Smart Specialisation
from design to implementation

HANDBOOK

INDEX
Preface and introduction will be added once the chapters are finalised

Chapter I – The Entrepreneurial discovery process (EDP) cycle: from priority selection to strategy implementation

Highlights

- The term entrepreneurial discovery process (EDP) was conceived, in preparation of the programming period 2014-2020, to support the deployment European Regional Development Funds (ERDF) for research, technological development and innovation (RTDI) in Thematic Objective 1. The EDP refers to the systematic identification and pursuit of investment priorities by regional stakeholders.

- The logic of EDP, whereby stakeholders' interaction is used to open new domains of technological and market opportunities and to inform governments' policy and decision-making processes, has proved robust five years since its introduction.

- However, the EDP-concept has since evolved to embrace a wide array of inclusive public-private processes that, whilst underpinning ERDF deployment, also stimulate the use and/or combination of EU, national, regional, public and private funding sources.

The last five years of EDP-practice have highlighted various dimensions that were not fully acknowledged nor addressed at earlier stages, namely:

1. The EDP can be used beyond the prioritisation phase. That is, the EDP can also help to fine-tune S3 priorities during the implementation and monitoring of the strategies.
2. The EDP requires governments to act as platforms to support stakeholders' participation across the policy process.
3. Local specificities are the EDP's starting point.

EDP five years on: an intact logic for an evolved concept

The EDP is the critical basis of research and innovation strategies for smart specialisation (S3). This process, through which regions or countries reveal where they see they can do best in terms of R&D and innovation, distinguishes the S3 from older policy approaches (Coffano & Foray, 2014; Rodríguez-Pose & Wilkie 2016).

This logic, after five years of S3 design and implementation, is still intact in its two key dimensions:

- As crucial and initial step for firms and research actors to open and explore new domains of technological and market opportunities;
- As mechanism/process generating information on the value of such new domains, thereby supporting policy makers at local, regional, national and EU level in their investment and policy decisions for regional development.

Effectively, the EDP is about **prioritising investment based on an inclusive process** driven by stakeholders' engagement and attention to market dynamics. Hence, the EDP provision breaks with traditional policy intervention based on centralised, top-down decision processes (Foray, 2016), on the grounds that the knowledge needed to regulate certain activities is scattered across stakeholders.

The EDP is considered a, if not the, feature that distinguishes the smart specialisation approach from innovation strategies of the past and the one that lends these approaches their more 'bottom-up' character. (Rodriguez-Pose & Wilkie 2016).

Following this inclusive approach, and in line with the S3 Guidelines, regions across Europe (see below the example box on the French region Franche-Comté and the Portuguese region Norte) have adopted -over the past few years- different kinds of participatory models and evidence-based practices, such us industry-government dialogs, SWOT analysis and other mixes of participatory and analytical methods to identify potential domains of specialisation. This useful endeavour, in which the EDP is used as a "**stock-taking process**" allows mapping promising sectors for investment and domains for future competitiveness.

Franche-Comté (FR) and Norte (PT) - The EDP as a prioritisation mechanism

Through a process combining numerous interactions between the regional government and the industry, with statistical analysis on the regional economy, the **French region Franche-Comté** has identified its S3 priority areas, which include microsystems and micro-techniques for the luxury industries. Subsequently, the regional Government has been strongly committed in stimulating and supporting, with investment, new collaborative projects within these priority areas.

A micro-system of innovation, developing flexible automation in the footwear industry, has emerged in the **Portuguese region Norte** following the combination and integration of engineering knowledge from the University of Porto (INESC), skills of companies specialised in industrial machinery, tools and software and the entrepreneurial vision of a few footwear manufacturing firms (which understand very well the need for revival via innovation). In this context, public actions pursuing the EDP will be particularly effective as they rely on an already active and committed micro-system of innovation.

More information

For Franche-Comté (FR), see the region's ERDF-ESF 2014-2020 Operational Programme webpage (in French):

http://www.europe-en-franche-comte.eu/FEDER/FEDER-2014-2020

For Norte (PT), see the communication "Portuguese footwear industry improved its competitiveness through R&D and RIS3", available at the webpage of Portuguese Innovation Agency (in Portuguese and English):

Five years of practice reveal that the EDP, as a process initially conceived for choosing investments priorities under Thematic Objective 1 of the ERDF (Strengthening research, technological development and innovation), has evolved revealing various dimensions that were not fully acknowledged nor addressed at earlier stages, namely:

- The cyclical nature of the EDP;
- The new role of government;
- The need to adapt EDP to local circumstances;
- The local, regional, national or transnational structures for EDP.

This chapter reviews and addresses these issues, providing key examples that have emerged from the activities of the S3 Platform and from discussions with public authorities involved in S3 management and implementation.

The cycle of Entrepreneurial Discovery Process

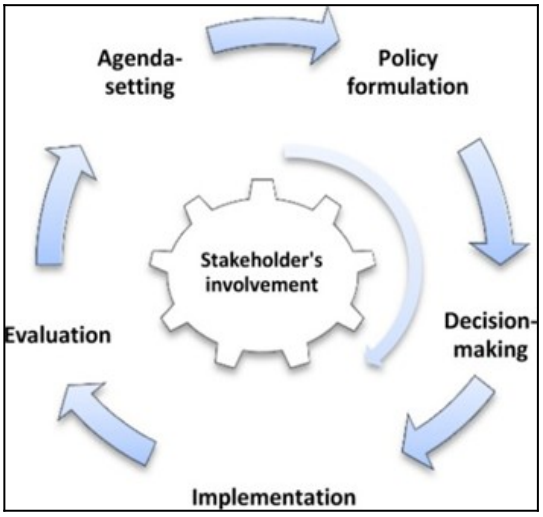
In their seminal paper, Hausmann & Rodrik (2003) who refer to the EDP as "self-discovery", already argued that discovering or learning what a country or a region is good at requires an investment in a concrete process of exploration. However, the experience accumulated over the past five years has shown that this is only the initial step of EDP. In this section we argue that the potential of the EDP goes beyond the prioritisation phase and the subsequent investments.

The potential of EDP: Recursive stakeholders' involvement

The EDP provision calls for an inclusive and interactive process at the different stages of the policy-making process. That is, to successfully implement S3 priorities, it is not sufficient for public authorities and stakeholders to jointly identify investment-priorities. Rather, once the process of 'discovery' has been initiated, it seems crucial to keep engaging stakeholders throughout the different stages of the policy-making process (See Figure I.1).[0]

[0] The involvement of stakeholders in policy-making, coupled with the emphasis on evidence-based decision-making, are increasingly common across countries, which undertake these practices in the interest of higher transparency and with the aim to address efficiently societal needs (Mieszkowski & Kardas, 2015).

Figure I.1. The cycle of EDP



Source: Kyriakou and Periañez-Forte (2016), based on Lasswell (1956).

This new dimension, which could be referred to as EDP as a "**flow**", is necessary to ensure trust and commitment to the strategic objectives codified in S3 strategies, and hence the successful implementation of the strategy itself. For instance, involving stakeholders' in the definition of policy instruments seems to be crucial, as it allows them to identify potential bottlenecks hence foreseeing implementation problems. Likewise, the interaction among the different stakeholders involved during the monitoring of the strategy allows a continuous reflection on market opportunities, as well as a periodic re-assessment of the investment-priorities previously identified.

The example box below on Slovenia and Wielkopolska (PL) illustrates how the EDP is effectively permeating different stages of the policy making cycle. In these cases, involving stakeholders has ensured actors' trust and commitment towards the objectives pursued in their S3, aligning market needs and opportunities, with policy intervention.

Slovenia and Wielkopolska (PL) – Stakeholder involvement in the EDP

Slovenia: open partnerships for private and public actors. As a result of the EDP stock-taking exercise that took place in Slovenia, a number of partnerships are to be established to support S3 implementation. These partnerships are planned to be open entities, where representatives from business, research, academia, NGOs, public sector may join or leave the group at their own initiative. However, partners will be required to provide their own funding as a way to guarantee engagement and cooperation. The internal management structure of the partnerships is tailored according to the technology and market-specific characteristics of each S3 domain, with some transversal partnerships covering more than one domain. Partnerships have the objective, among others, to maintain open dialogue throughout the policy cycle (implementing the EDP as a flow). This modus operandi was approved by all stakeholders, as it appeared clear that the process of identifying and focusing on investment priorities should be a continuous living and changing one.

During the preparation of S3 a substantial shift occurred, a drive to change the mind-set and perception of key actors including businesses and researchers. After many networking events, promotional activities and consultations, stakeholders no longer looked at the process from afar but are now taking ownership of it and co-creating trends and policies.

Although public-private interaction is not an unknown practice across regions, the challenge is to maintain the dynamics generated during the elaboration of the national and/or regional S3 along the different stages of the policy cycle. To achieve this, it seems critical to map and sustain dialogue among all institutional actors involved in S3 design and implementation. This includes the teams/institutions that conducted the EDP exercise in view of the *ex-ante* conditionality, as well as actors involved in the management/implementation of the relevant Operational Programmes (OPs) or other funds, down to the very individuals involved in drafting and managing calls for proposals. All these actors should have a common understanding of the EDP and should be aware of their role within the process. In sum, the EDP requires a long-term investment in building competences internal to the public administration, ensuring continuity allows the investment to produce its returns. Hence, the S3 governance should contain mechanisms to prevent the cycle being broken by either political or financial instability.

It is critical to ensure continuity to the EDP. Breaking the EDP means disrupting a trust-building process that is crucial for the sustainability of the S3 itself.

The new role of government

Inclusive governance, required for the EDP, demands that the public sector act as a platform to enable targeted stakeholders' interaction and policy coordination. This way, policy decisions are not specified beforehand, but evolve through exchanges between government, entrepreneurs and its citizens. Thus, the government is effectively operates a service provider enabling its user community (O'Reilly, 2010).

In the EDP, bottom-up, public-private interactions and exchanges of entrepreneurial knowledge are the principal source of information for policy-makers to develop more efficient tools for regional development.

These new demands on governments put an emphasis on the role of communication and transparency, both within the public administration and towards stakeholders, in order to ensure the sustainability of the process. Whilst it is critical to establish effective and efficient channels for communication from the onset of the process, it is also imperative to ensure flexible structures where governments and stakeholders can constantly adapt activities and policies to a changing reality. In this regard, governments have the following key responsibilities:

- To stimulate through incentives, and to support a continuous dialogue across firms and other stakeholders, allowing new techno-economic domains to emerge and be discussed.
- To avoid that inertia and path-dependence lead to selecting already established sector or areas that are too broad to become actionable;
- To build on such dialogue to recursively assess and select investment priorities identified by stakeholders;
- To support selected priorities, by developing policy instruments that enable collaborative projects and that embed monitoring and evaluation activities.

The above responsibilities are often new to policy makers across governmental levels. The way that public authorities deal with these tasks has a direct effect on the way in which the EDP can be organised, raising questions related to responsibilities, capacities, management of stakeholders, the impact of political changes and the ability of the public sector to engage in activities that present risks. Emerging key issues affecting the success of EDP are mentioned below.

Who is responsible for leading the process, engaging and managing stakeholders, whilst avoiding lobbing and corruption?

The EDP requires a "collaborative leadership" dynamic to be in place for regional stakeholders to find their way to work together. It is equally important to mobilise stakeholders and allow new ideas to emerge, as to translate such ideas into strategic steps that can impact on a whole cluster or domain (OECD, 2013). Within this process, each stakeholder has a role to play and it is a collective responsibility to build and sustain trust. As for the public sector, one of its roles is to provide adequate platforms for this to happen. This is essential to ensure balance across competing interests and keep in check lobbying and corruption.

What skills or capacities are necessary to transform 'entrepreneurial knowledge' into policy intervention?

Mediating between entrepreneurial, uncodified knowledge and policy definitions in a way consistent with the EDP, may require skills/capacities that are new to public bodies. These include the existence of an appropriate infrastructure for identification of, and exchange among, stakeholders (i.e. updated datasets, platforms for interaction, etc.). At the same time, stakeholders' engagement requires awareness and practice of participatory leadership methodologies, which allow common decision making to emerge. The latter 'soft skill' is not yet widespread and needs to be built for a successful EDP. However, participatory leadership must be combined with and aligned to the technical, legal and administrative knowledge which is well developed in the public sector. In this respect, one cannot overstate the importance of an interdisciplinary mind-set, whereby public entities that are relevant in different parts of the policy cycle have a common vocabulary. As an example, it is critical that those in charge of writing calls, are fully aware of the previous interactive process with stakeholders. In this way, they will be able to address their needs by devising appropriate policy instruments (see below the example box on the Greek region Eastern Macedonia and Thrace).

How are bottom-up and top-down initiatives in managing stakeholders to be managed?

With the EDP as the core process for priority selection, the S3 approach aims to deal with one of the weaknesses of government intervention, the so called 'principal- agent problem', proposing a more human-centred approach. Nevertheless, it is often hard to define a framework where a large number of regional stakeholders can work together. One of the remaining challenges hence concerns the division of competences during the EDP cycle.

How can the EDP be preserved from political changes or political instability?

The EDP requires trust across stakeholders, which is a lengthy and laborious process and should be protected by sudden political instability. In other words, the governance system should devise ways to ensure that the outcomes of stakeholders' interaction are embedded in the policy process in a

robust way, whereby political changes –rather than damaging the trust building process- are in a position to embrace them in their new agenda.

How can the risk friendly behaviour needed for innovation be embedded in traditionally risk-adverse public institutions?

The EDP requires the public sector to adopt a more risk-friendly attitude. Selecting priorities with the aim to develop new strategic sectors bares risks, as returns are uncertain and will only be visible in the long-term. Furthermore, within S3, the government also has the responsibility to re-assess the priorities periodically, which may require shifting the investment to other sectors if the avenues previously pursued appear less promising than expected. Policy makers need to identify new ways of working, in which uncertainty and risks in strategic proposals can be duly evaluated without any detriment to public accountability. It requires the public sector to take new risks, avoiding path-dependence or inertia, which would result in either picking winners or defining broad priority areas.

All in all, public sector innovation appears as a critical component of the EDP, without it, the state and its public sector agencies are more likely to frustrate rather than foster the process of entrepreneurial discovery (Morgan, 2016). These challenges are especially relevant in those cases in which S3 has altered the distribution of competences related to RTDI policies.

The need to adapt EDP to local circumstances

The key question is how to use the existing structures in a region to go beyond?

The afore-mentioned challenges need to be addressed starting from the local context. At the core of the S3 concept lays the conviction that development paths are place-based, which is why one EDP size does not fit all. A place-based approach is about extracting and building on local knowledge with the aim to mobilise it nationally and internationally (McCann and Ortega-Argilés, 2015), taking into account local specificities and constraints. This observation also applies to the EDP itself, as shown by the wealth of regional experiences recorded in the past five years. Although any EDP approach shares the goals of facilitating stakeholder's interaction, integrating their perspectives and actions into common goals and shared priorities, and obtaining their commitment to coordinated implementation, the way in which such objectives are pursued differs across regions.

We have identified three dimensions that illustrate well the place-based nature of the EDP. These dimensions serve the purpose of highlighting how much variety can exist across different territorial realities in the EU. Though, they are not the only dimensions affecting EDP developments:

- The degree of use of participatory practices;
- The institutional setting;
- The entrepreneurial readiness of the actors.

EDP Local Dimension 1 - Degree of use of participatory practices

The way the EDP is organised, as well as its outcome and impact, depends on how traditionally established participatory decision-making processes and stakeholders' dialogues are. In regions with less tradition in participatory exchanges, the EDP - whilst posing significant demands in terms of time, effort and commitment - has been a useful encouragement to stakeholders' interaction. In these cases, the public sector should find ways to be responsive and devise feedback mechanisms to ensure that local actors know how their participation to the EDP is affecting policy decisions, thereby avoiding stakeholders' fatigue. On the other hand, in countries with longer standing tradition in participatory exchanges, the EDP has provided momentum to reinforce and expand such practices (see below the example box on the Greek region Eastern Macedonia and Thrace).

Eastern Macedonia and Thrace (GR) - Organising an effective EDP

In Eastern Macedonia and Thrace (GR), the EDP required not only introducing, for the first time, participatory dialogue in the RTDI policy making, but also reigniting trust-building towards the public sector. This mechanism required that stakeholders who took part in the EDP be kept informed about policy outcomes. This was made possible through two types of events:

- EDP focus groups – a set of four sectoral events, aimed at generating innovative ideas through interaction between business, public and research sectors within the S3 priority areas
- Project Development Labs (PDL) – a set of two events aimed at processing the EDP ideas and moving them towards implementation, identifying funding opportunities and action plans for policy. During the second PDL, in particular, policy makers presented to actors of the Triple Helix the draft calls for proposals, which were developed in light of the EDP focus groups. Stakeholders could comment on those, as well as develop their ideas further with the support of experts in R&D funds.

With the S3 experience, policy makers in this region were given responsibilities for research and innovation policies. These new competences pushed the Managing Authority of the regional Operational Programme to develop, together with the JRC, skills in participatory leadership to pursue EDP in different sectors. Through the EDP focus groups the region defined in detail its priority areas and, building on that, analysed the administrative and legal aspects necessary to write effective calls for proposals. This involved interactions with the national government, the EC and experts in the field. Furthermore, throughout this process, stakeholders themselves noted that a better awareness of relevant actors (through updated databases and appropriate avenues for interaction) was necessary for conducting a proper EDP.

More information

Boden, M. *et al*. (2015) European Parliament Preparatory Action "Actual and desired state of the economic potential in regions outside the Greek capital Athens", Administrative Agreement (AA) no. 2014ce160at056 between DG Regional Policy (REGIO) and DG Joint Research Centre (JRC), Final Report, December.

EDP Local Dimension 2 - Institutional setting

A successful EDP requires governance structures sufficiently flexible to engage and empower stakeholders in the decision-making processes. Such flexibility is pursued differently depending on the institutional setting. For instance, in regions with a high regional autonomy dealing with RTDI policy, it is possible to institutionalise new EDP practices. In other cases, the EDP results from new configurations between the national and regional level. This relationship between EDP and the institutional context within which it occurs is of tremendous relevance to innovation, growth and economic performance in general. However, it is particularly important for the success of policies which take place at local or subnational level (Rodríguez-Pose, 2013; Rodríguez-Pose & Wilkie, 2016).

EDP Local Dimension 3 - Entrepreneurial readiness of the actors

Having entrepreneurial stakeholders which are ready to take an active role in the EDP seems critical for the success of the process. Entrepreneurial actors are intended in a broad sense, as stakeholders that are able to identify and pursue new opportunities. As such, they are not limited to firms in the private sector. Entrepreneurial knowledge arises from different sources (Coffano & Foray, 2014) and combining this know-how is crucial to develop a comprehensive knowledge-base to inform policy decisions (Rodríguez-Pose & Wilkie, 2016).

In this sense, when potential activities of future specialisation are detected, different stakeholders may contribute to identifying existing capabilities (e.g. research capabilities) but also barriers (e.g. regulatory constrains or institutional problems) to allow these activities to flourish further (OECD, 2013). It follows that one important element for the EDP success concerns the entrepreneurial readiness of the actors and their capacity to catalyse the attention and effort of their peers so that agglomeration and scale effects materialise at a later stage (Foray, 2012).

The local, regional, national or transnational structures for EDP

The S3 approach has triggered new institutional arrangements for EDP processes to be deployed beyond the regional scale. Such structures are based on the awareness that ‘bottom-up approaches’, which mobilise stakeholders in the pursuit of innovation, have the potential to add value at different levels. As the below example box on a sub-regional EDP experience suggests, this is because identifying innovation opportunities is in itself an interdisciplinary task, which requires multiple points of view to combine technology with market opportunities.

Tajo-Salor-Almonte (Extremadura, ES) - EDP going local and rural

In the territory of Tajo-Salor-Almonte (region of Extremadura, ES), the Local Action Group of Rural Development of TAGUS, capitalising on key features of the S3 approach and building on the experience of the LEADER programme, led its own sub-regional EDP. The territory thus identified its local comparative advantage in the exclusively local cheese 'La torta del Casar'. The rural EDP allowed local actors (e.g. farmers and knowledge institutions) to address jointly the weaknesses of their production system, e.g. the lack of capacity to attend market demand during peak seasons. On the one hand, the implementation of sub-regional, local EDPs and S3 illustrates the recognition of the process potential by local actors and policy-makers. On the other hand, the EDP logic generated the challenge for different public administrations to coordinate initiatives and policies at regional and local level.

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Chapter II – Good Governance: principles and challenges

Highlights

This chapter proposes seven principles of good governance to guide the implementation of S3. It spells out some of the difficult challenges and makes practical suggestions for national and regional authorities to follow. Examples from across Europe are included which can be useful for policy learning; although specific regional contexts require tailor-made governance structures.

Policy relevance

As governance arrangements underpin most aspects of S3, it is important that implementing authorities reflect on the principles of "good governance" and how they can be applied in their

Introduction

Governance arrangements can foster or frustrate the implementation of S3, which is why national and regional authorities should reflect and strive to integrate principles of good governance. In fact, many aspects of implementation covered in this handbook, in particular (i) the selection of projects for public funding, (ii) a continuous entrepreneurial discovery process (EDP) and (iii) monitoring mechanisms are highly influenced by governance arrangements.

What exactly do we mean by governance in the context of smart specialisation? We use the term to describe how the whole process of designing and implementing S3 is governed, including who is involved, the structures that are put in place and how decisions are taken. Using the term governance recognises that effective strategies are not implemented exclusively by national or regional authorities, rather executive power is shared with innovation actors, networks and indeed civil society more widely. As this handbook is directed mainly towards national and regional authorities, this chapter focuses on the role of the public sector in establishing, steering and overseeing governance of S3. Institutional change in the private sector, universities and other innovation actors can also be crucial. At the same time, the role of the public sector in driving forward S3 should not be underestimated, and can be particularly important in some less developed regions with fewer innovation actors. Moreover, some aspects of governance can only be exercised by government (such as funding decisions), and the main challenge in smart specialisation is to follow a process that involves a wide variety of actors while retaining democratic control.

This chapter starts by explaining in depth the critical importance of governance to smart specialisation with an overview of the concept's main elements. The rest of the chapter discusses the following seven principles of good governance, which are based on experiences from the S3 Platform:

1. Leadership and participation;
2. Cohesion to implement a collective vision;
3. Independence and transparency;
4. Integrated implementation;
5. Embedding smart specialisation in regional policy making;
6. Multi-level governance;
7. Reflection and learning.

Practical examples from different regions and countries across Europe are used to illustrate these principles. However, we should also recognise that each governance setting is unique and therefore there is no such thing as a "governance template" that can be universally applied to every regional context regardless of the circumstances of time and place. Respecting the uniqueness of local context does not mean that we have to abandon the search for general principles; on the contrary, it means that we have to apply these principles in a manner that is attuned to and appropriate for the place-specific character of the region in question.

Why governance is important for the implementation of S3

Putting the concept of smart specialisation into practice relies on a well thought out approach to governance. This was underlined by the RIS3 Guide, published by the S3 Platform to support the design of strategies at the beginning of Europe's S3 journey. Many of the points made then, such as the need for participation of the entrepreneurial community, a transparent approach to priority setting and an effective monitoring mechanism continue to apply in the implementation phase. Some issues become even more relevant, such as integrated policy delivery and the design of funding calls. The table below gives an overview of the main elements of S3 implementation and how governance is an important factor in their success.

Table II.1: The importance of governance to S3 implementation

Aspect of S3 Implementation	Governance Issues
Project selection in funding programmes	Calls for projects should flow logically from the S3 and subsequent funding programmes. The avoidance of ad hoc calls increases trust and predictability among regional actors. Advanced notification and support for applicants with less experience of applying to funding programmes will allow for richer and more inclusive implementation.
Structural and legislative changes	The success of funding instruments is highly dependent on changes in the wider institutional environment that is influenced by structural conditions, such as education systems, fiscal incentives, redistribution of policy competences, or simplification of procedures. Implementation of

	S3 therefore needs to be taken up across government departments and not just by one individual funding body.
Updating of priorities through a continual entrepreneurial discovery process	The process whereby entrepreneurs and other innovation actors help national or regional authorities to select priority domains for investment does not finish once an S3 is adopted, as described in Chapter One of this Handbook. A participative approach that integrates the principles highlighted in this chapter, combined with recourse to objective economic and social analysis, will help to prevent dominance of established interest groups and the stifling of innovation among less powerful actors.
External cooperation	Prioritisation is best done through benchmarking with other innovation systems, but this external dimension needs to continue into the implementation phase. Governance structures could involve external observers and funding programmes can be promoted beyond the region/country to increase investment. This involves a pro-active role for government that includes bringing people together from within and outside the region/country, acting especially on behalf of smaller firms who lack the capacity to network nationally or internationally.
Audit and state aid	Complex procedures must be communicated simply. The risk of claw back of state funds must be minimal to ensure confidence among applicants. This will depend on a competent and accessible public sector.
Monitoring and evaluation	Continual monitoring and evaluation is a requirement when large sums of public money are at stake. Innovation strategies like S3 are new in many places which makes this aspect of implementation even more important to learn for the future. Successes and failures must be transparently recorded. Mechanisms can be designed that allow experimentation, reflection and feedback to ensure a country or region learns throughout the S3 implementation process. Such mechanisms need to mix objective analysis such as quantitative indicators with the perspectives of stakeholders. The importance of a vision (principle two below), and demonstrating the extent to which progress has been made will retain motivation and trust in future elaborations of S3.

Seven principles of good governance for implementing S3

1. Leadership and participation to enable innovation

Leadership is critical for both the design and delivery of S3. In many respects it is highly influenced by the stability of the political and policy process in the region or country in question. This stability allows for the development of strong relationships between different levels or departments in the public sector and between the public, private and third sectors. Building on these relationships, the public sector can lead in the implementation of initiatives that emerge from involvement with a variety of actors.

Political leadership is the most critical ingredient in the S3 repertoire because it creates the capacity to mobilise every other ingredient. However, smart political leadership will recognise (and enable) an ethos of collaborative and distributed leadership because different skill sets are required at different stages in the S3 lifecycle. This is not however a simple process, due to the complexities of policy making in the real world. On the one hand, S3 may need different types of leadership at each stage of the implementation process – sometimes called collaborative or distributed leadership – and this requires a certain amount of flexibility from the stakeholders involved. On the other hand, there is a constant tension between the delegation of responsibilities, which might increase participation, and the centralisation of decision making processes, which facilitates the process of making difficult choices but runs the risk of alienating stakeholders. Leadership is also linked to transparency, setting a limited number of measurable objectives, and allowing stakeholders to judge the performance of the public sector.

A strong, developmental and leadership role for the public sector can be crucial for the implementation of smart specialisation. However, this is not only related to the management of funding programmes. While it may be the most visible form of public support in the S3 process, funding is most effective when integrated and bundled up with other forms of assistance, some of which may be intangible - like the *convening powers* and *brokering capacities* of regional governments and development agencies. Public authorities can play a role in bringing together stakeholders and institutions which do not usually work together, support horizontal and capacity building activities, or make early investments which the risk adverse private sector may ignore.

South Moravia (CZ) - An example of leadership

Leadership is critical for pro-active and transformative governance of smart specialisation. While all other aspects are important (including the design of structures, transparency and independence, multi-level arrangements), leadership is essential for *effective* governance. This example is particularly instructive for countries of Central and Eastern Europe. Other factors have also been important, such as the role played by foreign investment, but leadership is the facilitator and arguably what drives the strategy forward.

South Moravia is a region with a rather recent history of regional innovation policy, where the different organisations in the public and private sectors have fewer resources and less experience compared to other regions with long-lasting experience of regional innovation systems. An important step was the creation of the South Moravian Innovation Centre (SMIC). Established by the regional office together with Brno City Municipality and four different universities, it has been responsible since 2009 for managing a very successful innovation policy.

SMIC lead the building of a broad-based coalition of actors which was quite challenging due in large part to historical reasons and the lack of formal sub-national competences. SMIC established strong links with the public authorities that support it, with research centres, industry representatives and other institutions. These links were used to develop a broadly agreed S3 which is capable of evolving into a coordinated implementation strategy with real impact on the economic fortunes of the region.

More information

See the SMIC webpage (in English): https://www.jic.cz/en/

2. Cohesion to implement a collective vision

Leadership and participation are also essential to secure a certain amount of cohesion to the innovation system, which in turn can help spur further action from the public sector. By cohesion we mean the creation of a shared vision for the future development of the region, a collective will or sense of "shared destiny" which helps to ensure that stakeholders remain committed to the strategy after the design process ends and the more challenging implementation stage begins. This is achieved through processes of open and honest engagement, where stakeholders have the capacity to voice their opinions, which are then seen to be taken into consideration. These processes also benefit from politicians and policy makers openly discussing their objectives, not only with the employees of different public sector organisations but also a wider group of stakeholders. This ensures that everyone is aware of how policies are being designed and how they are to be implemented. The opposite is when decisions are made by only a small number of people through an opaque process. This generates high levels of uncertainty both among the public officials who will eventually have to deliver the instruments and the organisations that will benefit from them, and prevents individuals from planning for the medium and long-term.

The shift from "current economic performance" to "potential economic performance" of territorial units (national/regional) inherent in S3 requires a reasonable understanding of their development potential as well as a grounded exploration of future development trajectories. Although step three of the RIS3 Guide on designing smart specialisation strategies underlined the importance of an overall vision for the effectiveness of the whole process, a clear description of what the final objectives and who could benefit is not widespread among S3 so far. However, a shared vision is necessary to pursue ambitious long-term objectives and avoid vested interests to prevail when priorities are chosen and revised or when project selection criteria are defined. A critical factor is the capacity to put in place an effective feedback mechanism between the search for entrepreneurial knowledge and the regional vision, and to foster the quality of entrepreneurial discoveries which will subsequently affect decisions and choices about the vision itself. In the best engagement exercises, the S3 becomes a collectively-owned strategy of the territory rather than the plaything of government, ensuring a stronger commitment from the different actors that implement the strategy on the ground and providing better chance for policy continuity beyond EU funding. This sense of directionality is well illustrated in the logical narrative of Lapland's S3 vision and strategy as described in the example box below.

Lapland (FI) - A shared vision based on specific assets and values

Lapland (FI) is the northernmost region as well as one of the most sparsely populated in Europe. Due to its specific geographical characteristics, Lapland has explicitly based its S3 process on the elaboration of a joint vision of how to build on its strengths as an arctic region.

According to the vision of Lapland's Arctic Specialisation Programme 2030, Lapland would enjoy a leading position in exploiting and commercialising arctic natural resources and conditions. One of the Lapland VISION 2030's objectives is to "offer its inhabitants an original, attractive place for living", embracing a wider concept of territorial development than the one usually found in industrial policy. The S3 vision for Lapland aims to promote economic regeneration and to create an original, attractive place for living by linking smart growth with sustainable (economic, ecological and social) development, putting in place the aforementioned effective feedback mechanism between the EDP and the regional vision.

3. Independence and transparency

The issue of prioritisation is one of the most pressing in the implementation of S3, requiring transparency and clear guidelines for the process of decision making to be seen as fair, inclusive and robust. Where the governance and funding functions are integrated within the same government department, there is a much greater risk that the project selection process may be subjected to political pressures from within or captured by dominant interest groups from without. To overcome this problem, the project selection process needs to be – and *seen* to be – transparent, fair and robust. To retain the trust and credibility of regional stakeholders, the governance and funding systems need to be separated and rendered accountable to different departments. An example of how this has been tackled in Wales (UK) is described in the example box below.

Independence can also be strengthened through links with organisations outside the region, which can prevent closed networks dominating the implementation of the strategy, especially with regard to the use of public funds. Furthermore, the presence and importance of outside networks has a big influence on the capacity of regional authorities to encourage local firms to establish links that can lead to new or improved areas of activity. These links happen through multi-level governance (see below); through networks between local and non-local public organisations (for example INTERREG projects or the Peer Exchange and Learning activities of the S3 Platform); and through consultation processes that are informed by organisations such as universities or companies located outside the region.

Wales (UK) - Separating governance from funding

The Welsh Government in the UK has gone to great lengths to ensure a clear and credible division of labour in the governance and funding of its S3. The Department for Economy, Science and Transport is responsible for managing the design and delivery of S3 projects and, to ensure this process is transparent, inclusive and robust, the department created a wholly new Innovation Advisory Council for Wales in 2014, composed of senior representatives from the "Triple Helix" of government, business and higher education. One of the key roles of the Council is to provide independent oversight of the implementation of S3 in Wales. This governance function is wholly separate from the funding function, located in the Wales European Funding Office, which reports to the Finance Minister. Although clarity and transparency are assured in such a division of labour, the fact remains that this arrangement can also create coordination challenges and institutional tensions and these problems need to be openly acknowledged if they are to be properly addressed.

More information

See the webpage of the Innovation Advisory Council for Wales (in English):

http://gov.wales/topics/science-and-technology/innovation/iacw/?lang=en

4. Integrated implementation

S3 benefits significantly from integrated approaches that can target the many different areas in which a sector needs support. This means avoiding a silo type approach to policy, where each government department delivers its own strategy without coordinating with others. Integrated S3 implementation combines two perspectives:

- A **vertical focus** on specific priorities, as recommended by the S3 concept. This could include, for example, targeted support to knowledge transfer from universities to firms related to a particular economic activity. Purely horizontal approaches to R&D or skills provision, for example, hinder the design of integrated approaches, because it is impossible to know in advance which domains or sectors will use these instruments and therefore to plan a coordinated delivery.
- A **holistic approach** to sectoral development goes beyond narrow concerns with science and technology or infrastructure and seeks to understand their multiple and inter-connected needs. This necessarily impacts on a range of policy areas from employment and education to environment and planning. S3 cannot be implemented by one type of instrument, rather national and regional authorities will have to consider various 'policy mixes'.[0]

[0] The S3 Platform Policy Brief number 07/2014 is dedicated to the concept of policy mixes for the implementation of S3: http://s3platform.jrc.ec.europa.eu/-/ris3-implementation-and-policy-mixes.

Navarra (ES) - Integrated policy fields

In order to prevent a silo type approach, a two-vector response is envisaged by Navarra. The first entails a vertical focus on specific clusters, as recommended by the S3 methodology. Purely horizontal approaches to R&D or skills provision, for example, hinder the design of integrated approaches, because it is impossible to know in advance which domains or sectors will use these instruments and therefore to plan a coordinated delivery. The second is a holistic approach to sectoral development, which goes beyond narrow concerns with science and technology or infrastructure and seeks to understand their multiple and inter-connected needs.

The S3 of Navarra in Spain is an example of how integration can be achieved, as illustrated in the Figure. The sectors chosen for support are identified in the top part of the diagram, whereas the roots list the seven key factors that affect their overall competitiveness. Despite some criticism that the choice of priorities was not sufficiently restrictive, the desire to integrate all core areas of policy action is likely to generate important synergies between different government departments and between operational programmes.

5. Embedding smart specialisation in regional policy making

On a practical level, the governance system of innovative regions tends to benefit from a diversity of organisations, a clear separation of labour between these organisations and constant engagement between them. This is observed in some of the more developed regions in Europe, such as Bremen, Upper Austria and Scotland, as well as among less developed regions with good governance systems such as South Moravia in the Czech Republic. In the specific context of smart specialisation, governance structures should be designed that link stakeholders involved in the selected priority domains and the regional government. An illustrated example of this is shown by the governance arrangements of Friuli Venezia Giulia (IT) in the example box below.

In general terms, S3 implementation can be aided by well-funded and professionalised delivery agencies, which are owned by the government but have some degree of independence. This allows them to maintain good links with the private sector, research institutes and other relevant stakeholders and also to accumulate knowledge and experience of delivering policy instruments irrespective of the government's composition. Even though these systems are not perfect (as we can see in the case of Navarra, where a change of government led to a significant reconfiguration of governance arrangements), the existence of these agencies guarantees some coherence and continuity in the system, and this in turn creates a capacity for learning over time. Moreover, the separation of labour between these different levels, with ministries taking responsibility for strategic decisions, and agencies for design and execution, prevents the system from becoming closed to a small number of interest groups.

Friuli Venezia Giulia (IT) - A governance structure designed for implementing S3

In order to achieve a better coordination of funds, transparency of processes, communication and evaluation, the S3 governance structure elaborated in Friuli Venezia Giulia (IT) clearly defines the roles and functions of the different bodies involved:

- The regional administration provides political direction and ensures the management of the S3 by running the Steering Team and the Technical Secretariat. The Steering Team coordinates the S3 process and provides input to other departments responsible for complementary policies.
- The Strategic Committee is the connecting body between the regional administration and stakeholders and provides input in the implementation phases of the strategy and its

Regionally appropriate and inclusive governance arrangements enable the S3 approach to become 'embedded' in the region. Several examples from across Europe show how this is happening in practice, increasing the chances that S3 can withstand future changes in the political environment:

- Delegation of authority for the S3 process to executive agencies as in the case of the Swedish Agency for Economic and Regional Growth, which has responsibility for smart specialisation at national level, while VINNOVA (Swedish innovation agency) promotes and invests in smart specialisation though national programmes and calls for proposals;

- Increasing responsibility of regional delivery agencies, as in the case of Emilia Romagna (IT) where the implementation of S3 (including responsibility for process continuity, local animation and monitoring of results) is ensured by the horizontal coordination of different agencies in charge respectively for Industrial research and technology transfer (ASTER, through the High Tech Regional Network), Territorial development (ERVET) and the Digital Agenda (LEPIDA);

- Creation of stable platforms for regular discussion between research and business, such as the smart specialisation platforms in Norte (PT) that have been put in place for each of the region's eight priority domains. The platforms include a large number of firms, the regional science and technology community, and cluster and sector associations. The participation of an international expert is envisaged in order to reduce the risk of interest group capture. The platforms are intended to lead to proposals for calls from the regional operational programme;

- Establishment of public-private Quadruple Helix partnerships with a certain degree of autonomy but well connected to the regional administration. The Central Denmark Growth Forum (DK) is a partnership between business representatives, unions and employer organizations, education and research institutions, municipalities and the region. Among its tasks related to regional development, the Growth Forum functions as an advisory board for smart specialisation and decides on which projects should be supported by the European funds.

6. Multi-level governance

The need for integration across policy areas is closely related to the importance of 'multi-level governance'. This refers to a distribution of responsibilities between different geographical levels of government (such as local, regional, national and European) and importantly the cooperation and coordination between them. It is particularly useful to understand and manage because the integrated nature of S3 that has just been outlined means that competences are usually distributed across many levels, depending on the country. A territorial approach understands and integrates sub-national or sub-regional differences and how they can contribute to the overall implementation of a region's strategy.

Spain - Implementing S3 on the ground: the emergence of new territorial actors

A good example of the challenge to integrate new S3 institutional actors in existing regional S3 comes from the Basque Country (ES), where the City of Bilbao aims to design its own strategy in a process that is separate from the official S3 of the Basque Government. These two processes need to be synchronised otherwise territorial rivalry will impair them both. However, Bilbao may be the bellwether of a new trend towards urban development-led innovation policies, where cities become de facto "living labs" to test the feasibility of new technologies and novel ways of living and working.

The emergence of sub-regional S3 initiatives in Spain is not limited to urban settings but has also occurred in rural contexts, where a number of LEADER Local Action Groups (LAGs), such as in the regions of Extremadura, Castilla-La Mancha, Andalusia, Catalonia, have started to integrate elements of smart specialisation into existing rural development practice, so as to make it more knowledge-based and innovation-oriented. Among them, the Smart LEADER strategy of TAGUS in Extremadura is the first local (sub-regional) experience of smart specialisation and the first S3 developed by a rural development LAG in Europe. Although this pilot initiative is aligned with and supported by the Extremadura S3, continued coordination between the two governance levels will be critical to its implementation.

Finally, in Catalonia new territorial partnerships are explicitly planned in the regional S3 implementation phase to promote major collaborative initiatives, such as in the case of the Territorial Specialisation and Competitiveness Projects (PECT).

More information

See the Spanish S3 strategies' repository - REDIDI network (in Spanish):

http://www.redidi.es/politicas-y-estrategias-de-idi/la-ris3-en-las-comunidades-autonomas

See the Basque Country S3 strategy (in English):

https://www.irekia.euskadi.eus/uploads/attachments/6312/PCTI_Euskadi_2020_en.pdf?1429183477

See the Catalonia S3 webpage (in English):

http://catalunya2020.gencat.cat/ca/en/

Territorial governance arrangements need to combine stability with flexibility to capture the twin benefits of continuity and novelty. In practice, this means that governance systems will need to be responsive to two challenges: (i) the ever changing relationships between national and sub-national levels and (ii) the emergence of new institutional actors, whether they are sectorally or territorially based. During the process of designing S3, several examples can be identified that illustrate how different territorial levels have been integrated into national or regional governance arrangements.

The challenges and solutions are varied and depend on how the country in questioned is organised in terms of institutional governance of R&I.

- In Spain, regions have broad policy competences which are reflected in the regional S3. However, the need for coordination between the strategies at national level has been recognised and a network set up to prevent repetition, foster synergies and encourage inter-regional learning.[0] In addition the Basque Country and Extremadura have seen S3 processes emerge at sub-regional level, increasing the participation of territorial actors such as cities and rural development groups, as described in the box above.

- In England, R&I competences remain mostly at national level. However, as part of its S3, Local Enterprise Partnerships (LEPs) have been tasked with delivering S3 at the local level and a "Smart Specialisation Advisory Hub" has been created to identify good practices and disseminate them throughout the LEP network.[0]

- Romania has also sought to build capacity at the sub-national level through the involvement of Regional Development Agencies (RDAs), with six of them having developed their own S3. As described in the box below, the national government has responded to the emergence of the regional strategies with the introduction of 'regional concept notes', delegating responsibility to the RDAs.

- The Czech Republic has introduced a scheme called 'Smart Accelerator' to be supported by the national Operational Programme for Research, Development and Education. The aim of the scheme is to create administrative structure for the S3 implementation and EDP management (and in wider terms for the overall management of R&I) in all the Czech regions. Each region is invited to submit a project based on their needs (there is no one size fits all approach) and it gives the regions an opportunity to address their weaknesses in terms of S3 and R&I management.

[0] More information can be found at www.redidi.es.
[0] Learn more at: http://smartspecialisationhub.ktn-uk.org/.

Romania - Regional governance

Romania has a national S3 developed by the Ministry for Education and Scientific Research, which is also responsible for its implementation, monitoring and evaluation. The priority areas were selected through a consultation process, but the strategy remains limited in its weak territorial focus, since it does not reflect and establish areas of competitive advantage in each of Romania's eight regions. At the same time, six Regional Development Agencies (RDAs) independently elaborated regional S3, and two were submitted to the S3 Platform's peer review process (RDAs are NGOs responsible for regional development and also intermediary bodies for the Regional Operational Programme). These regional S3 were formally endorsed by the Regional Development Councils which are governance bodies that include all the elected presidents of county councils in the region. Yet, the status of the strategies is unclear, since the regional level in Romania does not have formal competencies or administrative responsibilities, and therefore neither the financial resources for implementation. In Romania, there is an urgent need for more complementary action between national and sub-national levels.

In order to address the issue of sub-national priorities, the Romanian government has proposed a solution that will involve external expertise and an active role for RDAs in shaping planned investments in R&I. The RDAs will develop Regional Concept Notes based on a common

7. Reflection and learning

A final characteristic of good governance systems is the stability that makes learning possible over extended periods of time. Some of the most successful regions in Europe in this respect have been developing innovation policies since the early 1990s and have gone through several rounds of policy design and implementation. Even in regions such as South Moravia, which have only recently gained the power to operate in the regional innovation policy arena, the current S3 is seen as the fourth round of innovation policy, with the first having been devised in 2002. For this learning to take place the principles discussed earlier are important, particularly the role of strong networks with local and

non-local representatives and a stable yet open governance system. In addition, the implementation of S3 needs to be closely monitored, not only in terms of outputs and outcomes of policy intervention, but also to ensure that some of the processes described in this chapter are operating effectively. More comments on monitoring can be found in a later chapter of this handbook.

Governments throughout the EU are becoming increasingly aware that the public sector can play a much more positive role in fostering innovation – by promoting innovation *within* the public sector (by experimenting with more agile and creative forms of public administration for example) and *through* the public sector (by leveraging the power of purchase for example). One of the new ways in which governments at all levels are learning to learn is through the creation of Innovation Policy Labs (IPLs). Originally inspired by the likes of NESTA, the UK-based innovation agency, IPLs are being created all over the world as governments and their partners in business, civil society and higher education collectively strive to better understand the emergent world of *open innovation* and assess what it means for each partner.[0] The world of innovation has been fashioned by a number of factors, including:

- The *pace of innovation* appears to be accelerating, (i) as technological change abbreviates product and service lifecycles, (ii) and as new entrants like China and India enter the global race with new business models based on frugal innovations.

- The *nature of innovation* could be changing, (i) as disciplines and technologies converge, (ii) and as large vertically integrated firms realise that they need to open themselves up to a wider and more diverse range of knowledge sources to complement and challenge their in-house R&D labs.

- The *agents of innovation* are changing in the sense that users and governments are becoming major players in the era of societal challenges, where consumer-citizens are assuming the role of co-producers with traditional agents (i.e. firms) in sectors like renewable energy, food security, healthy ageing, water conservation and climate change mitigation etc.; sectors where governments also play key roles as producers, users, purchasers and regulators.

Innovation Policy Labs enable governments to “look outside the box” in a more agile and less risk-averse fashion and this intelligence-gathering capacity will be especially important for national and regional governments that wish to learn what works where and why in the S3 implementation process.

Challenges ahead and action points

- This chapter outlines principles of good governance that could be applied in different regions of Europe, in a manner specific to each particular place.
- The public sector can have a vital role as leader, facilitator and enabler of innovation.
- Implementation of S3 is favoured by integrating policy areas and territories within the country or region.

[0] See: http://www.nesta.org.uk/project/innovation-growth-lab-igl.

- Governance arrangements themselves need to be innovative and reflective, allowing a process of learning throughout implementation.

Useful links

Andrés Rodríguez-Pose, Marco di Cataldo and Alessandro Rainoldi, The Role of Government Institutions for Smart Specialisation and Regional Development, S3 Policy Brief Series No. 04/2014.

WIRE 2015: Session on Governance for implementing Smart Specialisation Strategies (4 June 2015) Presentations and Video.

CoR-EC joint event on European Innovation Ecosystems: Good Governance and Effective Support for Smart Specialisation (26 January 2016).

FP7 funded research on smart specialisation (SmartSpec).

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Chapter III – From priorities to projects: selection criteria and selection process

Highlights

Call design, selection process, selection criteria and evaluators' contribution are some of the focal points addressed in this chapter. Questions such as: *What policies should be impacted by S3? How to select the right projects? What challenges need to be faced for a correct S3 implementation?* are discussed.

Policy relevance

Introduction

The aim of this chapter is to support policy-makers in the task of translating Smart Specialisation priorities into projects' implementation, i.e. to help them bridging the gap between "strategies on paper" and actual policies.

Experienced policy-makers know that moving from policy strategy design to implementation is a challenging task. Quite often the strategies are just stored on office shelves or drivers and stakeholders recall them when the moment to launch monitoring or evaluation arrives. It is fundamental to assume that S3 is a process to be developed on a continuous basis and as such, it should be well reflected in policy instruments' implementation.

The chapter is structured in four sections. The first addresses the "what" question with considerations about policies that might be impacted by the S3. In the second section, the "how" question is absorbed by analysing various possibilities to implement S3 priorities in practice, including the issues of call design, selection criteria and selection process of projects. The third section refers to "who" are the main actors needed to translate S3 into projects. Finally, the last section summarises the most relevant considerations related to S3 implementation.

How to translate S3 into actual policies?

Implementing S3 means different things that are non-exclusive of each other. Five different avenues are proposed as main ways to turn S3 into reality:

1) Launching strategic initiatives

2) Re-orienting existing programmes
3) Changing strategic agendas from existing operators
4) Aligning infrastructure

5) Setting up S3 fora.

These five channels are discussed below and concrete examples from S3 experience are provided.

Policy-makers can pick up some or all of these possibilities. Their choice is constrained by two elements: (i) the degree of Managing Authorities' impact on the innovation field, and (ii) the breadth of the policies' portfolio. Implementing S3 may lead either to fill gaps in policy mixes in regions that are less endowed, or to fine-tune an existing mix in regions that already benefit from a fully-fledged policy mix.

In practical terms, there is a need to define adequate selection mechanisms and criteria for projects to be funded in the implementation phase of S3. This is discussed in the following sections.

Five categories of action for implementing S3

The move from S3 on paper ("smart intentions") to S3 on the ground ("smart actions") can be realized through five different types of actions.

1. **Launching new strategic initiatives at the core of the identified smart specialisation areas**. The Strategic initiatives are bold actions which typically gather a large community of actors of the quadruple helix around a theme that lies at the heart of a S3 priority domain selected through the strategy process. These long-lasting initiatives aim at transforming the productive fabric towards the niches identified in the strategy. They often follow directly from the identification process, which has provided the opportunity for these key actors to interact and exchange about potential projects. Strategic initiatives serve as a framework for several smaller projects, which are linked together through interaction and through the complementarity of actions. Since those initiatives are pilots it is very important to embed learning mechanisms into them right from the start: this will facilitate deciding on their continuation, scaling up or dismissal.

Sweden, Flanders (BE) and Satakunta (FI) - Launching strategic initiatives at the core of S3

In **Sweden**, the programme called "VINNVÄXT – Regional Growth through Dynamic Innovation Systems" funds large and comprehensive initiatives in the regions throughout the country. Projects are selected through a competition process (calls for proposals) where the best proposals get a 10-year period funding. Through this programme, a limited number of "growth initiatives" focusing on regional strengths receive up to 1 million euros per year to which is added a minimum of 50% regional co-funding. These Triple Helix initiatives gather businesses, researchers and public sector organisations, and aim at transforming the regional productive fabric within a long-term framework.

The implementation of the smart specialisation approach in the region of **Flanders (BE)** takes place mainly through the support of "spearhead clusters". They are officially recognized by the Flemish government according to their capacity to organise an emerging cluster or transform an existing one with societal and economic value-added for the region. Under its New Industrial Policy (NIP), Flanders set up a comprehensive instrument, the Transformation and Innovation Acceleration Fund (TINA). The instrument's purpose is to reinforce and accelerate the marketing

2. **Adjusting existing programmes to align them with S3 orientations**: introducing a new criterion dedicated to the "contribution to the smart specialisation areas" in competitive programmes is the typical way to turn S3 priorities into reality. The idea is not to incorporate restrictions according to sectors in the programmes but to ask for demonstration of contribution to S3 areas: this can be done either by restricting projects to those falling in these priority domains (as in Region Provence-Alpes-Côte d'Azur, FR).

Provence-Alpes-Côte d'Azur (FR) - Re-aligning existing programmes with S3 priorities

After the S3 adoption, the French Region Provence-Alpes-Côte d'Azur (PACA) launched several research projects' calls for proposals falling under the five "strategic activity domains" (each including detailed smart specialisation axes) or the three "key general technologies" defined in the S3. One of the calls is targeted to research projects with the aim to reinforce existing strengths in research teams and gather individual scientists into more coherent research groups. Research carried out in this framework should be multidisciplinary, have a clear regional scope and be in line with the industrial needs; moreover, submitted proposals are eligible only if they match the S3 priorities. Another call is a joint national-regional tender aimed to provide funding for enterprises' innovation initiatives in the form of subsidies for feasibility projects or reimbursable loans for R&D and innovation projects. The funding schemes implemented in previous programming periods used to support research and innovation activities in a wide variety of domains in the public and private sectors: thanks to the adoption of the S3, their scope has been narrowed down to smart specialisation domains.

More information

Call from PACA region, Appel à Propositions PO FEDER-FSE /PI1a, 2015 (in French):

http://programmes-europeens-2014-2020.regionpaca.fr/fileadmin/user_upload/documents/Appel__PI1a_2015.pdf

Call issued by PACA region and Commissariat Général à l'Investissement: "Appel à Projets Investissements d'avenir", action "Partenariat Régional d'innovation en Provence-Alpes-Côte d'Azur - Soutien aux projets d'avenir des PME", 2015 (in French):

http://www.gouvernement.fr/sites/default/files/contenu/piece-jointe/2015/06/aap_pri_paca.pdf

3. **Changing strategic agendas of existing players in order for them to serve the S3 priorities.** A classical situation in regional systems is the lack of alignment of key players' strategic agendas around regional priorities and between themselves. The S3 exercise provides an opportunity to search for synergies and complementarities between these key players, around the smart specialisation domains. Typical examples include refocusing of research, education and training

programmes to serve the needs of the S3 domains, as is the case in Dutch Limburg with an enhanced role of universities.

Limburg (NL) - Changing existing players' agendas towards S3

With the S3, a new role is given to universities in the Dutch region of Limburg; previously, universities were not strongly involved in the regional policy-making process. While the resources concentration is not new to the region, S3 has brought about a more fine-grained definition of top clusters. The strategy provides greater support to university campuses through the "Brightlands" programme. This scheme facilitates the creation of science and industry clusters, e.g. by financing R&D infrastructure and equipment, and promoting HEIs' activities (education programmes, new research departments). Two Limburg campuses specialise in bio-based, biomedical and health activities. The respective universities signed a ten-year-contract with the region. During the S3 process, regional knowledge-production institutions presented their joint plan "Knowledge Axis Limburg" with the aim of creating synergies between the various Brightlands campuses. Brightlands also fosters the establishment of links with neighbouring knowledge-production institutions and firms from Germany and Belgium. Moreover, the campuses articulate strategies and funding sources from various levels: (i) regional (Province), (ii) supra-regional (South-East Netherlands (Brainport strategy) and South Netherlands (the territory for ERDF and S3), (iii) national, (iv) as well as transnational (TTR-Elat, cross-border INTERREG project).

More information

Research and Innovation Strategy for Smart Specialisation for Zuid-Nederland, the region compromising Noord-Brabant, Limburg and Zeeland (the South Netherlands), 2013 (in English):

http://s3platform.jrc.ec.europa.eu/documents/20182/91499/Ris+Southern+NL.pdf/eb5a7447-17f1-417a-8538-9b93cbba9fd4

4. **Defining priorities and criteria for funding innovation infrastructure to align them to S3 agenda**. Decisions on funding innovation infrastructures are risky decisions: they need to be taken in a long-term perspective and they typically involve large amounts of public resources. In addition, policy-makers confronted with such decisions face divergent pressures from various interest groups defending different models and missions for such infrastructure. With S3, policy-makers are better equipped to decide on which infrastructure to promote, in line with the needs identified for the smart specialisation domains.

Bremen (DE) - Establishing research and innovation infrastructure to support S3 priorities

The Land of Bremen (DE) is promoting the establishment of a research centre on new materials, the EcoMaT Technology Centre (Centre for eco-efficient materials & technologies), which will support several smart specialisation domains. By 2016, it will reach a regional scope in the context of S3. In co-operation with Airbus, EcoMaT is to provide a central, cross-cluster perspective for Bremen-based companies and research organisations in the field of materials and lightweight construction, with direct benefit to the aerospace sector in particular, which is one of the S3 regional areas.

More information

See Bremen's webpage (in German and English):

http://www.efre-bremen.de

5. **Establishing platforms or fora gathering the key actors of the S3 domains.** Such platforms are important first from an internal perspective: they help to further fuel the entrepreneurial discovery process (EDP) and further refine the smart specialisation domains and to facilitate the development of projects aligned to the S3 priorities. Second, they are important from an external perspective in linking regional actors with those outside the region and facilitate their inclusion in joint international innovation platforms (as the open innovation arenas in Skåne).

Skåne (SE) - Establishing platforms or fora gathering key actors of the S3 domains: a comparative approach

Skåne (SE) supports "open innovation arenas" - one for each specialisation domain identified in the S3 - gathering key actors to stimulate joint work on projects cutting across traditional sectors. Their aim is to increase actors' knowledge about each other's operations and to investigate the potential for new collaborations, production and growth opportunities. Collaboration is organised and facilitated by a cluster organisation the main purpose of which is to create added-value for all stakeholders: businesses, universities and university colleges. The open innovation arenas are expected to attract national and international resources and to create long-term, sustainable conditions for development of innovative capacities and competitiveness.

More information

See the Skåne regional webpage (in English):

http://www.skane.com/en

Ensuring S3 strategic vision though projects

The Operational Programmes (OPs) reflect the policy-mix developed within the S3 process. It is clear that calls for project proposals and selection processes have to consider ventures which can contribute to the vision and objectives defined in the strategy for selected smart specialisation areas. Exceptions might occur when the continuous EDP identifies new areas of specialisation to be explored under new instruments. But even then the essence of the strategy is respected, as long as revised principles are adopted.

S3 concept particularly promotes entrepreneurial entities keen and able to do R&D-driven activities in the selected areas of smart specialisation. The results must involve a market perspective in order to be commercially applicable. The funded activities should enhance collaboration among potential partners and promise great potential for innovative spillovers. Furthermore, the scope and impact of selected projects should be significant for each regional or national economy, towards real niche development or regional growth in global value chains. Finally, it is strongly recommended to check whether there is a real need for public intervention: some projects might be so profitable, and the risk of R&D activities failure so low, that public support is not required.

Calls' design

The calls reflect characteristics of policy-mix instruments which are to be implemented for certain purposes and under certain conditions. In order to sustain the clarity of policy intervention, calls should have their structure and consistent logic. Right calls define coherently their objectives, time schedule, allocated budget, target groups, application conditions, funding rules, information on ways of proposals submission, evaluation, awarding and final agreement signing, among others. The exact matter of calls is a key aspect that needs joint reflection and should be discussed with stakeholders as a part of EDP, in order to reach a common understanding on what is to be launched, to be improved, or to be clarified.

New calls for projects in the period 2014-2020 can build on results and outputs obtained in the framework of previous programmes and projects. One of the principles of S3 is to facilitate the coherent absorption of available funding. Consequently new calls should implicitly reflect coherence with actions financed in the past, for instance, through the integration of specific selection criteria that may convince applicants to capitalise on existing outcomes. Moreover, the fact of giving continuity to previous initiatives not only means better absorption of public funding but also contributes to reactivate motivation of already engaged policy makers.

The schedule of calls can be gathered and promoted in work packages drawing on EU practices. Usually, each work package is designed for a limited period of time (with a two to three-year perspective). This helps to orient potential applicants and lets them to the preparation phase.

Romania - Boosting start-ups and new business ideas via calls

In Romania, the S3 process pinpointed a potential for future entrepreneurial activities in the areas of smart specialisation. It highlighted the need to support the creation of new companies with the support of ESIF. The S3 policy mix includes an instrument called "Innovative start-ups and spin-offs" which has the objective to finance the realisation of new or significantly improved products based on research results (industrial research / experimental development). This policy instrument targets start-ups and spin-offs which possess research result or own use rights (patents, IPRs, etc.).

The instrument is meant for entrepreneurs with business ideas but short of capital. As the expected projects scope is rather narrow, the *de minimis* aid rule was implemented. The grant value covers up to 90% of the project eligible costs, the rest should be supplemented by private contribution.

In the project selection procedure, the administration first reviews the applicants and projects' eligibility, including completeness of documents and administrative conformity of the request for financing file. This verification is based on a Yes/No questionnaire. In the second step, individual assessments are done by specialist evaluators based on criteria grouped in an evaluation fiche. In the third step, panel evaluation is done based on a panel fiche.

The proposals should meet the following selection criteria:

- Relevance: product innovativeness; economic and technical viability; project contribution to the development of research activities in the enterprise; product coverage of a real need or an opportunity identified in a certain economic sector; new jobs creation potential.
- Quality and maturity: consistency between the activities described and the objectives; project budget - reasonableness, completeness, etc.; methodology and risk assessment; implementing capacity - how the skills and qualifications needed are acquired; quality of the business plan.
- Sustainability and operating capacity: financial sustainability; contribution to sustainable development and equality of chances - gender, anti-discrimination, disability; level of cooperation - international, regional, with enterprises or research organisations, etc.; financial correlations - sensitivity analysis of the project financial data based on at least three variables.

Importantly, the eligible smart specialisation proposals are awarded additional bonus points if the project is in line with smart specialisation areas.

More information

See the Romanian OP for research and innovation document (in Romanian):
http://www.fonduri-ue.ro/files/programe/COMPETITIVITATE/POC/ghid-unic-a-b-c-d-e-f-g-1-1.pdf

Selection process

On the one hand, the S3 concept promotes a high degree of specialisation by distinguishing the priorities that will lead sustainable growth and jobs in a country or a region. On the other hand, it is necessary that selection process of associated calls promotes sane competitiveness among applicants, allowing them to choose one or several fields of intervention which could facilitate synergies within S3 priorities.

Selecting projects to be funded during the implementation phase of S3 is to be done with great care, as these projects are likely to become emblematic of the "S3 in reality". For many actors, the essence of smart specialisation will only become fully understandable through the lenses of these concrete projects. Lessons from implementation of this type of strategies point to several good practices with respect to project selection processes:

- S3 governing instances (e.g. Steering Committees) should work in close relationship with OP Managing Authorities to ensure that full use of ESIF portfolio is made for related projects.
- There is a place for formal (eligibility) and qualitative assessment of proposals. According to the S3 approach, assessment of project proposals should emphasize qualitative and impact aspects which come after formal eligibility tests.
- Incorporating external views in project selection is a good way to fight against the problem of defence of vested interests (which may not be in line with decided S3 priorities) and against a concentration of projects on and around the same standard agents/themes.
- Two-stage processes for project selection are interesting practices to consider: these help to gather a large set of project ideas serving the S3 purposes, and also to subsequently suggest grouping of several proposals, or the development of linkages between various project proposals.
- Establishing a "performance reserve" for funding projects is a good way to ensure a concentration of funds on those projects that prove to be most effective to reach the intended goals of the strategy, as well as to keep space to support new and valuable projects that emerge at a late stage in the funding cycle.
- Linked to the previous point, foreseeing an exit strategy for projects that are not delivering against expectations, and thus not serving the goals of S3, is another way to ensure a concentration of public funds on the most effective projects.

Selection criteria

An adequate set of selection criteria is to be used (and communicated) for project selection. These criteria might also be used for on-going projects monitoring and for deciding on continuation of funding. Table III.1 lists S3-relevant project selection criteria.

TABLE III.1 - Selection criteria for projects in view of implementing S3

Alignment with S3	Incorporation of S3 objectives in project objectives Expected contribution to Smart specialisation domains
Regional dimension	Expected regional benefits Possibilities for scaling up and capitalizing on project's results to create spillovers beyond project partners Stakeholder involvement, bottom-up approach, endorsement by a wide community of regional actors Synergies with other regional initiatives or projects
International dimension	Demonstration of positioning of projects in a wider value-chain perspective Development of capacity of regional players to link with and embed external inputs Intensity of external cooperation for the benefit of the project
Viability-sustainability	Financial viability Legal viability Presence of private co-funding Alignment/complementarity with national orientations Inclusion of clear targets and realistic follow up process and indicators
Funding mix	Appropriate articulation of public (regional, national, EU (ESIF and other) and private funding sources

Following the principles of ESIF, selection criteria may give additional weight to calls and projects that can contribute to the establishment of synergies between various instruments funded by different sources. The co-existence of EU funding with national and local assistance can be also stimulated through specific selection criteria.

Centre-Val de Loire (FR) - Synergies between S3 and funding sources

The Regional Agency for Innovation and Technology (ARITT) of the French region Centre-Val de Loire did an S3-insipred exercise for the OP funded with EARDF. This initiative covered agriculture activities, agro-food and forestry. A call for expression of interest will be issued to select proposals in the context of the European Innovation Partnerships with the DG AGRI of the European Commission. Project proposals need to respond to the following criteria: (a) quality of project presentation and argumentation, (b) adequacy of a project with themes, (c) quality of partnership, (d) value in terms of innovativeness and complementarity, (e) impact on the region.

More information

See the ARITT Centre-Val de Loire webpage (in French and English):

Actors and their role in the process

Implementation bodies

The implementing institutions play the most important role in the implementation phase of S3. They should not be considered as mere funds dispensers; they are expected to have a real impact on the OP implementation in line with S3. It is also fundamental that staff is trained and convinced about their contribution to the S3 vision and objectives. Consequently, their enthusiasm might be distributed to the applicants and evaluators. Even if it might sounds quite naive, a lack of training and motivation will lead to a simplistic understanding of the role of implementation bodies.

Managing Authorities

The important role belongs to the Managing Authorities (MAs) at regional and regional level. They establish the rules and then execute them. They are also responsible for accepting any changes in the OP instruments and projects selection mechanisms.

Availability of MA's representatives to clarify doubts and assist project applicants is a key factor of success. On occasion, short adjustments to improve project proposals can be advised by MAs. On the other hand, this assistance needs to be available in equal manner to all applicants.

Evaluators

Project selection is done by evaluators. They can form evaluator panels or groups of experts who give views and judgement on the projects. It is recommended that pools of evaluators reflect the EDP stakeholders' structure in order to balance scientific and business competences and enrich the selection process with a variety of perspectives.

The selection of evaluators is an issue that could be facilitated by the EDP. Its participants are usually well-informed and a common agreement on candidates can be reached. In principle, evaluators are expected to be familiar with S3, but if not, they need to be trained so as to understand their role in the S3 implementation.

One of the key questions related to evaluators is to what extent foreign experts should be involved in assessment processes. This engagement has pros and cons as it depends on different factors such as: (i) the ability of applicants to provide proposals in a foreign language, (ii) the existence of a national pool of experts. The presence of foreigners gives the evaluation process an international seal of quality.

Stakeholders' involvement

The selection process as a part of the implementation of S3 requires a continuous EDP in order to contribute to the design of calls and to analyse the experience accumulated since the first calls. This is a benefit emerging from continuous EDP which facilitates checking basic assumptions regarding S3 objective and smart specialisation priorities.

Challenges ahead and action points

- To fully benefit from the S3, it is important to avoid restricting funding to ESIF-funded action lines and measures. S3 should be considered an integral part of local RTDI policy. Successful implementation needs a jointly agreed upon approach, coordination of resources and use of available complementary policy instruments.

- The implementation system relies on a continuous EDP and monitoring and evaluation activities. The feedback of stakeholders on the selection process can improve it and its results or advance its results.

- As public funds are limited, one should make sure that they are not scattered across projects of sub-critical size. The economic impact on the regions and countries must be confirmed. Improvement in overall innovativeness, job creation, regional niche development, general purpose technologies, which can generate spillovers, are factors to be considered in the project selection process.

- The selection of limited areas for investment may well cause reaction from those who feel “excluded” as well as from those who have been “included”. Information which comes from the former may be useful in order to revise the decision on selected areas. While the latter may not generate the projects/impacts which are expected. Both these sources of information are useful in monitoring, evaluating, rethinking policy choices.

Useful links

Nauwelaers, C., I. Periañez Forte and I. Midtkandal (2014), RIS3 Implementation and Policy Mixes, *Joint Research Centre Technical reports*, *S3 Policy Brief Series*, No. 09/2014. http://s3platform.jrc.ec.europa.eu/-/ris3-implementation-and-policy-mixes?inheritRedirect=true

OECD (2011), *Regions and Innovation policy*, OECD Publishing, Paris. http://www.oecd.org/innovation/oecdreviewsofregionalinnovationregionsandinnovationpolicy.htm

Magro, E. and C. Nauwelaers (2015), Reconciling territorial strategies goals and means: towards smart competitiveness policies, in Valdaliso Gago, J.M. and J. Wilson (2015), *Strategies for Shaping*

Territorial Competitiveness, Routledge.
http://www.orkestra.deusto.es/es/investigacion/publicaciones/libros-informes/capitulos-libro/747-reconciling-territorial-strategies-goals-means-towards-smart-competitiveness-policies

Foray, D. and Rainoldi, A., Smart specialisation programmes and implementation, *Joint Research Centre*, *S3 Policy Brief Series*, No. 02/2013.
http://s3platform.jrc.ec.europa.eu/-/smart-specialisation-programmes-and-implementation?inheritRedirect=true&redirect=%2Fknowledge-repository%3Fp_p_id%3Ds3ppublications_WAR_s3pcontentsportlet_INSTANCE_UKfpjUK1JBKt%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-1%26p_p_col_count%3D1

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Chapter IV – Compliance with State aid law

Highlights

This chapter highlights the relevance of State aid law both for policy makers and aid grantors when implementing S3. State aid law, while contributing to the effective implementation of policies like S3, controls the spending of public funds and prevents subsidy race between Member States.

Policy relevance

The right approach to State aid law is the early recognition of situations where State aid may be present. In such cases, it is important to find the best solution allowed for Member States, thereby

Introduction

State aid law is part of EU competition law and aims to constraint the funding possibilities of public authorities in order to sustain competition within the internal market, i.e. the 28 Member States. As a general rule State aid is prohibited as it distorts market competition. Nevertheless the European Commission can qualify certain public interventions as compatible aid, in case they contribute to the common interest like environmental protection, innovation, or investments in less developed regions. These interventions have to be necessary and proportionate to the goals to be achieved and must have limited negative effect on competition and cross-border trade.

State aid law is applied across all Member States requiring the same rules to be followed within the whole EU.

State aid under EU law is a broad concept. It comprises public measures financed by the State or from State resources, which provide financial advantages to a limited number of economic entities (undertakings) and that have a distortive effect - or have a potential to distort competition - on the market and affect trade between Member States. Under competition law, the term undertaking means any entity engaged in economic activities e.g. selling products or services for remuneration. The legal form or non-profit attitude of the entity has no relevance; even public entities can qualify as undertakings. In every case, the financed activity of the entity has to be identified. The above elements are cumulative preconditions of State aid. If

If public money is spent for economic actors, it is most probably State aid. For S3 implementing entities, it is therefore crucial to examine whether the entity financed from public funds is an undertaking or not.

any of the conditions are not met regarding a public measure, then State aid is not present. Hence, the requirements of State aid regulations do not need to be complied with. If State aid is present, then the authorities involved have to find a compatibility ground from the options offered by State aid law.

Implementation of State aid rules

European State aid law sets the framework within which the national decision makers can implement their policy choices; furthermore, compliance with State aid law requires full compliance with all the conditions set by the European Commission. Even if one condition is not satisfied, the aid will not be compatible with the internal market and the Commission can order recovery from the beneficiary. In case the planned State measure constitutes State aid, the authorities involved have to find which State aid rule will be used to establish its compatibility with the internal market provisions.

National authorities are obliged to ensure compliance with State aid rules regarding implemented measures. This means that entities involved in S3 implementation, especially those providing financial sources, have to be able to recognize State aid and to apply the rules.

Compliance with State aid law means both: compliance with financial requirements as well as with procedural requirements, such as notification to the European Commission or informing the latter about aid to be granted. In practice, compliance with State aid rules means that the national legal basis for granting the aid contains the conditions of State aid law: the aim, potential beneficiaries, highest amount of aid granted or aid intensity, eligible costs, and other conditions.

In case of S3 implementation however, the selection of the appropriate State aid rule is not as difficult, as the S3 main aims greatly overlap with the objectives of State aid policy (e.g. fostering growth, innovation, SMEs). Similarities can also be found between the approach of the EU State aid policy's common assessment principles and S3 principles. As a result, most of the objectives of the given measure may be aligned to one or more State aid rules, and beneficiaries contributing to the implementation of S3 can receive State aid.

For most of the S3 objectives aid can be granted without prior notification to the European Commission. In these cases national authorities are responsible to comply with State aid rules.

The European Commission has revised State aid rules in 2014 within the framework of the State Aid Modernization initiative. Under the currently applicable rules, the European Commission encourages Member States to grant most of the aid measures under the so-called general block exemption regulation, meaning that national authorities can grant the aid without going through the preliminary notification procedure of the Commission. The current rules are based on the compatibility analysis called common assessment principles, defining factors that need to be assessed, which are the following:

1. *Contribution to the common interest*: the aid has to contribute to objectives which are beneficial to the whole community, not just for the recipient undertaking.

2. *Need for State intervention*: a State aid measure must be targeted towards market deficiencies, for example by remedying a market failure.
3. *Appropriateness of the aid measure*: the proposed aid measure must be an appropriate policy instrument to address the objective of common interest.
4. *Incentive effect*: the aid must change the behavior of the undertaking(s) concerned in such a way that it engages in additional activity, which it would not carry out without the aid or would carry out in a restricted or different manner or location.
5. *Proportionality of the aid* (*aid to the minimum*): the amount and intensity of the aid must be limited to the minimum needed to induce the additional investment or activity by the undertaking(s) concerned.
6. *Avoidance of undue negative effects on competition and trade between Member States*: the negative effects of aid must be sufficiently limited so that the overall balance of the measure is positive.
7. *Transparency of aid*: Member States, the Commission, economic operators, and the public must have easy access to all relevant acts and to pertinent information about the aid granted.

For block exempted aid, the Commission presumes that the analysis of common assessment principles lead to a positive outcome. In line with the objectives of S3, the following State aid rules may be used by public authorities under general block exemption regulation[0] or *de minimis* regulation[0], therefore implementing the measure without notification[0]:

1. *Aid for research, development and innovation*: R&D&I aid aims to help companies to overcome market failures and information asymmetries. Aid can be granted to R&D projects (fundamental and industrial research, experimental development and feasibility studies), for innovation clusters, for SME's innovation costs (obtaining and validating patents, buying advisory and support services) and process and organizational innovation if it is based on cooperation of independent large undertakings and SMEs. Regarding R&D projects, the eligible costs are the costs of the project (personnel, renting facilities, contractual research, overhead costs, operating expenses) and the aid intensity is lower for projects closer to the market (fundamental research 100%, industrial research 50% experimental development 25%), but bonuses can be given to SMEs, and to cooperation between independent undertakings. Special rules apply for research organizations and research infrastructures. In the case of these entities, it has to be assessed whether they carry out economic activities or not. If the economic activity of these entities is over 20%, aid intensity may reach a maximum of 50% and 20 million euros under the GBER; above this threshold notification is required.
2. *Regional aid*: this is meant to address regional disparities within the EU thereby strengthening cohesion.[0] Regional aid can mostly be granted to initial investment. Simple

[0] Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty.

[0] Commission Regulation (EU) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid.

[0] The list only provides a brief overview of each category. For the complete conditions, please consult the regulation in the useful links section at the end of the chapter.

[0] Regional aid can be granted in underdeveloped areas of the European Union. Two types of such areas exist "a" areas and "c" areas. The formers are where the standard of living is abnormally low (< 75% of the EU average GDP per capita). The latter is mostly designated by the Member States based on their territorial development objectives. The regions where

replacement investment is excluded from its scope. The beneficiary has to contribute at least 25% of the project costs from its own resources. To have an impact on the region's economic development, the investment has to be maintained for 5 years [3 years for SMEs] and aid intensity cannot be higher than the regional aid map set by the Commission. Projects with eligible costs exceeding 50 million euros are subject to stricter requirements.

3. *Risk finance and start up aid*: in these cases, it is allowed to complement the funding needs of SMEs with State aid. Risk finance is a broad concept and includes equity financing, loans and guarantees provided by fund managers selected through open calls ensuring commercial and profit driven management of the fund. Risk finance up to 15 million euros can be given to undertakings with defined conditions set out in the regulation.
4. *Beside risk financing, start-up undertakings (unlisted small enterprises up to five years following their registration, which have not yet distributed profits and have not been formed through a merger) can receive designated start-up aid in the form of loans, guarantees or grants even a combination of these forms of aid.*
5. *Aid for broadband deployment*: the deployment of broadband networks can be financed via State aid if the market does not provide coverage for a given territory. The aid must be limited to the investment cost of the broadband network, and the beneficiary has to be selected through an open and non-discriminatory, competitive procedure, which respects technological neutrality as well.
6. *De minimis aid* can also be granted without notification, i.e. small amounts of aid that have negligible effects on competition and trade, setting a threshold of 200,000 euros per undertaking, per three fiscal years. De minimis aid cannot be used to circumvent the aid ceilings and intensities which are laid down in other State aid rules. For example, if the undertaking receives regional aid up to the maximum aid intensity allowed, it cannot obtain de minimis aid linked to the same costs (e.g. an investment loan below market rate to finance the same investment).

regional aid can be granted and the aid intensities for each are to be notified by Member States to the European Commission for approval (regional aid maps).

Hungary - Ensuring state aid compliance

There are cases of centralized state aid control where a single unit within the government is responsible for checking compliance with state aid rules and for authorizing block exempted state aid. No aid can be granted without the express consent of this specific unit which is also responsible for conducting state aid notifications to the European Commission.

In Hungary it is mandatory for aid grantors to notify their planned grant schemes to the State Aid Monitoring Office (SAMO). The notification must contain the most important information (aim, beneficiaries, budget, duration, how state aid rules apply and the conditions thereof). The SAMO checks whether the plan:

1. Is in line with the General Block Exemption Regulation (GBER) or the de minimis regulation and approves the future granting,

   OR

2. Contains all the necessary elements to notify it to the European Commission.

In the first case, aid can be granted after the approval of the SAMO and in the second case, only after the approval of the European Commission.

Actors and their role in the process

Ensuring compliance with State aid law is the responsibility of each Member State. Member States have developed different institutional settings to ensure compliance. There is no single good governance solution. Ultimately,

National State aid contact points can or has to be involved to ensure oversight and take the necessary procedural steps towards the European Commission (ex-ante notification, ex

one can involve State aid experts both in the planning and implementation phases of Operational Programmes. It must be decided how the final measure will best support the given S3 priority through the implementation of the Operational Programme (like financial engineering, financing of incubators or research organizations). Compatibility has to be ensured with State aid rules through assigning, e.g. one of the exemptions provided by the EU State aid law, parallel to the creation of national legal base, e.g. responsibility given to granting authorities. National authorities are also responsible for providing annual reports about the money spent on different objectives and they have to comply with the accumulation requirements as well (e.g. exclude financing to the same undertaking or same costs above the limits set by State aid rules even when different public sources are used).

The *Commission* approves aid measures subject to ex ante notification. Furthermore, it monitors ex-post whether the aid granted complies with the rules. Should the Commission discover infringement of the State aid rules, it opens a formal investigation procedure which may result in recovery (repayment of aid received by the beneficiaries, with interest).

Based on the jurisprudence of the European Courts, *beneficiaries* have to act like a diligent business when receiving State aid, therefore it is obligatory for them to check State aid compliance of the programme through which they receive funding.

Auditors or entities responsible for monitoring, including the European Commission can check State aid compliance both at the scheme and at individual decisions level, for a 10 year period starting on the day of the funding decision.

Competitors of beneficiaries or alleged beneficiaries can turn both to the European Commission but also to national courts for remedies. Also national courts can and have to use all measures at their disposal under national law to stop and remedy State aid granting not in line with the procedural requirements or not in line with block exemptions, which may lead to repayment of the aid increased by paying interest for the period using the aid and also damages to the competitor of the beneficiary.

France - Unlimited guarantee by the State for research institutions

In 2006, the French authorities notified the European Commission about the law which granted a special status called "publicly owned industrial and commercial establishment" (EPIC) for the research organization Institut Français du Pétrole (IFP). This special status enabled IFP to obtain an indirect State guarantee securing that EPIC entities cannot go bankrupt. Such a legal protection allowed for IFP to mitigate its funding risks, thus conferring economic advantage through the indirect state guarantee. The European Commission had to analyse and separate the activities of the research organization, since it pursued both economic and non-economic activities. As a result of the process, the Commission found the aid to be compatible with certain conditions, which resulted in exclusion of the guarantee for the future economic activities of the EPIC.

More information

Challenges ahead and action points

As can be seen, State aid is often present when public funds are used for S3 implementation. It is for the relevant authorities to first recognize State aid and secondly to find the best solution for its compatibility with the internal market rules. It is advisable for entities involved in the planning and implementation of Operational Programs and S3 to consult national State aid contacts or experts early in the process in order to save time in finding the most appropriate solution and set up necessary institutional background, as well as to inform future beneficiaries about the conditions to comply with. Using different schemes and complementary measures (like grants and loans for the same purpose or parallel investment schemes) has to be assessed as well.

State aid options have to be selected based on the following factors:
- Their potential contribution to the Operational Program and S3 objectives
- Overlaps and synergies with other measures even outside the Operational Program and S3
- Time needed for action (can the aid be granted without ex ante notification)
- Potential absorption capacity at the level of undertakings
- Complexity, institutional set up ready for disbursement, monitoring and evaluation
- Legal certainty, safe interpretation of the rules, which excludes the risk of recovery.

Under the current State aid rules numerous objectives can be financed via State aid compliant solutions without notification to the European Commission. As the objectives of S3 are mainly in line with the objectives of common interest as defined in the EU State aid policy's common assessment principles, it is easily feasible to implement a compatible measure (e.g. regional, environmental, research and innovation, start-up aid) without having to go through a notification process, which might prolong the implementation causing more red tape for all involved actors. As the State aid rules facilitate aid through the block exemption regulation avoiding the modification process, it is up to the national and regional authorities to apply the block exemption regulation without errors and

provide legal certainty for the beneficiaries. In case of doubt, informal contacts with the Commission (DG Competition) can be used. The correct application of the State aid rules is imperative since the Commission regularly monitors the implementation of State aid schemes and can check, either ex officio or based on complaint, whether all conditions have been met, and can do so at any time in the ten year period following the granting of the aid.

Italy - Tax incentives for investments in SMEs

In 2013, Italy notified the European Commission about its intention to grant personal and corporate tax incentives to investments made in innovative start-up companies directly or via collective investment undertakings. The aim of the measure was to leverage additional investment in start-ups by giving financial advantage to the investors. The European Commission assessed the policy intervention and established that it constituted State aid at the level of various involved entities:

- At the level of investing undertakings (with the exception of private individuals) since they pay less taxes;
- At the level of the target companies as they could receive funding more easily - which would not be available in the absence of the tax incentive;
- Indirectly, at the level of collective investment undertakings by creating demand for their services, opening scope for higher revenues thanks to the measure.

The personal income tax advantage was not qualified as State aid as the beneficiaries (private individuals) are not considered as undertakings.
Since the conditions for tax exemption followed the rules defined in the State aid guidelines with respect to risk capital, the European Commission declared this form of aid compatible with the internal market.

More information

See the European Commission's decision on the case (in English): http://ec.europa.eu/competition/state_aid/cases/244253/244253_1373480_139_2.pdf

Useful links

EU Competition Law – Rules applicable to State Aid (2014): http://ec.europa.eu/competition/state_aid/legislation/compilation/state_aid_15_04_14_en.pdf

General Block Exemption Regulation (2014): http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1404295693570&uri=CELEX:32014R0651

General Block Exemption Regulation (GBER) Frequently Asked Questions (2015): http://ec.europa.eu/competition/state_aid/legislation/practical_guide_gber_en.pdf

De minimis aid regulation (2013): http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2013.352.01.0001.01.ENG&toc=OJ:L:2013:352:TOC

National State aid contacts can be found at: http://ec.europa.eu/competition/state_aid/overview/contacts.html

DG Competition State aid case search engine: http://ec.europa.eu/competition/elojade/isef/index.cfm?clear=1&policy_area_id=3

List of regions eligible for regional aid: http://ec.europa.eu/competition/state_aid/regional_aid/regional_aid_2014_2017.pdf.

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Chapter V – Transnational cooperation and value chains

Highlights

There are many reasons why policy-makers should open up their smart specialisation strategies for transnational cooperation: gaining access to wider business and knowledge networks, getting necessary research capacity, reaching out to other markets, expanding business opportunities, combining complementary strengths and joining global value chains are some of these. Most importantly, transnational collaboration is an investment that brings growth to countries and regions. *What are the challenges faced by regions and countries expanding transnationally? What are the instruments and frameworks to facilitate different stages of collaboration and how S3 integrates local economies into global networks?* These questions will be addressed in the chapter.

Policy relevance

Staying competitive in the global economy depends on transnational activities and participation in

Introduction

The importance of the global economy and innovation networks calls for a regional innovation policy that goes beyond regional and national borders.[0] Cooperation in S3 involves sharing knowledge, coordination and exploiting synergies with S3 initiatives in other countries and regions. Transnational[0] cooperation is a key component of smart specialisation strategies. Cooperation and outward-looking disposition promote an understanding of the competitive position of the country/region with regard to others, and with respect to global value chains.

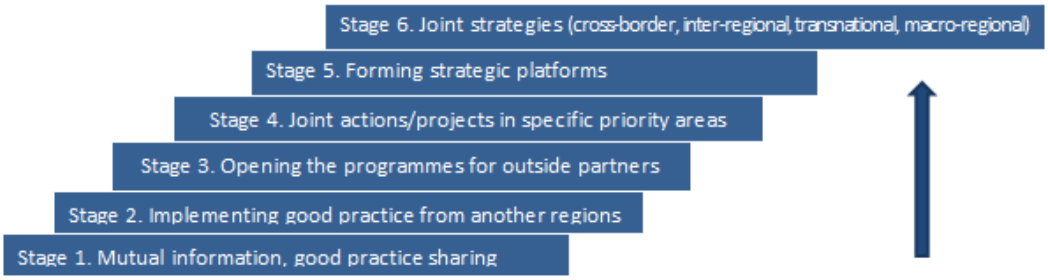
Outward-looking smart specialisation strategies enhance opportunities to take advantage of the best available knowledge.

Regional innovation eco-systems determine the degree of collaboration intensiveness. S3 cooperation may start on a bottom-up basis involving data and information exchange, and then moving on to experiment with collaborative projects, later on evolving into strategic platforms and alignment of funding instruments allowing for a comprehensive policy approach to open up joint programmes and a combination of policy instruments. This evolution of transnational cooperation in S3 from mutual information to common strategy may be explained like a stairway where each step

[0] Uyarra, Sörvik & Midtkandal (2014).
[0] Here, the concept of transnational collaboration is inclusive of inter-regional collaboration.

opens up for the next (Graph V.1), although some steps might be missed, continuous efforts and successful partnerships help to build a solid background for joint transnational strategies.

Graph V.1 - Evolution of transnational collaboration



As witnessed by many regions (e.g. KNOWHUB project, TR3S project in Table 1), information sharing and transnational learning through peer review or participation in the EU territorial cooperation programmes, have provided necessary knowledge to build one's S3 and to continue partnerships supporting implementation (Stage 1). Applying good practices (Stage 2) and using the input from foreign partners may enable regional authorities to approach challenges in novel ways, to solve problems more efficiently, avoid pitfalls and build necessary institutional capacity for new collaborations. Going a step further and opening the national/regional programmes for outside partners (Stage 3) helps to join the transnational networks and create necessary linkages to global value chains, in this way supporting national S3 priority areas (see the Swedish example in Table 1).

Regions should take advantage of opportunities provided by EU ESIF regulation, which favours transnational strengthening of innovation systems and stipulates a possibility to spend up to 15% of the support from the ERDF (Article 70(2)) outside the programme area. Joint transnational projects (Stage 4) can open new trajectories for S3 priorities and redefine strategic focuses as in the case of the BORDWIIS+ project in the text box.

To form a continuous pipeline of initiatives and projects, regional and national stakeholders join strategic platforms (Stage 5) to address common challenges or achieve common goals; this is often observed in the frame of macro-regional strategies (see example of the EUSBSR flagship project: BSR Stars programme in the text box). Joint S3 strategies (Stage 6) are an advanced form of cooperation as in the case of Galicia (ES) and Norte (PT) which help streamline funding from existing sources and exploit the synergies with the policy initiatives, instruments and infrastructures in other regions.

There are many R&I policy instruments that can be devised to advance a collaborative basis of S3, including joint analysis and foresight, joint research and education programmes, allowing or the participation of international partners in national calls, coordination of cluster initiatives, collaborative schemes to support R&I investment in firms etc. Table V.1 below suggests what instruments could be used to facilitate the appropriate steps of S3.

According to the results from a recent survey on inter-regional collaboration in S3[0], the most common activity for inter-regional collaboration among the S3 authorities so far has been *information sharing*, followed by *cluster and innovation network initiatives*, *technology transfer infrastructures* and *monitoring and evaluation of policies*.

Galicia (ES) and Norte (PT) - Joint cross-border smart specialisation strategy

Forms of transnational collaboration that align R&I goals and priorities into a joint cross-border smart specialisation strategy are a major example of inter-regional cooperation. In this way, regional authorities would expect to (i) make better use of the different funding frameworks, in particular regional operational programmes and cross-border cooperation funding, (ii) to be more competitive in R&I excellence frameworks such as Horizon 2020 or the Era-net.

The joint strategic process between Galicia (ES) and Norte (PT) began in 2014 with the creation of the cross-border Work Group (Technical Secretariat) made up of representatives from the Galician Innovation Agency (GAIN) and the Northern Portuguese Regional Coordination and Development Commission. They set up the governance for the development of a joint strategy and carried out an analysis which identified the main areas for collaboration between the two entities. At the end of this strategic exercise, a shared vision for the future was reached that includes alignment of R&I goals and the proposal of joint priorities, actions for support, as well as an evaluation system with indicators to follow up implementation. The joint S3 aims at reaching greater levels of critical mass based on innovation synergies and complementarities at the value chain level, given the increasing combination of knowledge and production capabilities needed in innovative processes.

More information

See the joint cross-border smart specialisation strategy document (in English):

[0] Sörvik, Midtkandal, Marzocchi & Uyarra (2016).

Table V.1 - Aligning transnational collaboration instruments with S3 steps

S3 stage	Partner competencies	Policy instruments	Examples
	- Learn from good practices - Start transnational policy-learning by discovering differences - Look out for good practices in other regions	• Evaluation of R&I policies • Good practice transfers • Peer reviews[0] • Benchmarking[0] • Foresight	**INTERREG IVC KNOWHUB project** (PL, HU, ES, FR, AT, DE, BG) helped to bridge the gap of knowledge, skills and experience in designing and implementing S3 through joint activities. http://www.know-hub.eu **INTERREG IVC TR3S project** (FI, DE, PL, RO, IT, EE, UK, HU, ES) identified the unique characteristics and assets of each region highlighting competitive advantages through mutual learning and exchange of experiences. http://www.tr3s-project.eu
	- Learn from peers (these are regions with similar structural conditions and problems) - Structural differences may lead to policy methods which cannot easily be transferred.	• Cluster policies • Joint platforms for dialogue • Coordination of R&I policies • Cross-border R&I strategies	**INTERREG Europe CLUSTERIX 2.0 project** is an ongoing initiative of 10 regions/countries on leveraging cluster policies for the successful implementation of S3. It aims at improving policy instruments related to the actual delivery of innovation, making better use of clusters to facilitate such processes by focusing on complementary competences through the introduction of new innovation models for the development and operational implementation of strategic cluster partnerships. http://www.interregeurope.eu
	- Some regions might have performed better than others in terms of knowledge-creation, innovation and growth - Consider linking into their knowledge & innovation networks; build on complementarities through deeper integration into transnational value chains and knowledge networks - 'Building bridges' can provide absorptive capacities and spaces	• Establishing selection criteria to encourage transnationality in calls for projects • Joint research and education programmes • Joint provision of R&I infrastructure • Collaborative schemes to support R&I investment • Technology transfer infrastructure • Joint Innovation support services • Facilitating access to finance	**The Swedish Agency for Economic and Regional Growth (Tillväxtverket)** opened an ERDF-financed cross-clustering scheme to strengthen regional and national efforts developing new knowledge and competencies. The purpose is to (i) stimulate cross-border collaboration between regions and countries, and (ii) support S3 projects based on Swedish prioritised areas of strength for their further development and renewal. The call for pre-studies was launched for inter-regional cluster collaboration projects. In the next stage, the most promising 5-8 collaboration projects involving international partners will be granted up to 1million euros support over a three year period in order to develop and renew the Swedish areas of strength. http://www.tillvaxtverket.se

[0] http://s3platform.jrc.ec.europa.eu/s3-design-peer-review.

[0] http://s3platform.jrc.ec.europa.eu/regional-benchmarking.

S3 stage	Partner competencies	Policy instruments	Examples
	for knowledge brokers.		

Challenges and ways to overcome them

Regions have widely different eco-systems of innovation and correspondingly diverse directions and growth opportunities to their smart specialisation strategies. This heterogeneity gives rise to complementarities and synergies which can be capitalised upon through interaction.[0] As can also be seen from the results of the survey on inter-regional collaboration in S3, the main drivers for collaboration are similar or complementary industry structure and/or research capabilities helping to address common challenges jointly.

Collaborating across borders may open new and renew existing paths of economic development.

To be able to identify new development trajectories through the entrepreneurial discovery process, regions may need to acquire access to new forms of knowledge, create new re-combinations of their resources, or move from path extension to new path creation. All this calls for dynamic innovation policies, strengthening domestic linkages with international extensions. The challenges depend upon the level of transnational connectivity:

1. Developing a stronger regional innovation eco-system through improved internal connectivity between existing industrial and knowledge provision strengths, supported by transnational learning.
2. Growing a larger, stronger and more dynamic regional innovation eco-system by opening it up and connecting it to transnational or macro-regional knowledge
3. Achieving economic growth through collaboration and participation in the transnational and macro-regional frameworks and networks.

Challenge 1. How does transnational cooperation support the smart specialisation strategy within the region?

Regions have to strengthen their internal networks, creating triple-helix or quadruple relationships among relevant actors in research, industry, government and the civil society to be able to access and gain from transnational links. Regional innovation eco-systems can be somewhat fragmented in some regions. This fragmentation could be linked to potentially critical interaction gaps. In some regions for instance, there is a long history of co-evolution between universities and industry. They tend to co-evolve by relying on each other's successes and achievements. In other regions, academia and industry are distinctly different worlds with diverging rules, placed in widely distinct knowledge networks. Addressing these mismatches through a quadruple-helix dialogue may contribute to a

[0] Lundquist & Trippl (2013).

shared understanding of each stakeholder's needs. Transnational learning can support and strengthen the S3 process within the region as seen from the example below.

Ostrobothnia (FI) by the Nordland Region (NO) - Application of a gap analysis tool

Nordland is an industrial region in Norway with inadequately developed knowledge providers, characterised by a high level of path dependency and learning by undertaking (DUI) innovations. The regional authorities in charge of S3 searched for good practices which could be used to build a regional system of innovation for the Norwegian manufacturing industry. They have identified the *Ostrobothnian model of Triple Helix analysis* and policymaking which is a smart specialisation planning tool initially developed and applied in Ostrobothnia (FI). This good practice was later applied during the analytical stage of the S3 process in Nordland. Interestingly, this transnational learning exercise, in turn helped the region of Ostrobothnia to realise its core strengths and build them into its S3.

To address the gaps through transnational collaboration, the regional authorities should examine:

- What are the gaps in the regional-ecosystem that need to be addressed?
- Who can help provide the knowledge that the region does not have and what incentives would they have?
- What is the proper instrument to set up the cooperation?
- Is the identified good practice applicable in the region, and what are the steps to implement it?

More information

Virkkala, S., Mäenpää, A. & Å. Mariussen (2014) "The Ostrobothnian model of smart

Challenge 2. How to strengthen a regional innovation eco-system by opening it up and connecting to transnational or macro-regional knowledge networks?

Public authorities should address this challenge by connecting their regional innovation ecosystem with relevant actors external to the region by exploring opportunities across the following dimensions:

- Cross-border collaborations creating linkages with neighbouring regions,
- Inter-regional or transnational networks finding collaborations with regions and countries sharing certain common characteristics,
- Emerging macro-regional frameworks, which provide platforms for more strategic collaborations to address common challenges,

- Transnational and macro-regional value chains and business networks.

Transnational smart specialisation strategies could allow partners to take advantage of European regional diversity, as a group of regions might develop strategies based on co-evolution and complementarity. Such a collaborative approach to policymaking can be expected to boost critical mass and knowledge complexity while further supporting ongoing entrepreneurial discoveries in various types of regions. The example below demonstrates how transnational learning, comparative analysis and the sharing of entrepreneurial discovery process outcomes helped regions identify new strategic interests in the field of ICT.

Lorraine (FR) and Tuscany (IT) – Gains from transnational collaboration when exploring cross-sectorial ICT opportunities in S3

This example focuses on collective efforts to exploit ICT opportunities that are so wide and rapidly changing that existing policies and strategies are very often outdated to meet the challenges and benefit from created opportunities. Policy-makers need both a clear and up-to-date overview as well as easily adaptable plans in order to develop, assess and modify policies. In that way, they ensure quality of life improvement whilst keeping regional strengths and assets in mind. Gathering 10 partners from nine member states, the INTERREG IVC project BORDWIIS+ tackled the challenge of providing policymakers with recommendations about the way in which ICT development can be exploited within smart specialisation strategies. The project succeeded in influencing several S3 of the participating regions.

For instance, the Lorraine region in France used to focus its innovation strategy on already well-established economic sectors (materials, bio-medicine, energy and resources). Thanks to the project, the region finally integrated digital sciences and the needs of the markets linked to ICTs in its strategy. The region used to support these domains in a transversal way but the exchanges carried out within the framework of BORDWIIS+ enabled Lorraine to identify its assets (and weaknesses) more precisely and develop a robust meta-project based on ICT innovation. The ICT inventory, the analysis of the collaborative models, and obviously the final recommendations from the projects were key elements in this policy change.

Similarly, the lessons learnt during the experience exchange directly affected the process of defining S3 in Tuscany (IT). The study visits of both projects, plus the comparative analysis among partners were useful to better understand Tuscany's position internationally with regard to ICT. During the entrepreneurial discovery process and on the basis of the project's comparative analysis, "Photonics for space and medical applications" was identified as the most important R&D field. As a result, Tuscany included photonics solution into the domains of aerospace and medical applications in its S3 final version.

More information

To be able to exploit co-specialisation opportunities adequately, public authorities might start by re-examining their existing smart specialisation strategies in the attempt to answer the following questions:

- What regions have similar or complementary S3 priorities?
- Is there the capacity within the eco-system to establish networks with the other potential partner, and how?
- If so, what are the common problems or challenges to be addressed?
- What are the policy instruments available for this cooperation?

Macro-Regional Strategies and Smart Specialisation

EU macro-regional strategies endorsed by the European Council emphasise greater co-ordination between different stakeholders and the alignment of resources and strategies between private and public actors at different governance levels. This is very important for the successful implementation of S3 strategies. To date, the European Union has put in place strategies for a number of such macro-regions covering several policies: the Baltic Sea Region (EUSBSR), the Danube Region (EUSDR), the Adriatic and Ionian Region (EUSAIR), and the Alpine Region (EUSALP). These strategies concern 19 EU Member States and 8 non-EU countries.

By participating in macro-regional strategies, regional and national policymakers have an opportunity to:

- Discuss the transnational dimension of S3, its importance, relevance, and practical issues
- Learn about available analytical tools and implementation instruments, including value chain activities through cross-cluster and cross-region cooperation
- Examine various cooperation opportunities and steps to be taken in order to stimulate transnational cooperation in areas of smart specialisation
- Explore common interests and set up collaborative projects
- Jointly consider how to mobilise relevant funding sources that will support their projects
- Provide more appropriate common or coordinated replies to global issues, and thus increase the competitiveness of the macro-region.

Cooperation in S3 at macro-regional level helps explore whether and how S3 priorities envisaged in national and regional strategies differentiate, or are complementary to, their neighbouring countries/regions. It also leads to the creation of strategic linkages to tackle common challenges when engaging in joint S3 initiatives. One such example is illustrated below.

Baltic Sea Region (BSR) - The flagship project BSR Stars

Macro-regional collaborations are good instruments to mobilise competences and align S3s, as well as to create strategic platforms for developing joint S3 projects tackling common challenges.

The BSR Stars is a transnational programme and policy collaboration among 10 countries (DK, EE, FI, DE, LV, LT, NO, IS, PL, SE) that aims at strengthening the competitiveness and economic growth in the Baltic Sea Region (BSR). This is to be achieved by fostering transnational linkages between specialised research and innovation nodes, leading to strategic innovation alliances to tackle common "grand challenges", such as health, energy, sustainable transports and digital business and services.

One of the recent initiatives in the flagship – BSR Stars S3 is the INTERREG Baltic Sea Region project which fosters a transnational approach towards S3 implementation. Partners (DK, FI, LT, NO, SE) will develop integrated innovation support infrastructures such as test and demonstration facilities and new innovation management tools to leverage complementary competences stemming from their S3. The project focuses on bio and circular economy as a cross-sectoral priority field of S3 in the BSR.

More information

See the BSR Stars project webpage (in English): http://www.baltic.org/project/bsr-stars-s3/

https://www.interreg-baltic.eu/about-the-programme/cooperation-priorities/capacity-for-innovation.html

Challenge 3. Create economic growth through transnational collaboration and innovation

Economic growth can be facilitated through technological innovation leading to new path-creation. The next technological revolution will depend on multiple innovations across many industrial areas linked to emerging value chains with several technological components joined in new ways. This is where European diversity may contribute: some regions have access to leading R&D and upstream innovation facilities, others have industrial skills needed in downstream testing and industrial upscaling. In larger territorial frameworks, both attributes may exist. It is time to upgrade transnational networks of knowledge and expertise, and drive the development of trans-national and macro-regional value chains.

Global value chains and smart specialisation

Global value chains (GVCs) are 'organisational systems'[0] that operate across multiple nations with complex global integration and a technology base, or 'engine', rooted in Information &

[0] Brennan & Rakhmatullin (2015).

Communication Technologies (ICT). Consistent with the role of ICT and related key enabling technologies (KETs) as a means of upgrading activities in some sectors in countries/regions, they can also play an important role in GVC participation. GVCs drive firm-level competitive advantage through integrating global and local competitive and comparative advantages (firm-specific and location-specific advantages).

The comparative advantage of specific industries can be assessed and their degree of participation in the corresponding industry GVC can be examined, including establishing those locations that serve as its main sources of input and output destinations. Such an analysis could point to opportunities for maintaining, extending and/or deepening the region's positioning on the GVC. Furthermore, by applying a similar analysis to other locations, a region (or country) can ascertain who else occupies significant parts of the industry value chain, how strong their positions are and whether those clusters of GVC activities in these other competing regions/countries are similar and/or complementary to their own activities. Taking account of the previously identified linkages, this can indicate whether there could be opportunities to capitalise on complementarities in other locations and the development of inter- or macro-regional and trans-European linkages.

Since the data required at the digging stage may be unavailable or indeed difficult to access, there is a need to identify conduits/boundary spanners that are connected to the specific industry and have a deep knowledge of the industry cluster and its characteristics. These are likely to be found within national and regional development agencies and/or enterprise development agencies. For each location, one such individual might be assigned an S3 responsibility within the context of the industry GVC. Platforms - real and virtual - would need to be developed to facilitate engagement among such conduits/boundary spanners so that opportunities for intra-regional industry GVC linkages can be precisely identified and pursued to promote match-making. A number of general principles can be summarised as *Engaging*, *Anticipating*, *Assessing and Responding* (EAAR):

- *Engaging* with the Industry and its stakeholders on a continuous basis
- *Anticipating* the likely evolution of the industry globally
- *Assessing* the challenges and opportunities that are likely to ensue from future industry trajectories
- *Responding* to these challenges and opportunities in a proactive manner.

A good example of such a trajectory of upgrading a position within a value chain is the case of BioPharma in Ireland, as described in the example box below.

Ireland – The Case of BioPharma

The Pharmaceutical industry forms an important part of the manufacturing sector in the Irish economy. Initial investments in the sector were primarily in bulk pharmaceuticals, now known as active pharmaceutical ingredients (APIs). Over the course of the 1970s, investment began to gravitate towards drug product manufacture. The 1990s saw this trend continue, with many established sites reinvesting significantly and expanding into shared service activities. The advent of the human genome project saw many Ireland-based companies invest in biotech or biopharmaceutical operations. Currently, many players are investing in product and process development, thereby adopting the Development & Manufacturing model. In addition, a number of indigenous specialist pharmaceutical and chemical companies have been established, adding to the overall diversity of the sector. The majority of Irish sites have undergone significant

The process of Engaging, Anticipating, Assessing and Responding (EAAR) is required to be followed on a continuous basis and must involve active stakeholder participation. The following areas are key for the development of the individual region's position in global value chains:

- The provision of a compatible and supportive environment via a relevant infrastructure that encompasses a robust regulatory framework, research and technology and education
- The upgrading and sustaining of a regional/national innovation system
- The development of the requisite human capital pool
- The support and nurture of collaboration among all stakeholders
- Engagement in the upgrading of existing activities within the industry, anticipating and targeting areas of growth.

If regional authorities are to play a role in co-creating and developing European industrial value chains based on smart specialisation priorities, they also need to focus on the following: interregional knowledge-building, mapping the matchmaking potential around GVCs between regional smart specialisation priorities, identifying some pilot examples of interregional value chains, key stakeholders, available equipment and facilities, relevant actors/skills in smart specialisation areas, and applying the methodology described above with a view to identifying opportunities for

the matching of national and regional cluster organisations in identified value chains of smart specialisation areas.

The *Vanguard Initiative* (see example box below) is an example of ongoing multi-regional collaboration in bringing together regional eco-systems in a number of key priority areas such as *Advanced Manufacturing*. The initiative is committed[0] to embedding clusters or cluster-like organisations (co-creating eco-systems for public private partnerships in innovation and transformation) in regional eco-systems as the backbone of emerging cross-EU and cross-sectoral innovative value chains.

The Vanguard Initiative and related activities

The smart specialisation Vanguard Initiative seeks to lead by example in developing interregional cooperation and multi-level governance in the support of clusters and regional eco-systems to focus on smart specialisations in a number of priority areas for transforming and emerging industries. These regions wish to build upon the synergies and complementarities in smart specialisation strategies to boost world-class clusters and cluster networks, in particular through pilots and large scale demonstrators. These investments will bolster the competitive capacity of Europe to lead in new industries for the future and develop leading markets that offer solutions for common challenges. The sectors covered by the Vanguard Initiative are: Advanced Manufacturing for Energy Related Applications in Harsh Environments, High Performance Production with 3D Printing Efficient and Sustainable Manufacturing Bio-based Economy and Nanotechnology. The Vanguard Initiative builds on the Milan Declaration.

More information

See the Vanguard Initiative webpage (in English): http://www.s3vanguardinitiative.eu

See the Milan Declaration of the Vanguard Initiative (in English): http://s3vanguardinitiative.eu/sites/default/files/contact/image/final_declaration_of_milan_final_zonder_handtekeningen.pdf

Practical suggestions and support tools

The selection of partners and the identification of an applicable good practice are never easy, as several factors and preconditions for learning must be taken into consideration. To guide policymakers in this work, various European Union bodies offer a number of tools:

CORDIS – the European Commission's primary public repository to disseminate information on all EU-funded research projects and their results.

[0] http://www.s3vanguardinitiative.eu/sites/default/files/contact/image/vi_workshop_on_clustering_policy_-_discussion_note_final.pdf.

The ERA-NET – the instrument under Horizon 2020 designed to support public-public partnerships in their preparation; establishment of networking structures; design, implementation and coordination of joint activities, as well as the topping up of single joint calls and actions of a transnational nature.

INTERACT – the hub for exchanging information and best practice among territorial cooperation programmes.

KEEP – the source of aggregated information regarding projects and beneficiaries of European Union programmes dedicated to cross-border, transnational and interregional cooperation within the European Union and between European Union member states and neighbouring countries.

INTERREG EUROPE Policy Learning Platforms – a new feature of INTERREG Europe which is open to the whole community of regional policy stakeholders and provides information and services for continuous learning where any organisation dealing with regional development policies in Europe can find solutions to improve their public policies in four priority areas: 1) Research and innovation; 2) SME competitiveness; 3) Low-carbon economy; 4) Environment and resource efficiency.

The European Cluster Collaboration Platform – a service facility aiming to provide cluster organisations with modern tools: to make efficient use of networking instruments, develop collaboration transnationally, support the emergence of new value chains through cross-sectoral cooperation, access the latest quality information on cluster development and improve their performance.

The Enterprise Europe Network – the instrument to support small and medium companies to take advantage of business opportunities in the EU Single Market linking up through powerful databases, sharing their knowledge and sourcing technologies and business partners across all Network countries.

EIT Knowledge and Innovation Communities (KICs) – the instrument of The European Institute of Innovation and Technology (EIT) to integrate all three sides of the 'knowledge triangle' - i.e. higher education, research and business - in Knowledge and Innovation Communities (KICs) by bringing together leading players from all these dimensions to cooperate in addressing common challenges.

S3 Platform tools

Regional Benchmarking Tool – allows for the identification of reference regions across Europe which share similar characteristics that cannot easily be changed.

Eye@RIS3 Database – an online database of S3 priorities in the EU as well as R&I strategy priorities in non-EU partner countries which enables regions and countries to position themselves, find unique niches, and seek out potential partners for S3 collaboration.

EU Trade Tool – an interactive web-based application for the visualisation of inter-regional trade flows and the analysis of regional competitiveness.

ICT Monitoring Tool – a web-based tool that allows users to search European Structural and Investment Funds (ESIF) data (ERDF, CF, ESF, YEI and EAFRD) regarding planned investments in ICT.

Challenges ahead and action points

Regional economic development follows paths based on existing specialisations. Smart specialisation means that paths must be renewed and new paths may be created. This requires entrepreneurial discoveries which combine knowledge in new ways and can be achieved through transnational interaction. Table V.2 below provides a summary of what consequent steps to consider and actions to take in order to come to the path extension strategies and reap the benefits from transnational cooperation, towards smart growth.

Table V.2 - Cumulative steps to benefit from transnational cooperation

The stair	Challenges ahead	Action points
Step 1	Achieve more efficient and better targeted policies through transfer and translation of good practises	▶ Monitor and evaluate S3 strategy, policy tools and the strengths of innovation networks through transnational comparisons ▶ Discover strengths and shortcomings ▶ Discover relevant regions with good practice achievements ▶ Transfer good practices
Step 2	More powerful policy tools through transnational cooperation, boosting scale and scope	▶ Use these experiences to initiate cooperation on R&I policies, cluster policies and in other relevant areas
Step 3	Climb within the value chain, open new paths of economic development and renew existing ones through cross-border, macro-regional and European level extensions of networks and systems of innovation	▶ Proceed with development of networks of short and long distance knowledge transfer and learning. ▶ Set up bridges between leading and lagging regions, with a. institutionalised mechanisms of cooperation b. instruments promoting transnational mobility.

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Chapter VI – Monitoring

Highlights

Monitoring is a strategic management tool to ensure an effective implementation of S3strategies; it should not be seen just as an administrative burden. Implementation and revisions need an informational basis to make informed decisions following two main questions:

- Are we doing it right? (i.e. achieving the goals of our strategy)
- Are we doing the right things? (i.e. is our strategy still appropriate)

Each S3 priority area has its own specificity with its own set of indicators. At the same time, all indicators are meant to track the achievement of predefined objectives.

Policy relevance

Monitoring innovation support at multiple levels of government (national, regional and local) is beneficial for avoiding duplications, benchmarking and ensuring coherence. Without data or other systematic information, it will be impossible to show which goals of the strategy were achieved and

Introduction

Monitoring policies and policy strategies refers to an organized set of activities encompassing the iterative collection and elaboration of information on assessing the direction and evolution of socio-economic phenomena and the delivery of policy measures. Monitoring is a key element of the decision-making process that allows for adjusting the course of policy actions. This chapter outlines how monitoring should be used as a management tool when implementing smart specialisation. It reflects the S3 intervention logic, ensuring it is conducted at the policy level and provides the umbrella for the monitoring of Operational Programmes (OPs). We discuss regional and national examples of good practices and provide references to them for the interested reader.

Implementation of monitoring mechanisms

S3 monitoring as a management tool

Besides the legal obligations directly deriving from the ESIF regulations, the S3 monitoring system should be understood as a fundamental management tool for innovation strategies. A poorly

constructed monitoring system could hinder the capacity to face effectively the territorial development needs and may even prevent the proper implementation of the strategy.

Monitoring is meant to provide information and signals for concrete action. Taking follow-up actions based on the information and signals provided by the monitoring system can be costly and burdensome, for the Managing Authorities and S3 governance bodies, if this is not designed appropriately. Yet, monitoring systems are meant precisely to allow timely actions, to revise elements of the S3 on the basis of knowledge that is internal to the strategy management (without having to wait for ex-post external evaluations). Policy strategies should not be set rigidly in stone, but rather be adaptive, adjusting to the changing reality, and facilitating learning and appropriate responses. Similarly, monitoring should be seen as an emergent strategic management tool co-created together with stakeholders. Without critical information from stakeholders, public agents alone are less likely to learn from experience and to identify failure and success. Stakeholders and beneficiaries possess knowledge of the reality on the ground that is often beyond the reach of public authorities.

S3 monitoring has to be a strategic management tool co-created together with stakeholders.

The monitoring system should reflect the S3 logic of intervention

In order to be a proper and effective management tool, the S3 monitoring system should reflect the logic of intervention of the strategy. In particular, the indicator system should be linked to **specific objectives and expected changes** explicitly defined and **identified for each of the S3 priority areas**. In this respect, the monitoring system represents also an opportunity for strategy designers to streamline and distil the very essence of the S3 logical chain that links means to ends. Therefore, it ensures consistency among the various elements of the strategy and certifies their appropriateness to the achievement of ultimate goals. In other words, once it is properly and fully defined, the monitoring system is a way to effectively describe the role of S3 priorities and policy instruments, and their relationship with strategy objectives. Monitoring systems can help people in charge of policy implementation, stakeholders and citizens to understand the rationale of policy interventions, enabling them to constructively engage in strategy improvement and to quickly react to early warnings.

The monitoring system should assess whether expected changes are taking place, in what direction and with what intensity. Specific objectives and expected changes should be explicitly defined for each and all S3 priority areas.

It is useful to remember that even the most sophisticated monitoring system alone cannot allow for a complete and precise identification of the causal impact of policy interventions on selected socio-economic variables (and the related indicators), net of the effects of 'other factors'. These latter factors include variables and socio-economic dynamics that are external to the cause-effect chain linking policy measures to results.[0] Monitoring systems are only a representation of the logic of intervention of S3, not necessarily a validation of such logic.

[0] On this topic, see for instance the Commission Guidance Document on Monitoring and Evaluation available at http://ec.europa.eu/regional_policy/sources/docoffic/2014/working/wd_2014_en.pdf.

Wielkopolska (PL) – The Polish multi-level system

The monitoring and evaluation system for S3 in Wielkopolska (PL) includes interlinked sets of indicators reflecting the strategy's logic of intervention, its financial sources and the broader socio-economic context: result, output, context, and input indicators. Additional analyses are planned with the objective to better understand the sources of competitive advantage of the region and its priority areas. They include, for example, international benchmarking and regional input-output analysis at regional, national and European level. The Wielkopolska Innovation Observatory established at the Department of Economy is responsible for monitoring activities, while evaluation will be performed externally by an independent expert organisation. Together with three other regional observatories, it forms a network coordinated by the Regional Policy Department in the Marshall's office, which at the same time is responsible for the Regional Operational Programme.

More information

November 2015 (in English):
http://s3platform.jrc.ec.europa.eu/documents/20182/149513/Wielkopolska-Poland_presentation_Bologna_10Nov2015.pdf

The objectives of S3 monitoring and the types of indicators

S3 monitoring has two main objectives, each associated to a different type of indicator:

- Measuring the actual **level of implementation of the policies and related actions** undertaken in the territory in terms of, e.g., projects approved, accepted investments, contributions paid, beneficiaries funded, jobs created, people trained. To this aim, the monitoring system will define appropriate *output indicators*, which need to be articulated on the basis of the S3 priorities.
- Measuring the **degree of achievement of the socio-economic objectives** and the **changes taking place in the production systems** for each of the S3 priorities. To this aim, the monitoring system will define appropriate *result indicators*, which need to be articulated on the basis of the objectives and expected changes linked to each S3 priority. Result indicators typically aim to measure outcomes at the level of enterprises, organizations or individuals, capturing e.g. research and innovation performance, value-added generation, education achievements.

The **minimum required elements for a meaningful S3 monitoring system** are therefore: (i) output indicators (direct products of the intervention intended to contribute to results, (ii) result indicators (showing whether or not the indicators move in the desired direction for all potential beneficiaries, not just for actual beneficiaries), (iii) their explicit articulation by S3 priority areas, (iv) their logical link with the expected changes and objectives they will contribute to.

In addition to results referring directly to categories of potential beneficiaries, we may want to **measure the evolution of production systems within and between the S3 areas in terms of structural change and specialisation.** Structural change refers to any change that can be observed in

the generally persistent characteristics of the economy and society, and specialisation refers to changes in the relative importance of specific economic domains, markets, or value chains. *Structural change & specialisation indicators* can be included in the S3 monitoring system to capture changes in the structural characteristics of the business system, the dynamics of the production specialisation as well as the spatial concentration of economic activities, the positioning of local production systems in the supply chain, the level and quality of interaction between private sector research and higher education institutions.

As a further complement to the minimum requirements described above, the S3 monitoring system may also **provide a picture of the competitiveness of the regional economy**, with particular reference to issues of research and innovation and the evolution of production systems at large. To this aim, the monitoring system will define *context indicators*, recovering most of those already available from official statistical sources, or, if necessary, integrating the information base with *ad hoc* analysis at the level of supply chains and/or production systems.

Table VI.1 summarizes the characteristics of and exemplifies the four categories of indicators.

Table VI.2 - Monitoring indicators and functions

	Type of indicator	*Function*	*Examples*	*Source*
Minimum reauirements for S3 monitoring	OUTPUT	Measuring the actual level of implementation of the policies and related actions undertaken in the territory.	E.g.: number of projects approved, amount of accepted investments, contributions paid, number of beneficiaries funded, number of jobs created, number of people trained.	These indicators are most likely identified already in the programmes that contribute to the S3 (e.g. the ERDF OP output indicators). In the S3 monitoring system, these indicators should be linked to the strategy priorities and the associated expected changes.
	RESULT	Measuring the degree of achievement of the socio-economic objectives of the strategy for each of the S3 areas.	E.g.: value-added generation, upgrading of products and processes, private R&D expenditure, employment of qualified people, education achievements.	These indicators are most likely identified already in the programmes that contribute to the S3 (e.g. the ERDF OP output indicators). In the S3 monitoring system, these indicators should be linked to the strategy priorities and the associated expected changes.
Extensions depending on the S3 objectives	STRUCTURAL CHANGE & SPECIALISATION	Measuring the absolute and relative changes taking place in the production systems comprised in each of the S3 areas according to the trajectories and transitions foreseen in the strategy for each S3 priority and for the whole economy and society.	E.g.: structural characteristics of the business system (firm size, business ownership structure, projection in external markets), sectoral concentration of economic activities, technological specialisation of local production systems as measured by evaluating intermediate products of research and innovation investment (patents, inter-firm collaborations, collaboration with research institutions), demographic dynamics of firms, outreach of social interventions.	These indicators are less likely to be found in the programmes that contribute to the S3. They need to be defined by the strategy designer and tailored to the specific objectives of each S3 priority.
	CONTEXT	Providing a picture of the competitiveness of the regional economy, with particular reference to issues of research and innovation and the evolution of production systems at large.	E.g.: distribution of value added and employment by sector, incidence of R&D activity by sector, distribution of patents by sectors, general indicators of innovation and R&D activities.	National and regional official statistical sources.

Emilia-Romagna (IT) - Measuring the transition and evolution of the regional economy

The minimum required elements for a meaningful S3 monitoring system are: (i) output indicators (measuring the actual level of implementation of the policies and related actions), (ii) result indicators (measuring the degree of achievement of the strategy's socio-economic objectives), (iii) their explicit articulation by S3 priority areas, (iv) their logical link with the expected changes and objectives to which they will contribute. The S3 monitoring system may also include (v) structural change and specialisation indicators (measuring the evolution of production systems within and between the S3 areas), and (vi) context indicators (providing a picture of the competitiveness of the regional economy and the evolution of the regional innovation system as a whole).

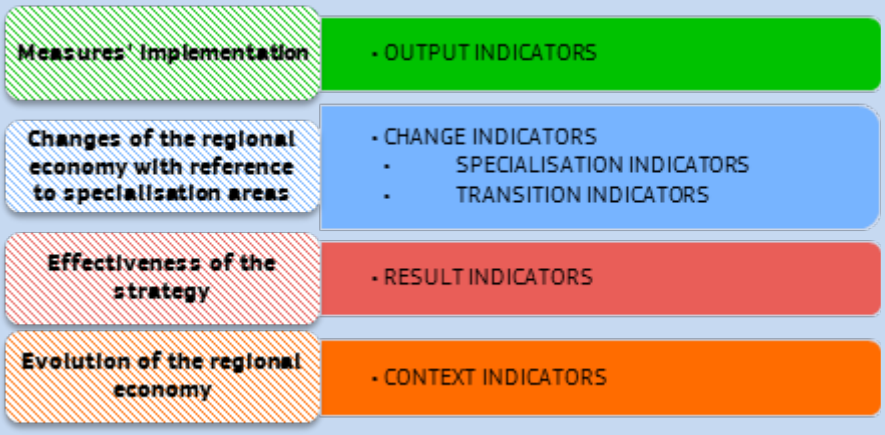
The current approach of Emilia-Romagna (IT) to smart specialisation focuses on two lines of action: reinforcing and modernising existing clusters as well as discovering emerging ones with a high potential for innovation and employment. The idea is to support the evolution of the industrial system towards a higher capacity for better managing the immaterial/intangible aspects of value chains. ASTER - a consortium for industrial research, technology transfer and innovation - oversees the monitoring activities of the S3 through a system capturing four measurement dimensions:

1.Implementation (output indicators);

2.Change of the regional economy in terms of specialisation domains (specialisation and transition indicators);

3.Effectiveness of the overall strategy (result indicators);

4.Evolution of the regional economy (context indicators).



This differentiated approach allows catering to different target groups. Especially 'change indicators' are at the core of Emilia Romagna's effort to promote specialisation in activity areas with proven strengths and potential. Within this broad category, the 'specialisation indicators' cover e.g. patents, research grants, value of business-research contracts, share of new start-ups and number of SMEs per specialisation area. These indicators show how the regional economy is advancing in the selected specialisation areas. They also capture how the regional economy is moving along the selected innovative drivers. An online portal is under construction and will allow the visualisation of monitoring data. This device will be a key communication tool to inform stakeholders and the broader public about the implementation of the S3 in the region, providing freely accessible data.

More information

Romagna_PXL_10Nov2015_final.pdf/

Involvement of stakeholders and communication of monitoring information

Ownership of the S3 process and its results. A sense of ownership of the S3 process should be common to all three main categories of actors involved in the strategy design and implementation: political policy-makers, ESIF managing authorities, and stakeholders. The sense of ownership provides these actors with the right incentives to maintain their engagement in the strategy implementation and hence to achieve the desired results. To achieve sustainability of the S3, a shared ownership of the monitoring mechanism is also needed. A common difficulty in this respect is that monitoring data can become politically sensitive, especially if they indicate negative developments; this may in turn withdraw political support from the strategy. At the regional level, the solution lies in the involvement of stakeholders in the design and implementation of the monitoring system: the political level will be more interested in the strategy delivering, the more stakeholders are involved.

Targeted communication and accessibility of monitoring information can be an important involvement device. A transparent monitoring system that communicates concisely the relevant information about S3 implementation contributes to the credibility and reputation of the ambitious transformational plan contained in the S3. Ideally, monitoring activities are organised as a continuation of the dialogue with those stakeholders that were involved during the design of the S3. In this function, monitoring contributes to build and maintain dialogue and consensus. Stakeholders can either be involved in the follow-up of monitoring activities or be empowered by having access to factual information on progress made. In this way trust, ownership and commitment can be built and maintained.

Communication and accessibility of monitoring data support trust-building and facilitate the involvement of stakeholders and citizens.

Wales (UK) – Arloesiadur: a new data platform for the Welsh innovation system

The Government of Wales (UK) commissioned the innovation charity NESTA the development of a novel data platform that collects and assesses information about innovation activities in Wales and the interconnectedness between people and organisations. Arloesiadur (meaning "innovation tool" in Welsh) will gather data automatically from very different sources, combining established statistics and web data (company websites, software developing or professional meeting platforms, Twitter accounts, etc.). Learning how to engage constructively with these unconventional data sources for improving innovation policies is part of the entrepreneurial discovery process. It also implies that the public sector has to innovate and rethink current approaches. Valuable lessons can be learnt from this exercise on monitoring developments in S3 priority areas and dealing effectively with the lack of regionalised data from official sources, which are both common challenges for national and regional authorities across Europe.

More information

See the Arloesiadur project webpage (in English): http://www.nesta.org.uk/blog/arloesiadur-innovation-analytics-experiment

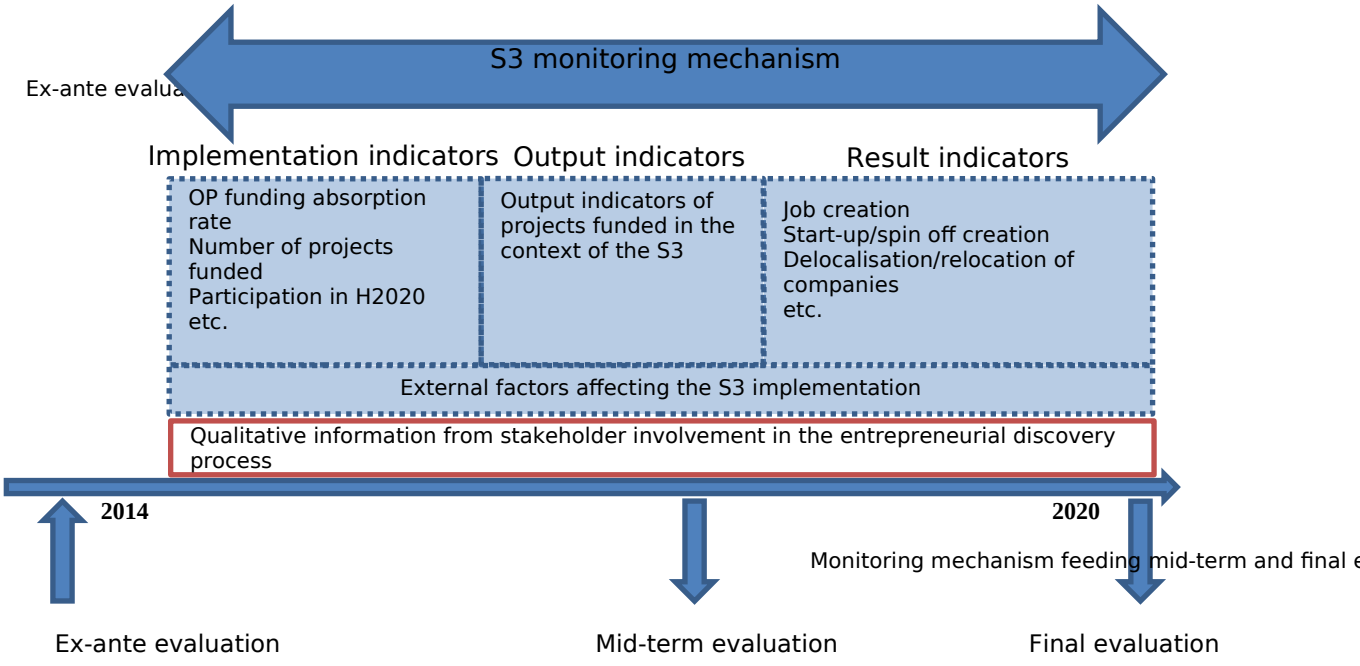
Complementarity between monitoring and mid-term and final evaluation

S3 monitoring as a management tool needs to go beyond traditional monitoring mechanisms designed uniquely for audit and ex-post evaluation purposes. It should be seen as a **'learning-by-monitoring' process with a real impact and influence on the management of the strategy**. Recommendations derived from evaluation often come too late to have an impact on adjusting the strategy; this is why the monitoring mechanism complements the established mid-term and final reviews and evaluations. While evaluations give an ex-post assessment of an implementation period in the past, S3 monitoring - being placed at the core of strategic management - can provide a picture in motion of the implementation.

Independent bodies performing ex-post evaluations offer an external point of view that reinforces the legitimacy of recommendations to implement vis-à-vis policy makers and the broader public. However, they cannot substitute monitoring as a timelier and on-going instrument to facilitate feedback and learning during the implementation phase. Based on information produced by the monitoring mechanism, evaluation will then need to be performed in order to properly identify the contribution of policy measures to the observed changes in the target variables. A good monitoring system provides information for evaluations that can be more precise.

The relationship between monitoring activities and evaluation is represented in Figure VI.1.

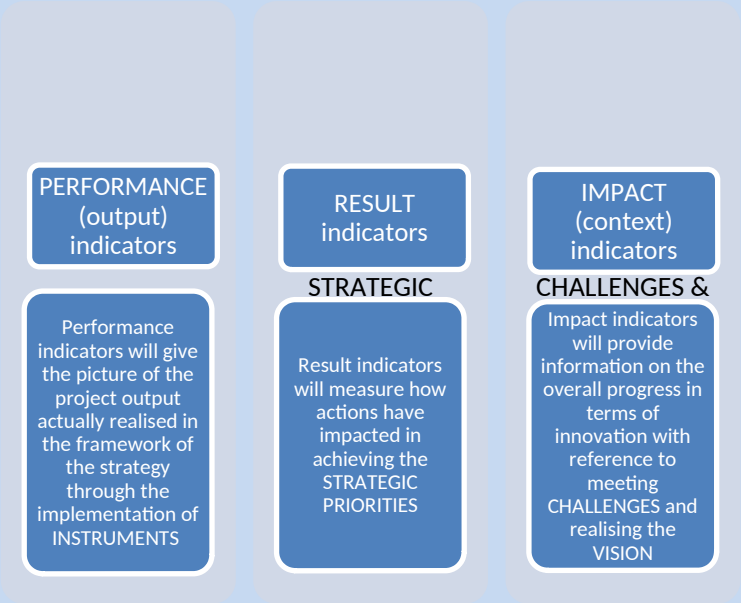
Figure VI.1 - Monitoring and evaluation exercises



Galicia (ES) - Monitoring as a way to manage strategy objectives

The S3 monitoring system of Galicia (ES) comprises a panel of 74 indicators categorized into output, result and context which will be updated continuously during the programming period covered by the S3. Data will be collected by the Galician Innovation Observatory, the body responsible for analysing the impact of public innovation policies in Galicia, with the support of a team of independent experts and stakeholders.

The indicator structure identified in the Galician S3 is reported in the following chart (own elaboration based on Galicia S3):



These three interlinked sets of indicators constitute the Galicia S3 scorecard, conceived as the key management tool integrating the strategy's executive and operational levels with the aim to achieve the S3 mid- and long-term objectives.

Intermediate and target values of indicators were fixed in mutual agreement with the Government departments involved in S3, also taking into account the historical evolution of each indicator and the expected impact of the S3 strategy. Baseline values were defined using different sources, such as the Galician Institute of Statistics (IGE), the Innovation Platform Galician (PINNG) or the Galician Service of Industrial Property (SEGAPI).

There will be an interim and a final assessment in 2018 and 2020, respectively, in which the indicators' actual values will be contrasted with the target values. The assessments will take into account qualitative information obtained via surveys to beneficiaries and Quadruple Helix discussion groups to further confirm the evidence gathered through quantitative information. The assessments will analyse both the evolution in time of individual indicators and the comparative performance of context indicators in the region as well as in other Spanish and European regions. In case of negative deviations from expected targets, corrective measures will be devised according to a risk analysis. In case of positive deviations, the likely causes will be analysed in order to try to transfer the experience to other areas and inspire future actions.

More information

http://s3platform.jrc.ec.europa.eu/documents/20182/149513/Wielkopolska-Poland_presentation_Bologna_10Nov2015.pdf

The monitoring system across levels and areas of intervention

An effective monitoring system has to establish a link between various levels of intervention and different scales of socio-economic phenomena. Depending on the institutional setting, the S3 monitoring system should establish links with other monitoring systems operating at different administrative levels (e.g. national and regional). In general, it is also advisable to determine how the local S3 objectives fit into the broader national and international pictures; to this aim, the monitoring system will have to clearly define different time horizons for the measurement and assessment of different types of indicators.

Monitoring activities across sectors is essential to track innovations. Policy makers and implementers should go beyond traditional taxonomies of industrial activities whenever it is necessary in order to better capture the evolution of the priority areas. In this case, experimental methods and targeted surveys may represent the only real solution in order to generate the information base for the monitoring system.

Relationship between S3 and OP monitoring

In practice, the OP monitoring will be the starting point of the S3 monitoring with respect to the measures which are funded by ESIF (also due to the need for an OP to report about its contribution to the S3 implementation), but the S3 monitoring will have two distinctive features: (i) a **breakdown by priority areas**, and (ii) a **mechanism and indicators which allow to follow the specific development of priority areas** at a greater level of specificity than the OP monitoring. Therefore, *results* and *result indicators* as well as *output indicators* in the S3 need to be categorized and measured according to each priority area.

It is important to **be able to actually measure the processes/outcomes/outputs that the chosen indicators are meant to capture**. The problem is in this respect twofold: (i) lack of statistics; (ii) lack of capacity and skills in the administration, or a combination of the two. In the first case, targeted surveys to collect original information of both quantitative and qualitative nature are recommended. In the second case, the development of skills and capacities inside the administration is encouraged together with the use/integration of external capacity. ERDF funding allows for the possibility to set aside resources to invest in both directions through Technical Assistance at the OP level, which should be fully explored.

Aquitaine (FR) - Relevant, flexible, fine-grained indicators for S3

The S3 monitoring requires two distinctive features: (i) a breakdown by priority areas, and (ii) a mechanism and indicator system which allow following the specific developments of priority areas at a greater level of specificity than the operational programme monitoring level.

In the monitoring system of the region Aquitaine (FR), indicators are selected to be realistic within the realm of projects appraisal, and to offer the S3 governance bodies a dashboard enabling an update of the strategy if necessary.

More specifically, S3 indicators need to address the following objectives:

- Objective 1: Indicators should measure the extent to which the projects to be funded by European Structural Investment Funds (ESIF) or other type of EU funding are aligned with the selected S3 priority areas (i.e. number of projects per S3 priority)

Challenges ahead and action points

- Monitoring is still seen by many implementing bodies as an additional burden rather than as an instrument for strategic management. National and regional authorities can effectively use the autonomy they have to design a simple yet effective monitoring mechanism tailored to their particular and unique strategy and context. Only indicators providing value added to the management of strategy implementation and adjustment should be selected. Otherwise monitoring will remain a blunt administrative exercise.
- Two are the fundamental types of indicators to be included in the S3 monitoring system: output indicators measure the actual level of implementation of the policies and related actions undertaken in the territory; result indicators measure the achievement of the socio-economic objectives of the strategy and the changes taking place in the local production systems. Of utmost importance for the strategy designer is to link indicators to specific objectives and expected changes explicitly identified. With no explicit identification of

expected changes, the strategy cannot be monitored and its implementation would be purposeless.

- Result and output indicators should be defined and identified for one of the S3 priority areas. Breaking the indicator system down by S3 priorities constitutes a challenge for strategy designer and represents a new task compared to monitoring Operational Programmes; this also represents a defining feature of S3 monitoring that makes it different from other monitoring mechanisms.
- In several Member States, monitoring will be conducted at multiple levels of government (national, regional and local). Bringing these different information streams together avoids duplications, enables benchmarking and ensures consistency in the policy actions. Yet, consolidating many monitoring data sources in a joint system is often difficult in terms of resources and organizational cultures. A pragmatic approach is to ensure an exchange of data at least at regular events or joint fora. Running pilots like the joint innovation data portals across several regions or countries (e.g. in the Baltic Sea or Danube regions) can yield new insights for benchmarking.

Useful links

S3 tools developed by the S3 Platform:

http://s3platform.jrc.ec.europa.eu/s3-tools

S3 Policy Brief Series "Monitoring Mechanisms for Smart Specialisation Strategies":

https://ec.europa.eu/jrc/sites/default/files/JRC95458_Monitoring_Mechanisms_S3_Policy_Brief.pdf

European Commission's "Guidance Document on Monitoring and Evaluation of the European Cohesion Fund and the European Regional Development Fund. Concepts and Recommendations (2014-2020)":

http://ec.europa.eu/regional_policy/sources/docoffic/2014/working/wd_2014_en.pdf

Other source of data:

http://ec.europa.eu/eurostat/cache/RSI/#?vis=nuts2.labourmarket&lang=en

https://ec.europa.eu/growth/tools-databases/kets-tools/

http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm

http://www.oecd.org/gov/regional-policy/regionalstatisticsandindicators.htm

http://qog.pol.gu.se/data/datadownloads/qogeuregionaldata

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