of S3. On a different dimension, being heavily reliant on ERDF allocations, the Azores frequently face pressures to meet the effectiveness of actions. This ERDF dependence results in an overemphasis on short-term objectives, sidelining broader developmental goals. This was observable for Azores where it is reported that the operational programme was more focused on financial execution and perceived S3 as a possible complication.

Norte: Norte, in stark contrast to the Azores, operates with limited regional autonomy. This means that its ability to adapt and customise centrally formulated strategies to its regional context is often hampered. While the region contributes significantly to Portugal's GDP and houses a large portion of its population, its limited autonomy creates challenges in localising and tailoring S3 strategies. The region becomes somewhat tethered to central directives, which might not always resonate with Norte's specific developmental trajectories. Nonetheless, two aspects must be highlighted. On the one hand, the reports on the operational programs indicate that the regional evaluation criteria, based on S3, was the one that introduced greater discriminatory impact. On the other hand, it is not observed any attempt from the Norte OP 2014-2020 to adapt its policy instruments to S3. Like in many other regions, there is an ERDF-centric approach that privileges financial execution and formal compliance rather than strategy.

Catalonia: Catalonia stands out as an autonomous community in Spain, vested with the power to design and enact its own policies. This autonomy has been instrumental in fostering a sense of regional identity and driving initiatives directly linked to local needs. In the case of S3 implementation, Catalonia is a good example, demonstrating the capacity to use S3 to design and integrate policies. More critically, this system addresses a common bottleneck in governance – the barriers to internal coordination. Traditional bureaucratic silos, which often impede seamless communication and coordination across departments, are effectively dismantled. By integrating representatives from different governmental sectors, only possible given the high level of autonomy and the commitment of Generalitat, Catalonia ensures a holistic approach to decision-making, policy formulation, and strategy execution.

Pomorskie: The Pomeranian Voivodeship, like other Polish regions, is a case of limited autonomy and competence in the field of innovation policy. Balancing between the S3 directions set by the national level (ministries) and the identified regional potential significantly affects the effectiveness of the implemented activities. The multiplicity of activities and competencies in the scope of fulfilling the basic condition both on the country and region side causes dispersion of activities and communication bottlenecks between relevant ministries and representatives of regional authorities (e.g. maritime economy). At the same time, the region does not have sufficient competencies and, therefore, tools to effectively support the development of key R&D areas (e.g. centralisation of cooperation with HEIs). This limited autonomy affects the region's ability to adapt and modify S3 strategies, making it difficult to effectively meet specific regional needs and thus have a real impact on the region's position compared to others in the country and abroad (e.g. Regional Innovation Scoreboard).

Political commitment and mandate

Political commitment and mandate are pivotal elements in the successful governance of S3. Their presence, consistency, and strength can either facilitate or impede the realisation of S3 objectives. In the absence of political commitment and a clear mandate, regions may face difficulties in aligning various stakeholders, securing resources, maintaining the strategic direction of S3 and, more importantly, effectively adapting the policy mix.

Azores: Despite its regional autonomy, the Azores have experienced periods of fluctuating political commitment to S3. During the first half of the programming period of 2014-2020 political commitment was low but has been steadily increasing. This inconsistency can be attributed to changing regional leadership and political priorities, but to a great extent to a risk aversion to change, in a region with low density and long-term dominant stakeholders. The lack of a clear and sustained mandate from the political leadership has sometimes resulted in a misalignment between S3 objectives and broader regional developmental goals. This is evident in the region's challenges in entrepreneurial discovery processes where stakeholder engagement and strategy adjustments have been less effective than intended.

Norte: Norte's limitations in S3 governance arose from its political landscape. Despite having a robust governance model on paper, the region has faced challenges in its practical application due to wavering political commitment. The absence of consistency influenced by factors such as political turnover and competing regional priorities, has hindered the application and evolution of S3 strategies. The region's dependency on centrally coordinated policies, namely in the incentives system for SMEs also contributed to the inability to implement S3 effectively.

Catalonia: Catalonia, with its status as an autonomous community, has the advantage of designing and implementing its policies. The governance model established a clear mandate for implementation. Even though the region occasionally struggled with internal political dynamics, S3 moved up the hierarchy in the Generalitat, reinforcing its capacity towards transformative actions. This signal of political commitment and the reinforcement of the mandate provides an adequate setting for delivering S3.

Pomorskie: In Pomorskie, the limitations arising from political commitment and mandate are intertwined with its status as one of Poland's voivodeships. With limited legislative and financial autonomy (incl. innovation policy competencies), the region is often bound by national directions, which may not always align with its specific needs. The effectiveness of its S3 governance is contingent on the strength and consistency of political commitment at both regional and national levels. Any misalignment or lack of commitment at the national level can ripple down, affecting the region's ability to tailor and implement S3 strategies effectively.

Institutional capacity

This section delves deeply into the crucial role of institutional capacity in the effective governance of the Smart Specialisation Strategies. Through this examination, we aim to elucidate not only the intricacies and potential pitfalls related to institutional capacity but also the avenues they present for enhanced collaborative action and strategic refinement.

Azores: In the Azores, institutional capacity has emerged as a critical bottleneck. Despite the region's distinct status and autonomy, there have been evident gaps in the technical capacities essential for S3 governance due to a low-density institutional framework. The region's reliance on ERDF allocations has further accentuated these gaps. With a primary focus on meeting key performance indicators (KPIs) set by ERDF, there was a limited investment in the management team, as well as in its training. Given the novelty of the S3 concept, capacity building would have been vital to enhance internal capabilities in strategy design, entrepreneurial discovery, and monitoring. The lack of such capacity has rendered the entrepreneurial discovery processes ineffective in influencing strategic adjustments and policymaking.

Norte: Norte, despite its industrial strength and economic significance, has struggled with challenges tied to institutional capacity, mostly derived from issues previously mentioned regarding mandate and commitment. Norte's institutional landscape is rich and diverse, however the region faced limitations in its implementation. While the region boasts a well-defined S3 governance structure, the institutional dynamics for S3 were low. This limitation has been exacerbated by the region's constrained autonomy which sometimes impeded the effective localisation of centrally formulated policies. The governance model's limited dynamism, compounded by reduced engagement from key entities, has impacted the consistent application of S3 strategies.

Catalonia: Catalonia presents an institutional landscape that is varied and complete with top-tier institutions that can provide insights and foresight for the S3 implementation as well as present the ability to mobilise and cluster other stakeholders around them. The implementation around shared agendas also facilitates the collaboration across institutions and actors, favouring a seamless alignment of institutional actors with S3 objectives.

Pomorskie: In Pomorskie, regional clusters, selected in 2009 and 2010, played a fundamental role, serving as the main instruments to start with the S3 implementation and develop the EDP with the support of universities, R&D centres, and other regional institutions. At the regional Governmental level, the institutional potential exists and has demonstrated competence to implement S3 but it faces limitations related to the re-engagement of partners and regional stakeholders (new programming period 2021+). Given the decline in political commitment to clusters, their institutional capacity and motivation to act is weakening. An additional problem is the increasing lack of competent staff to conduct projects that could involve a larger number of partners (including international ones).

Multilevel governance mechanisms

Azores and Norte: Multilevel governance was limited during the programming period 2014-2020. If the informal technical group set-up by the National Innovation Agency (ANI), already mentioned in the case of Azores, helped to coordinate strategy development and a better multilevel coordination of priorities. On governance and deployment of policy instruments, that coordination was poorly achieved as well as the coordination with the management authorities and the intermediary bodies, involved in the appraisal of projects, was also very shallow. Although all management authorities (for mainland regions only) coordinate calls through two technical groups, this layer of multilevel coordination addressed S3 as a mere compliance issue.

Catalonia: The Government of Catalonia, as per the agreement on 2013, established two commissions to streamline and optimise the coordination of resources from the European Union's multi-annual financial framework for the period 2014-2020 in Catalonia. The first, the European Fund Coordination Commission of the Common Strategic Framework, ensures alignment between European funds and RIS3CAT operational programmes. The second, the Interdepartmental Commission for European Union Financial Resources focuses on enhancing the financing system for government initiatives with European funds and identifying new cooperation areas within the priorities set by the European Commission.

Pomorskie: The multi-level framework includes the national S3 (National Smart Specialization) and regional S3, but the national level dominates in shaping innovation policies, limiting the competencies of regions. Multi-level coordination was not a great success, encountering communication and decision-making bottlenecks (e.g. the perception of key R&D priorities). There are no goals jointly defined at the national and regional levels, which would be set and agreed upon by all stakeholders, and most importantly, would bring the expected results notably in terms of improvement of the quality of R&D activities and effectively positioning Polish entities in global value chains. This results in decentralisation of human resources and capital and the fragmentation of the S3 process. It is crucial to prepare a system of incentives for the inclusion of enterprises and regional partners and stakeholders. Despite many years of managing the S3 process, the Pomeranian Voivodeship still remains at a low level in innovation rankings (a drop of 4 places in the Regional Innovation Scoreboard 2023). This results in a growing distance from innovation leaders.

Entrepreneurial Discovery Process

Azores: The Azores region, with its rich maritime and agricultural potential, would stand to gain significantly from EDP. However, the region has faced limitations in effectively leveraging this process. Notably, the entrepreneurial discovery process in the Azores has not been effective in influencing strategy adjustments and policymaking. The reasons for these challenges can be traced back to limited stakeholder involvement, particularly before 2018, but also due to the dominance of established institutions that condition the process. The impact of EDP in practice was also reduced, not being effective in instigating strategy adjustments and informed policymaking. This disconnect has led to a reduction in the perceived importance and credibility of S3 among stakeholders.

Norte: Norte's governance model underscored the importance of EDP. Yet, the actual dynamics of entrepreneurial discovery in Norte have faced challenges. Although foundational to the region's S3, the EDP lacked continuity and failed to exert significant influence on the Norte operational program. The participatory processes, vital for EDP, were not sustained throughout the S3 strategy's lifecycle. This led to a decline in the dynamism of stakeholder engagement and reduced the potential impacts of entrepreneurial discovery on S3 strategy adjustments and policy recommendations.

Catalonia: Catalonia, with its advanced economy and strong emphasis on innovation, recognises the pivotal role of EDP in shaping its S3. The challenge-driven approach contributes to the strong implementation of EDP mostly focused on local challenges. However, while the region boasts strong institutional structures and a vibrant innovation

ecosystem, it needs to balance the interests of diverse stakeholders and ensure that the outcomes of the EDP processes genuinely influence policy and strategy formulations, namely through the collective construction of shared agendas. Furthermore, the region's advanced economy sometimes leads to over-reliance on established sectors potentially limiting the exploration of emerging innovative domains through EDP.

Pomorskie: Pomorskie is struggling with the demotivation of regional partners to engage and co-create innovation priorities (second “round” of S3). The S3 process is often parallel to real market processes and it is increasingly difficult to maintain linkages between them both. The S3 process, which took place in the region in 2014-2016 was specific due to the priority goal of building an innovation system in Poland compared to today's process, where the involvement of entities is more demanding. Until 2020, it was mainly about basic indicators, such as attracting investors, increasing employment and expenditure on R&D, etc. Companies believed that the S3 process would help them reach a higher level of innovation and that, in the end, they would be rewarded with EU funding (general mobilisation). However, the process of applying for R&D funds turned out to be more complicated than expected, and not everyone received awards and gained experience. Currently, there are other challenges for companies and regional partners, including productivity growth, twinning transition, energy efficiency, and social goals, while a large number of SMEs and regional stakeholders are struggling to stay in business. Ambitious goals can often seem abstract to them. Innovation is no longer associated with "global diamonds" but more down-to-earth changes. It is worth emphasising that most of the same people have been involved in EDP since 2013 (there is a lack of new blood). In contrast, “new people” in the S3 process are more project-oriented, focused on short-term activities and quick benefits which further reinforces the fragmentation of the process and often makes it impossible to be consistent.

6. Good practices

Navigating S3 can be challenging, but there are shining examples of success. This chapter showcases the best practices that have made a difference in our case studies. By understanding and learning from these successes, we can discover detailed examples and actionable takeaways that can inform and enhance S3 governance.

In the **Azores**, the governance system benefits from its significant political autonomy, enabling comprehensive execution of regional policy and S3. The elevation of S3 to the vice-presidency signifies its growing importance, complemented by an expanded management team. This team, with its cross-departmental structure, draws from varied departments, potentially enhancing policy coordination. Moreover, the Azores' active participation in the EU initiatives, like regional innovation partnerships, integrates it into European innovation networks, fostering transformative discussions for S3.

Catalonia's governance system is marked by its robust internal coordination and policy integration. Its foundational structure integrates six expert elements and is enhanced by staff from different governmental departments. This design facilitates quick adaptability to changing needs and mitigates bureaucratic barriers, ensuring a cohesive approach to decision-making and policy implementation. Catalonia's autonomy further strengthens its

governance, supported by the Generalitat's commitment to S3, the strong institutional capacity of the Technical Committee, and a cross-cutting approach that integrates executive bodies with various departments.

Norte's governance showcases the importance of multilevel coordination in smart specialisation. The CCDR-N emphasised this by fostering coordination in the Norte-Galicia Euroregion through a cross-border S3 initiative. The region's governance draws strength from its vibrant innovation system, with a clear structure that encourages stakeholder participation in entrepreneurial discovery. A recent leadership shift has further emphasised the significance of S3 and the need for enhanced governance.

Pomorskie's governance is characterised by innovative agreements and platforms of cooperation that foster stakeholder collaboration. The signing of the Pomeranian Smart Specialisation Agreements, following an extensive EDP, has enhanced stakeholders' engagement and laid out specific (horizontal) projects for specialisation domains. Cooperation platforms, like the Pomeranian Offshore Platform, address industry needs by establishing expansive partnerships. Good practices in Pomorskie emphasise the need for more regional-priority policy-oriented cooperation at the national level, streamlined communication and tangible benefits for entities engaged in the S3 process.

7. Lessons learned

Through experience, crucial lessons arise, which can shape the future path of S3. This chapter explores these significant insights derived from various case studies focused on S3 governance. By reflecting on these lessons, we can anticipate challenges, refine our approaches and maximise the strengths of S3:

Political commitment: ensuring consistent political support and aligning regional/national objectives with S3 goals can drive more impactful outcomes

A strong political commitment is paramount for the seamless implementation of S3 strategies. For instance, Catalonia's consistent political support and autonomy have enabled it to customise its S3 strategies effectively, addressing local challenges and leveraging strengths. In contrast, Norte's intermittent political backing has posed challenges in aligning S3 goals with regional aspirations. Such disparities underscore the vital role of continuous political commitment in determining the success of S3 implementations.

Regional autonomy: increasing regional autonomy on innovation policy and providing regions with the necessary resources and knowledge can foster more tailored and effective S3 strategies

Regional autonomy is a crucial factor in the effective adaptation and implementation of S3 strategies. While regional autonomy can empower regions like Catalonia to tailor and

effectively implement a smart specialisation strategy (S3) based on local needs, it's not a guaranteed formula for success. In regions such as Norte and Pomorskie, limited autonomy has posed challenges in adapting S3 to their specific contexts, whereas regions like Catalonia and the Azores, with higher autonomy, have the flexibility to mood S3 strategies based on local challenges and strengths. Thus, while autonomy is an important factor, it operates within a complex web of regional characteristics, financial constraints and overarching policies that together determine the successful governance of S3.

Multilevel governance: establishing regular communication channels and collaborative platforms among different governance levels can streamline S3 strategy implementation

Effective S3 governance requires coordination across different governance levels. An absence of such coordination, as seen in Azores and Pomorskie, can lead to fragmented policies and missed synergies.

Strengthening institutional capacities and promoting interdepartmental collaborations can enhance the adaptability and effectiveness of S3 strategies

Robust institutional frameworks are instrumental in navigating the complexities of S3. Catalonia's strong institutional setup has been a cornerstone of its S3 success. Pomorskie, on the other hand, used the animation project to build the necessary competencies both on the part of regional partners, mainly companies and clusters, as well as administration representatives. However, regions like Azores, prior to 2018, have faced challenges due to limited institutional capacities and stakeholder involvement, resulting in static priorities.

Entrepreneurial Discovery Process: promoting broad-based stakeholder engagement and setting up regular feedback mechanisms can invigorate the EDP and, by extension, the S3 ecosystem

A continuous EDP is the heartbeat of a dynamic S3 ecosystem. Regions like Pomorskie have thrived by fostering continuous stakeholder feedback and participation. Such a participatory approach ensures that the S3 strategies remain relevant and adaptive to evolving needs.

Role of European Regional Development Fund: regions should maintain a balanced approach, ensuring that short-term goals do not eclipse the broader, transformative vision of S3

While ERDF provides critical financial support for S3, an over-reliance can distort the overarching vision of S3. The emphasis on fast project implementation for ERDF compliance

can sometimes overshadow a holistic as was observed in regions like the Azores and Norte who have experienced challenges when the urgency of ERDF execution overshadowed long-term S3 visions.

8. Final remarks

This analysis of the S3 governance across multiple regions provides a comprehensive understanding of the complexities and intricacies involved in regional innovation policies. The process has underscored the importance of political commitment, regional autonomy, and institutional capacity in influencing the success of S3 initiatives. Furthermore, it has shed light on the need for a dynamic and inclusive EDP and the challenges that arise from an over-reliance on funding sources like the ERDF.

The study also identified a number of good practices and lessons learned from different regions, which serve as invaluable reference points for other regions wishing to refine their S3 governance. For example, Catalonia's internal coordination and the Azores' recent transformative approaches to S3 governance could serve as models for other regions to emulate.

However, the journey of S3 governance is an ongoing one, and continuous feedback and adaptability are crucial. The challenge is not only to identify the right strategies, but also to ensure their effective implementation, taking into account the unique socio-economic and political contexts of each region.

In conclusion, as regions continue to develop and adapt their S3 governance models, A collaborative approach - learning from each other's successes and challenges - will be key to realising the full potential of regional innovation policy.

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Annexes

Synthesis of the governance models

	Azores (PT)	Catalonia (ES)	Norte (PT)	Pomorskie (PL)
What are the Governance bodies?	Executive Committee, a Regional Innovation Council and Thematic Working Groups.	Generalitat, RIS3CAT Steering Committee, Technical Committee.	CCDR-N, Regional Innovation Council, Thematic Platforms.	Management Board of the Pomorskie Voivodeship.
Who are the Management units?	<p>Government establishes the model.</p> <p>Regional Innovation Council approves strategy changes.</p> <p>Thematic groups maintain entrepreneurial discovery dynamics.</p> <p>Management team of 3 civil servants integrated in the Regional Directorate for Science and Technology.</p>	<p>Generalitat makes strategic decisions.</p> <p>RIS3CAT Steering Committee promotes and coordinates.</p> <p>RIS3CAT strategy, Technical Committee monitors actions.</p>	<p>CCDR-N oversees the strategy.</p> <p>Regional Innovation Council approves the strategy and recommendations.</p> <p>Thematic Platforms engage in entrepreneurial discovery.</p> <p>Management team integrated in CCDR-N with a limited resources and little institutional traction.</p>	<p>Department of Economic Development, Office of the Marshal of the Pomorskie Voivodeship is organising the S3 proces.</p> <p>The Director of the Department is Programme Manager for implementation of Regional strategic Program which plays the role or S3.</p>
Existing multilevel and coordination mechanisms	A national informal group has been created by ANI, but with little coordinative impact.	In light of the high autonomy of Catalonia, it is not observed a coordination mechanism with national policies within S3.	<p>A national informal group has been created by ANI, but with little coordinative impact.</p> <p>The crossborder S3 and the Vanguard Initiative present different opportunities of multilevel coordination.</p>	<p>Regional Forum of Smart Specialisations (communication chanel with national smart specialisations).</p> <p>Management Team of Regional Strategic Program.</p>
What are the key active stakeholders of the EDP?	<p>Initial broad participation of regional actors based on the quadruple helix model.</p> <p>EDP process occurred sparsely.</p>	<p>Involvement of various stakeholders in the RIS3CAT Steering Committee, including representatives from different departments.</p> <p>EDP occurs in variable geometry, from high level groups, to local mission-oriented groups.</p>	<p>Through the quadruple helix model, ensuring participation of regional actors.</p> <p>EDP process occurred sparsely.</p>	<p>Smart Specialisation Councils (for each specialisation domain)</p> <p>Regional and sectoral chambers of commerce, associations, institutions supporting entrepreneurship, development agencies, entrepreneurs, pro-innovative organizations, universities, cluster initiatives etc.</p>
What are the support groups/units/platforms/councils involved and disseminating EDP?	Thematic working groups, one per each identified priority domain.	Catalonia's approach is more flexible and is not based in crystalized working groups. Instead, it foster the creation of support groups challenge-driven.	Thematic working groups, one per each identified priority domain.	S3 Leaders (for each smart specialisation domain), S3 Councils, Regional Key Clusters e.g. Hydrogen Technologies Cluster, Pomeranian Offshore Platform, Autonomous Shipping Working Group and

	Azores (PT)	Catalonia (ES)	Norte (PT)	Pomorskie (PL)
				Pomeranian Entrepreneurship Council
Main changes from 2014-2020 to 2021-2027 in the governance system.	<p>S3 is under the governance of the vice-presidency.</p> <p>The management team has been significantly augmented and follows across-departmental approach.</p>	<p>No major changes are observed in governance which encompasses a Strategic Committee, a Technical Office for Transformation and Working Groups</p> <p>New flagship initiatives associated with the shared agendas were launched⁵:</p> <p>BIOHUB CAT: Service centre for the effective development of the circular bioeconomy;</p> <p>CIDAF CAT: Digital Innovation Centre of the Agroforestry Sector;</p> <p>Energy and Local World: Empowering local authorities to tackle energy transitions.</p>	<p>There is an intention to create a directorate within CCDR-N to establish a full-fledged S3 team.</p>	<p>No major changes in the governance however, greater emphasis was placed on the implementation of the twin transformation, i.e. digital mechanisms and energy efficiency priorities. This was reflected both in strategic and operational documents as well as in the way of organizing the work of individual specializations (concentration on horizontal approach).</p>

⁵ <https://fonseuropeus.gencat.cat/web/.content/ris3cat/documents/angles/ris3cat-agendes-compartides-plataforma-sinergies-en.pdf>

Summary of limitations and obstacles

Region	Regional Autonomy	Political Commitment and Mandate	Institutional Capacity	Multilevel Governance	Dynamics of EDP
Azores	High autonomy; an autonomous region with significant legislative and fiscal powers in the management of policies.	The lack of political commitment hampered the effective connection between S3 and the implementation of policies.	Limited institutional capacity with a lack of investment in the management team.	Multilevel coordination was limited during 2014-2020.	Entrepreneurial discovery was a major flaw due to low stakeholder interest and discontinuity between S3's preparation and implementation.
Catalonia	High autonomy; strong regional government with significant decision-making powers.	Strong political commitment; clear mandates leading to consistent S3 execution.	Robust institutional capacity; well-coordinated efforts across institutions.	Effective multilevel governance with clear roles and coordination mechanisms.	Dynamic EDP; continuous feedback loops and regular adjustments based on entrepreneurial discovery.
Norte	Limited autonomy; though it has a decentralised institution, it operates under central government directives.	Initial enthusiasm waned over time, leading to a more compliance-based approach.	Institutions have clear roles but often pursue individual strategies.	Limited multilevel governance in the 2014-2020 period.	The static nature of S3 priorities, with little adjustment based on entrepreneurial discovery, hindered effectiveness.
Pomorskie	Moderate autonomy; regional government plays a role but still subject to national policies.	Varied commitment levels; some mandates are not strictly enforced, leading to inconsistencies in S3 implementation.	Established institutions but often work in silos.	Multilevel governance is present, but coordination between levels can be challenging.	EDP are in place but require more stakeholder engagement and continuous feedback.

