StressTesting Regional Approaches Conducive to Implement S3 through Clusters

Lombardy in the framework of the INTERREG ALPINE SPACE Project S3-4AlpClusters

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Concepts and Definitions

For the purpose of this report the key concepts and definitions are understood as follows:

- **Clusters:** Clusters are generally described as groups of companies, mainly SMEs, and other actors (government, research and academic community, institutions for collaboration, financial institutions) co-locating within a geographic area, cooperating around a specialised niche, and establishing close linkage and working alliances to improve their competitiveness.

- **Cluster initiatives:** A cluster initiative is an organised effort aiming at fostering the development of the cluster either by strengthening the potential of cluster actors or shaping relationships between them. They often have a character like a regional network. Cluster initiatives are usually managed by cluster organisations.

- **Cluster organisations:** Cluster organisations are entities that support the strengthening of collaboration, networking and learning in innovation clusters and act as innovation support providers by providing or channelling specialised and customised business support services to stimulate innovation activities, especially in SMEs. They are usually the actors that facilitate strategic partnering across clusters. Cluster organisations are also called cluster managements.

- **Cluster participants:** Cluster participants are representative's industry, academia or other intermediaries, which are commonly engaged in a cluster initiative. Given the case a cluster initiative has a certain legal form, like associations, cluster participants are often called cluster members.

- **Cluster policy:** Cluster policy is an expression of political commitment, composed of a set of specific government policy interventions that aim to strengthen existing clusters and/or facilitate the emergence of new ones. Cluster policy is to be seen as a framework policy that opens the way for the bottom-up dynamics seen in clusters and cluster initiatives. This differs from the approach taken by traditional industrial policies which try (and most often fail) to create or back winners.

- **Programme:** Programmes are a vehicle to implement a policy, e. g. funding programme for R&D in environmental technology. In addition to programmes, policies are also implemented through regulation (= regulatory framework, e. g. law on consumer protection).

- **S3-Smart Specialisation Strategies:** Smart Specialisation is a strategic approach to economic development through targeted support for research and innovation. It involves a process of developing a vision, identifying the place-based areas of greatest strategic potential, developing multi-stakeholder governance mechanisms, setting strategic priorities and using smart policies to maximise the knowledge-based development potential of a region, regardless of whether it is strong or weak, high-tech or low-tech[1].

We will clearly distinguish between clusters, cluster initiatives and cluster organisations to make it easier for the interviewee to understand what is intended with the corresponding question.

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[1] Foray (2015). *Smart Specialisation, Opportunities and Challenges for Regional Innovation Policy*, Routledge.

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Introduction

Several EU regions have developed Smart Specialisation Strategies (S3) as integrated part of their regional innovation strategies. The challenge is to implement S3 through clusters in order to gain sustainable and inclusive growth while generating critical mass of economically viable activities.

There is a relative lack of knowledge about S3 in emerging economic regions of the EU. Both analytical and implementation tools must be developed in order to adapt S3 approaches in a way that will be fully beneficiary for SMEs.

The objective of the S3-4AlpCusters project is to improve framework conditions for innovations, induced by clusters and SMEs and to create new jobs and employment opportunities. As implemented by clusters and cluster organisations, S3 can offer an innovative approach to improve innovation in the Alpine Space. Cross-regional approaches can serve to support coordinated actions between the different sectors/regions. Transnational cluster cooperation helps to achieve a critical mass of SMEs and enhances cross-regional collaboration to innovate for new products in areas relevant to the Alpine Space. For further information about the S3-4AlpClusters project, you will find a short description at the end of the document. To learn more and to download additional resources please refer to the project website http://www.alpine-space.eu/projects/s3-4alpclusters/en/home.

Against this background, each of the 11 partner regions of the S3-4AlpClusters conducted a policy benchmarking (StressTesting) to learn how to implement S3 through clusters as individual benefit. Additionally the StressTesting provided a joint benefit to the S3-4AlpClusters partnership, by allowing for a better understanding of each other's policy instruments. The StressTesting addressed policy making and implementation processes, namely the role of clusters in the design of the S3, regional support schemes for cluster initiatives, coordination and alignment of S3 at the regional and national level and the role of clusters in the implementation of S3. Benchmarking also explores the role of a regional cluster excellence portfolio to provide inputs for development and testing innovation models initiated by cluster organisations and identifying areas for (common) improvements.

The present StressTest Report compares the approaches of 25 regions conducive to implement S3 by means of clusters. It aims to serve substantiated discussion and policy improvement, shows the state of play in each region and offers individual recommendations.

The Context: Interplay between Smart Specialisation and Clusters

Clusters are a fundamental part of the European industrial landscape as 38 % of European jobs are based in clusters. They are key drivers for the European economy with regard to competitiveness, growth and jobs. Over the last years, cluster policy in the EU has increasingly gained importance to improve competitiveness of local industries and facilitate industrial transformation processes by stimulating the development of infrastructure in support of business innovation. The recent economic crisis and on-going global industrial transformations have highlighted the need to modernise regional industrial structures and build new industrial competences in order to respond to global competition and to address societal challenges, such as environment, health and resource efficiency.

Starting from the observation that the implementation of Smart Specialisation Strategies often fails to generate the desired effects, there is a strong need to better understand the relationship between S3 and clusters. The underlying problem in the implementation of S3 has been detected at two fundamental levels: a lack of experience among regions on how to use clusters in the implementation of Smart Specialisation Strategies and a lack of alignment between and knowledge about other regions' strategies.

The interplay between S3 and clusters implies a two-way relationship between the two concepts. As suggested by the overall title of the project ("S3-4AlpClusters – Smart Specialisation Strategies to build an Innovation Model for Alp Clusters"), a first way to study the interdependency is to look at how S3 can be used to foster innovation processes and spark entrepreneurship within clusters ("S3 → Clusters"). Turning the relationship on its head, existing clusters can also be used as a tool in the implementation of S3 ("Clusters → S3"). The overall design of the project allows focusing on different aspects of the interplay between S3 and clusters in its different work packages.

Taking the above-mentioned into account, regions should apply a broad set of policy instruments when implementing their S3 through clusters. History has shown that there is no single policy appropriate to cope with all regional challenges[2]. This also leads the attention away from single clusters rather than to the **regional cluster portfolio**.

A well-balanced, matured regional cluster portfolio is necessary to have capable clusters and cluster managements in place as tool to support the entrepreneurial discovery and identify those opportunities a region can benefit most. Consequently, regions need

- Strong clusters, since enterprises located in strong clusters have a higher growth rate and higher productivities[3].

- Strong cluster managements that can provide higher impact in terms of innovation and competitiveness than weak ones[4].

- Systematic implementation approach. If a region intends to use clusters as a tool to implement S3, it has to follow a throughout and systematic approach.

[2] Izsak, Ketels, Lämmer-Gamp, Meier zu Köcker (2016), *Smart Guide to Cluster Policy*, European Cluster Observatory, Brussels, http://ec.europa.eu/enterprise/initiatives/cluster/observatory/cluster-mapping-services/services/index_en.htm.

[3] Ketels, Protsiv (2013*): Clusters and the New Growth Path for Europe*, WWWforEurope Working Paper, WIFO, Vienna.

[4] Lämmer-Gamp, Meier zu Köcker, Christensen (2012): *Clusters are Individuals. New Findings from the European Cluster Management and Cluster Program Benchmarking*, Danish Ministry of Science, Technology and Innovation, ISBN: 978-87-92776-22-8, Copenhagen/Berlin.

The StressTest Approach

StressTesting is a transnational benchmarking-based approach that enables an empirical review and assessment of regional policies for implementation of Smart Specialisation Strategies (S3) through clusters. StressTesting determines how and where clusters can be most supportive of industrial transformation and growth in an integrated, coordinated and sustained manner. The overall aim is to develop new and better ways of designing and implementing modern cluster-based regional economic development policies. The approach draws maximum advantage from analysis of the regional cluster portfolio to better understand the forces that shape new industrial value chains and sectors. StressTesting is intended for regional implementation organisations, policy makers and business development entities that are interested in comparing their own region with European frontrunner regions.

The StressTest and its related report will thus mainly focus on the question of how clusters are used as a tool of S3 and study the modality of use and influence of clusters in the implementation of S3. By including questions about the ability of cluster initiatives to implement new innovation models, the results of the StressTest will nevertheless also pave the way for another important question of how S3 can contribute to define new innovation models in further detail. It thus fully considers the two-way interplay between clusters and S3.

StressTesting addresses both policymaking and implementation processes. The approach examines the role of clusters in the design of S3 and the regional support schemes for cluster initiatives. It provides insight views on the coordination and alignment of S3 at the regional and national level. Furthermore, it identifies the current and potential role of clusters in the implementation of S3.

The process of using clusters as tool to implement S3 is a multi-facetted and complex process. However, although regions are very different, it follows the six key dimensions shown in Figure 1.

Figure 1: Dimensions of policy-making and implementation process in connection with S3
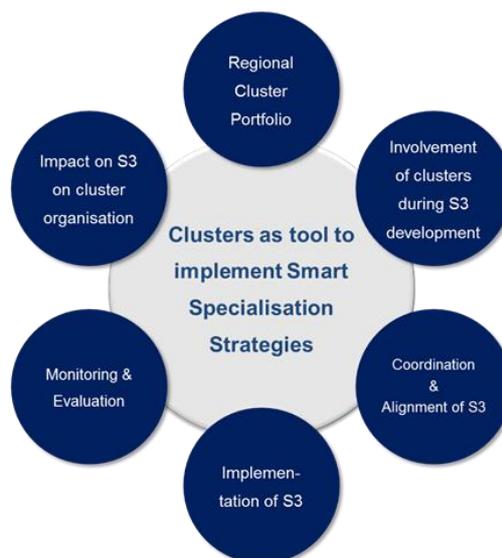
The importance of the regional cluster portfolio and individual clusters already starts during the design phase of S3. Clusters can act as a more efficient tool, if the respective S3 is built upon them and takes the needs and potentials of the cluster actors into account. The main challenge then is the implementation of S3, meaning to turn the S3 into a set of policy instruments that helps to meet the desired objectives. Even if the concept of S3 helps to concentrate the resources on selected priority

areas, regions often do not have the critical mass or capacity to successfully develop the necessary transformative activities completely on their own.

Thus, aligning S3 related policy instruments with those on national level or with those of the neighbouring regions, enables regions to attract additional funding or other kinds of support. Evaluation and monitoring as tool to do better policies is also an important dimension, thus considered during the StressTesting.

S3 Stakeholder Survey

The StressTesting exercise was completed by a representative group of regional stakeholders from three different levels

- Regional policy makers in charge with the development and implementation of S3
- Cluster managers
- Other stakeholders like representatives from regional development agencies, regional councils or other entities closely involved in the development and implementation of S3.

By means of an online questionnaire, these experts were asked to provide their opinions related to the six dimensions given in Figure 1. Thus, the data gathered provides a unique source of insight and a "snap-shot" portrait of each region's theoretical and practical approach in order to implement S3 through clusters.

The Indicator Approach

Based on the findings of the questionnaire and on the evaluation of the questions, 22 appropriate indicators for the respective dimensions were calculated (see Figure 2). A scale with the following indicators has been designed:

- Value "0" represents the indicator under worst operating conditions or in the worst possible situation, emphasising that it is poorly developed or non-existent.
- Value "1" means that an indicator basically exists, but on a very low level. Nevertheless, there is a strong need to improve its efficiency or functionality.
- Value "2" means that an indicator exists, but on an average level. Nevertheless, there is room for improvements in terms of operability or functionality.
- Value "3" means that an indicator is mature and the given region performs well in this regard. Not much room for further improvements is left.
- Value "4" corresponds to the indicator under its best operating condition. The approach behind can be considered as best practice.

The Comparative Portfolio

The benchmarking aspects of StressTesting also provide a comparative view of the approaches and capacities of regions to implement S3 through clusters. This enables participating regions to identify areas for common improvements by comparing and mutual learning. To date, 25 regions have participated in the StressTesting exercises since June 2015 (s. Figure 2). The growing number of regions increases the comparative portfolio and enlarges the portfolio of good practices.

Figure 2: Survey of regions having participated in the StressTesting exercises since 2015
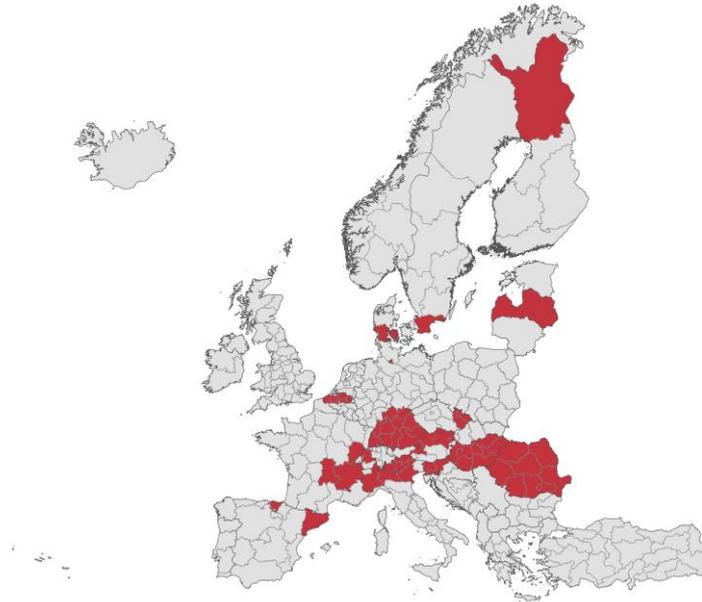
Results

The survey's results do not present the results of a representative survey as the participation of interviewed stakeholders is limited and the selection of the stakeholders was based on subjective decisions of the S3-4AlpClusters project managers. However, in total more than 130 stakeholders from all levels (cluster organisation, stakeholder responsible to implement S3 and policy makers) participated in the online survey, including 12 from Lombardy region. Consequently, the results present subjective perspectives of the different stakeholders. Thus, we are quite confident that the results represent the real status.

The results are presented according to the dimensions shown in Figure 1 and structured as follows:

- starting with a short introduction to describe the rationale of the related dimensions,
- followed by a short paragraph explaining how the cluster approach can leverage the impact of the implementation of S3,
- a good practice case from the comparative portfolio in order to demonstrate how it can work in practice,
- a short regional perspective that provides an explanation regarding the individual performance against the set of indicators

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The chapter finishes with a broader discussion of the findings.

The findings of the StressTest are mainly presented by boxplots (s. Figure 3). Boxplots display information about the distributions of statistical data without making any assumptions about characteristics of this distribution. This means that the spacing between the different parts of the box helps to indicate the degree of spread and skewness in the data. The box represents 50 % of the indicators population (the interquartile range), 25 % higher and 25 % lower than the median value, which is marked inside the box. The whiskers represent the lower quartile and the upper quartile of the data. For more homogeneity and representativeness of the results, only a reduced set is included in the lower and the higher quartile and not the full 25 % of the data. The ends of the whiskers are determined by the following model: the length of the whiskers is determined by the lowest and the highest value of the presented data AND shall not be larger than 1.5x the size of the interquartile range. This way, the whiskers include up to 25 % of the entire data, reduced by significant statistical outliers.

When applying the described methodology for drafting the box-plot chart, in general at least around 80-90 % of the StressTest related data can be considered to be inside the box or inside the range of the whiskers. Very exceptional individual values are not considered.

The red line represents the data of the individual region. The figure does not feature a red line in case no data was available for the region.

Figure 3: Boxplot Approach
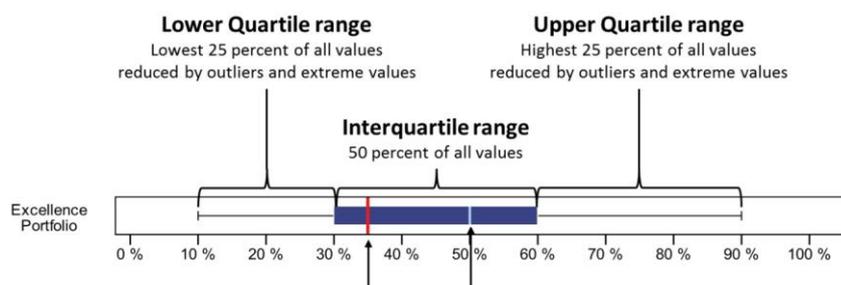
Involvement of Clusters during S3 Development

S3 is a strategic approach to regional economic development, aiming at new combinations between a region's existing potentials and capacities and new opportunities[5]. However, the identification of these potentials and capacities is not an easy task and requires deep insights about the existing potentials and capabilities in the region.

Although there are statistical data helping to understand the situation in the region, these data can just offer a very general overview about the situation. Entrepreneurial discovery workshops can help to get some detailed insight about the opportunities and needs in the region. But, the risk that the results of such workshops strongly depend on the individual know-how of the attendees is often underestimated.

Leverage through clusters: By actively involving cluster initiatives in the development of S3, regions can better identify their main existing capacities and needs for upcoming transformative activities. By focusing the S3 on clusters, main regional economic assets are taken into consideration and, moreover, cluster organisations are involved as crucial regional moderators of transformative actions.

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[5] Foray (2015): *Smart Specialisation, Opportunities and Challenges for Regional Innovation Policy*, Routledge.

Explanation: Clusters represent existing regional strengths and are, as such, a cornerstone in the development of S3. Cluster initiatives are organised efforts aiming at fostering the development of the cluster. Cluster organisations are working together with their companies and partners over a long time, sometimes more than 10 years. Thus, professional cluster organisations have excellent insights about the weaknesses, strengths, opportunities and needs of their companies. Therefore, the involvement of clusters and cluster initiatives helps to identify place-based entrepreneurial resources and areas of greatest strategic potentials, which are crucial for a successful definition of strategic priorities to maximise the knowledge-based development potential of a region. Cluster organisations can provide the S3 stakeholder with "in-sight" information about needs, opportunities and ongoing transformative actions.

Role of Cluster Initiatives during the Development Phase

Regional Perspective

The participation of clusters in the promotion of S3 has been broad and tied to clear obligation under Europeans regulations. Despite the large participation of clusters in the design of the Intelligent Specialization Strategy, the result seems to show a different perception of the respondents. It may be hypothesized that this situation may be associated with the involvement of some "non-cluster-based" participants in the questionnaire that did not participate in the same way as the S3 development phase.

Figure 4: Involvement of cluster initiatives during the S3 development phase
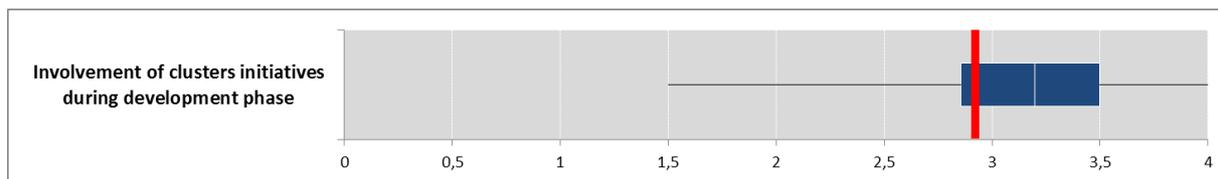
Good Practice Case:

The approach of **Franche-Comté** can be considered as a good practice, since the Smart Specialisation Strategy was mainly built on the historical strengths and economic activities (clusters) of the region. The main cluster initiatives of the region ("Pôles de compétitivité") were created in 2005, and are still an important part of the innovation landscape. These Pôles de compétitivité were strongly involved in the definition of the S3.

S3 Focus of S3 on Clusters and Cluster Organisations

Regional Perspective

S3 of Lombardy clearly defined the role of clusters, describes it's characteristics and assigns them precise tasks:

- networks of scientific and industrial players that strive to achieve adequate critical mass to tackle primary challenges in a certain sector on both national and European level;
- implementation of the knowledge triangle among enterprises, universities and research centres, plus other public and private players operating in the sector of innovation;
- an influential intermediate governance body, facilitating the inclusion even of small businesses (MSMEs and start-ups);
- a stimulating environment for research and innovation, in line with Europe 2020 strategies;

- evolution of the system from a triple helix model towards a quadruple helix one: government, research, industry, civil society.

This clarity of role seems to be confirmed by the analysis but it seems that some work still needs to be done for the fully alignment between clusters and S3. The physical location where this could happen is the running cabin take place each month and that should intensify its activities.

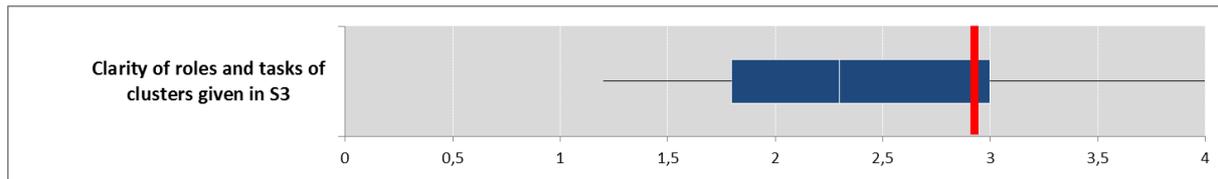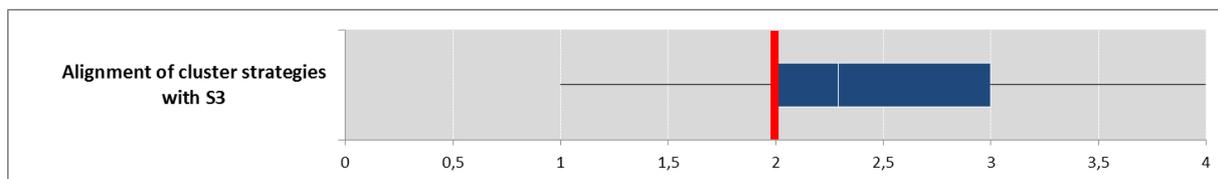**Figure 5: Clarity of roles and tasks of clusters given in S3**

Figure 6: Alignment of cluster strategies with S3

Good Practice Case:

The **Southern Denmark** approach can be considered as a Good Practice. Cluster initiatives were actively involved in the S3 development and even more, parts of the S3 are directly built on the individual strategies of the four cluster initiatives of the region. Thus, the S3 also contributed to better a coordination of the activities of the individual cluster initiatives among each other. As a result of the common undertaking between the cluster initiatives and the Regional Council of Southern Denmark, the role of the cluster initiatives is very clear and aligned with the S3.

Coordination and Alignment of S3

In reality, clusters and place-based areas of greatest strategic potential do not stop at boarders. They are often stretched over several regions. Thus, the priority areas of a S3 in a given region are likely to be also relevant for neighbour regions. In addition, in many cases, innovations are mobile and therefore can drive the dynamism of regional potentials from the outside.[6] Consequently, regions often do not have the critical mass or capacity to successfully develop the necessary transformative activities completely on their own.

Leverage: By aligning S3 related policy instruments with those on national level as well as with those of the neighbouring regions, synergies and related S3 objectives can be achieved faster and more efficiently.

Explanation: S3 is not a closed process but rather benefits from complementarities with other policies and regions. Aligning S3 related policy instruments with those on national level and / or with those of

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[6] Foray (2015): *Smart Specialisation, Opportunities and Challenges for Regional Innovation Policy*, Routledge.

the neighbouring regions, enables regions to attract additional funding or gain critical mass through inter-regional cooperation. This can significantly help regions to meet the objectives defined in their S3 in a faster or more efficient way. Bundling resources also lowers the risk of individual regions.

Alignment of the Implementation of S3 with Policy Instruments on National Level / of Neighbouring Regions

Regional Perspective

The results here presented clearly describe the situation in Lombardy regarding the governance and clusters co-ordination at the national level. The Lombardy Region has already joined in 2013 an agreement between State and Regions aimed to coordinate and promote national clusters to which Regional clusters are linked. Probably interregional cooperation still has wide needs for implementation and reinforcement.

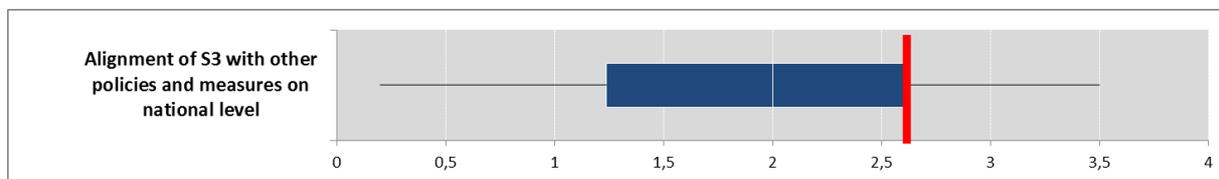**Figure 7: Alignment of S3 with other policy instruments on national level**

Figure 8: Alignment of S3 with other policy instruments of neighbouring regions

Good Practice Case:

The Fribourg case can be considered as a Good Practice Case. Also **Salzburg** did well in aligning it's S3 with policies on national level. The federal government of Austria and the Länder (regions) coordinate their structural policies within the scope of the Austrian Conference for Spatial Planning (Österreichische Raumordnungskonferenz). At the instruments level, important Research, Technology and Innovation policy instruments are jointly funded by the federal government of Austria and Länder (e.g. COMET Programme) or are co-financed by the Länder (e.g. financial assistance for enterprise R&D projects). The exchange of information and coordination is also supported within the National Cluster Platform (www.clusterplattform.at).

Implementation of S3

S3 is a comparable new and multi-facetted approach. Not much experience exists on how to implement S3 by different policy instruments and what implementation tools or entities work best. To seriously implement a given S3, it has to be backed by appropriate policy instruments and public funding. Besides, an interactive communication among all S3 stakeholders is beneficiary during the implementation phase.

Leverage through clusters: Cluster initiatives are promising tools, not only during the development phase of S3 but also during its implementation. Respective cluster organisations can serve policy makers in multiple ways. They can be considered as representatives of the groups / sectors the policy instruments are targeting at.

Explanation: There are different ways, how cluster policy makers can make use of cluster initiatives in practice. The most relevant ones are:

1. Cluster initiatives are funded with the dedicated objective to implement certain elements of the S3. In this case, the individual strategy of the cluster initiative is well-aligned with the objectives of a S3. Thus, the cluster organisations take over parts of the implementation of S3. Close monitoring is required to assure high conformity of S3 and of the measures of the cluster organisation.

2. Cluster initiatives become an active partner for regional policy makers during the S3 implementation process. In that case, cluster organisations have good relationships and intensive communication with regional policy representatives. This kind of interaction can be very diverse, like providing expertise on demand, structured information exchange, expert workshops, studies and white papers, roadmapping etc.

3. Cluster initiatives as a strategic tool for regional development. Regional policy makers actively use the knowledge and proximity to the key actors of the cluster initiatives to jointly cope with upcoming challenges and further develop areas of greatest strategic potential. Cluster organisations are considered to act as key partners for policy makers.

Alignment of Demand and Availability of Policy Instruments

Regional Perspective

Lombardy Region in the last 3 years has activated about eleven different instruments to support research and innovation policies with an annual budget of around 200 million euros. The availability of tools, from financial support to co-ordination of initiatives, covers all the actors of the quadruple helix. Nonetheless, the data seems to highlight a distance that, even if minimal, needs to be filled. Actors who seem filled less this gap seem to be the clusters who, probably thanks to networking activities, seem to have a greater awareness of the tools and the better ability to access them.

As will be analyzed subsequently there is still a distance between awareness on tools and needs of policies.

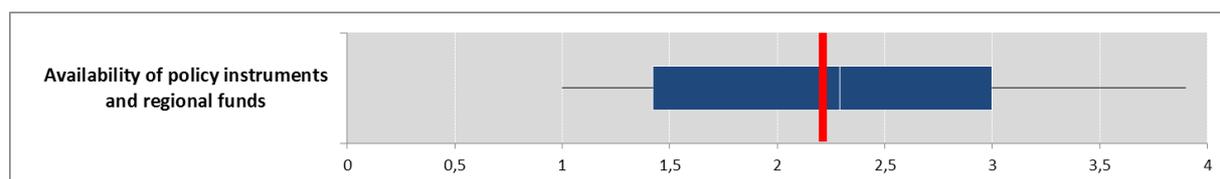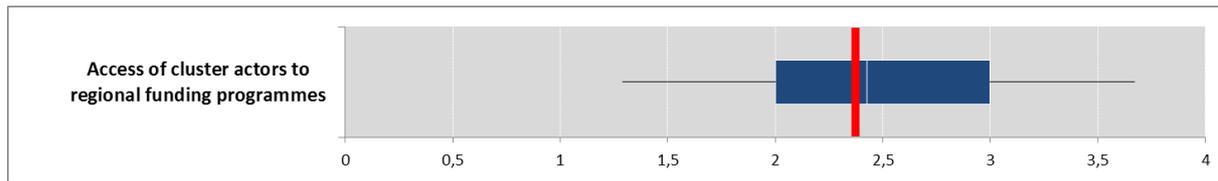**Figure 9: Availability of policy instruments and regional funds**

Figure 10: Access of cluster participants to regional funding programme

Good Practice Case:

Baden-Württemberg invests around EUR 1,5 Bio in Science, Research and Innovation per year in the context of the implementation of its Regional Innovation Strategy. This is operationalised by a broad set of policy instruments which are targeting very specific objectives. In total, there are more than 30 different programmes in place. Due to the fact that majority of the funding is not coming from ERDF rather than from own regional sources, Baden-Württemberg has significant flexibility to adopt or design new policy instruments if needed. Dedicated focus is given to the support of Science and Technology, cross-sectoral innovation, SMEs in the context of digitalisation, workforce development and the development of new enterprises.

Cluster actors in **Upper Austria** have preferred access to a regional innovation support programme, provided the project application has been created within an Upper Austrian cluster initiative The cluster management plays an import role as facilitator (bringing the "right" actors together) and coach (turning ideas into a common proposal). Although neither the funding volume nor the funding rate is really high, there is a strong demand by many applicants since incentives to jointly innovate are given.

Object	Innovative cooperation projects within the cluster-initiatives
Cooperation criteria	→ At least three companies → At least one SME
Costs eligible for funding	Personnel costs, external services, consulting and other costs
Funding amounts	30 % of the costs eligible for funding
Max. funding per cooperation partner:	€ 30,000 ('technological' projects) € 15,000 ('organizational' projects)
Max. funding per project:	depending on number of projectpartners ('technological' projects) € 50,000 ('organizational' projects)

Practical Use of Clusters as Tool to Implement S3

Regional Perspective

For the Lombardy S3, Clusters are enabling environments for businesses to support the growth and evolution into emerging industries

Since 2014 Lombardy Region is supporting the start-up and consolidation phase of the Lombard Technological Clusters (LTCs) as a "layer" of a soft governance of the regional innovation system.

On the territory have been created 9 LTCs (Lombardy Hi-Tech Agro-food Cluster, Lombardia Aerospace Cluster, Lombardy Green Chemistry Association, Lombardy Energy and cleantech Cluster, Lombardy Intelligent Factory Association, Lombardy Mobility Cluster association, Lombard Life Science Cluster, Technology Cluster for Smart Cities & Communities, Lombardy Technological Cluster Technologies for Living Environment) with focus on specific technological sectors and with the aim to contribute to the competitiveness of the economic system at local, national and international level.

Again, the role of clusters seems to be clear and this fact allows policy makers to participate actively in clusters activities. Beside this it seems that not all the opportunities are fully covered or understood by policy makers.

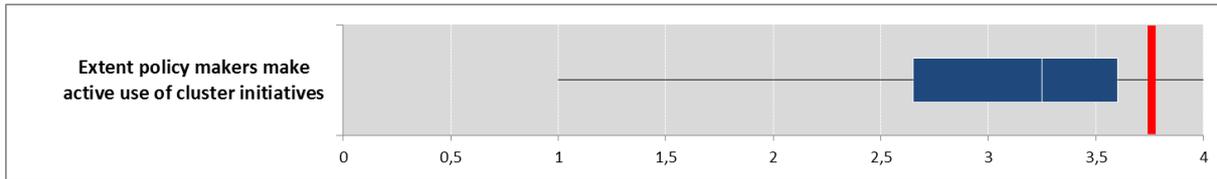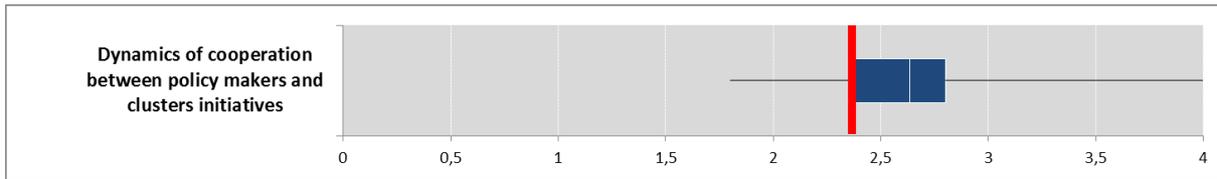**Figure 11: Extent policy makers make active use of cluster initiatives**

Figure 12: Dynamics of cooperation between policy makers make and cluster initiatives

Good Practice case:

Skane (Sweden) can be considered to make most strategic use of clusters when implementing S3 through clusters. There is a very close cooperation between the Regional Council (responsible for the S3 implementation) and the related cluster initiatives. The Regional Council set up common tools with the cluster organisations to identify and cope with upcoming regional challenges. The Regional Council and cluster organisation interact on an operational and strategic level. Cluster organisations are considered as peers with high "business and market intelligence" in this process. Representatives from the Regional Council are represented in the boards of all cluster initiatives to keep close ties.

Cluster Support Schemes

Regional Perspective

To facilitate the process of development and consolidation of the existing clusters, Lombardy Region, after a first regional call (€ 1,000,000 of regional funds in 2014 and 2015) for the startup phase of each cluster and their formal recognition, launched a second regional call in 2016 for the consolidation of the Clusters Organization (€ 1,000,000 of ERDF funds).

The budget assigned to clusters therefore seems to meet the expectations of respondents even if they point to shortcomings in the variety and continuity of the tools. Lombardy Region has put in place tools for monitoring cluster activities to assess strengths and to seek to contaminate positive experiences. Again, the distance between the programming of the activities and the perception of these by the actors of innovation should be further explored.

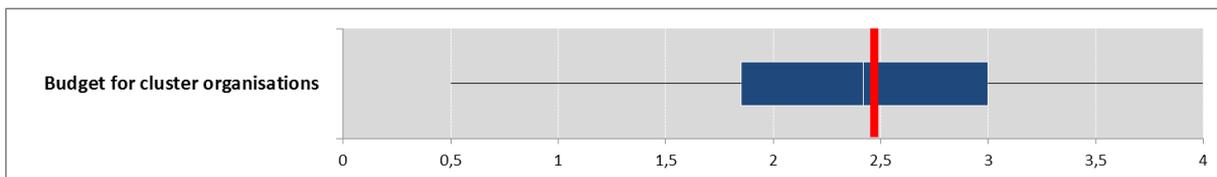**Figure 13: Budgets for cluster organisations**

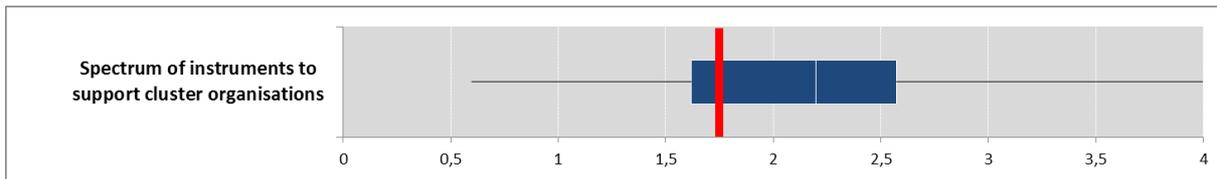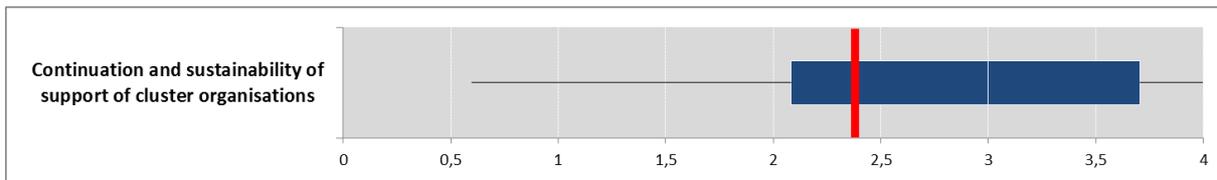**Figure 14: Spectrum of instruments to support cluster organisations**

Figure 15: Continuation and sustainability of support of cluster organisations

Good Practice case:

Baden-Württemberg supports cluster development since a long period. Over time, the funding of cluster organisations followed the life cycle and new tasks of cluster initiatives. At the beginning, funding was mainly provided to set-up cluster organisations. In the meantime, this kind of "baseline funding" was reduced and new funds for internationalisation and quality labelling of cluster organisations have been implemented. Since 2014, the ClusterAgentur Baden-Württemberg provides coaching, training and individual strategy development for cluster organisations. In 2015 a call for proposals was launched in order to support the development of new cluster services. Furthermore, in 2017 there will be an additional call for cross-sectoral cooperation with cluster initiatives from Scandinavia. Over time, the overall aim, among others, to support cluster organisations has been reduced to the benefit of a "smarter" cluster funding (s. Figure 16)

Figure 16: Smart funding approach of cluster initiatives
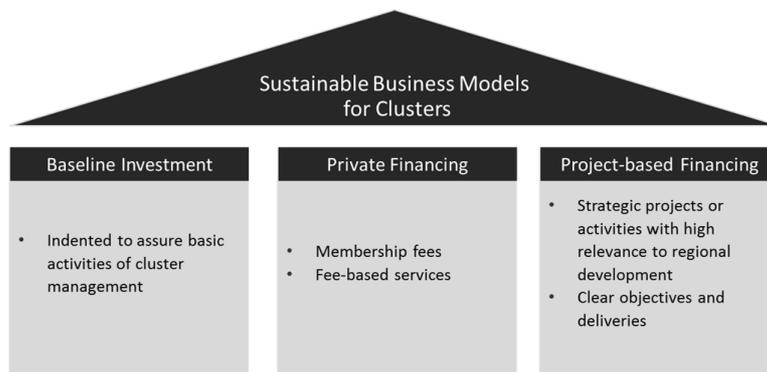
Monitoring and Evaluation

One of the basic ideas of S3 is the process of experimentation and learning. Not all investments in new activities will be successful and not all policy instruments are equally efficient to reach the defined objectives. Evaluation and monitoring help assuring policy objectives and meeting desired goals. Due to the novelty of S3, the evidence whether a given policy instrument could effectively contribute to the realisation of S3 related objectives, is moving towards the focus of policy makers.

Leverage though clusters: Given the case that clusters are used as an important tool to implement S3, applying a tailor-made monitoring and evaluation system that properly measures cluster development and its contribution to the implementation of S3 is an efficient way.

Explanation: Evidence on how the different tools used in the implementation of S3, notably cluster initiatives, effectively contribute to the realisation of the defined objectives, is becoming increasingly important for political decision-makers. Relevant aspects hereby include, on the one hand, the legitimacy of fiscal expenditure and, on the other hand, the possibility to intervene in relevant processes in a proactive way. There is a dedicated trend from the traditional ex-post evaluation towards a formative evaluation and monitoring in order to enable a learning and improvement process during the S3 implementation.

Approach to Monitor and Evaluate Cluster Development according to S3

Regional Perspective

Tailor made support to each Cluster is sustained thanks to permanent **monitoring and assessment tool** of the level of growth and development of clusters.

This tool is a **performance scoreboard** to monitor cluster growth based on 6 quantitative and qualitative sets of indicators (cluster development, financial sustainability, research and innovation, internationalisation, governance and communication). The obtained **performance dashboard** intends to pursue the following goals:

- ✓ **constant monitoring and comparison** of performance (following the four phases in the Deming cycle: *plan-do-check-act*), as a decisional aid for LTCs;

- ✓ **benchmarking** with other regional, national and European competitor clusters;

- ✓ **objectifying** and spreading of performance by the LTCs to all the stakeholder (members, non-members, policy-makers and competitors at all levels)**;**

- ✓ **suggestions to policy-makers** for programming of new tools and measures to support development and consolidation of the LTCs.

From the data provided, this activity seems to be positively evaluated and, while having some improvement needs, is appreciated by stakeholders.

Figure 17: Tailor-made evaluation and monitoring approaches for cluster development

Good Practice Case:

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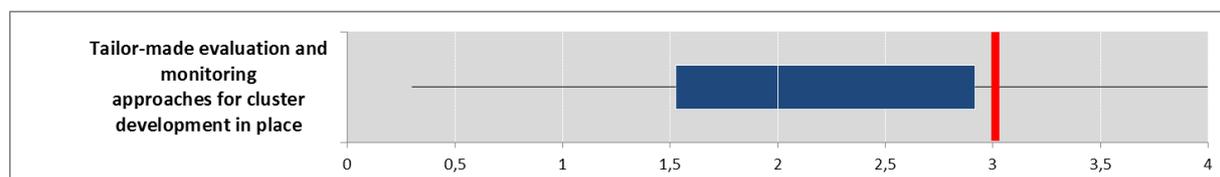
The Balanced Scorecard System (BSC) of **Lower Austria** is one of the most advanced approaches. On one side, it is very tailor-made according to the tasks the cluster initiatives have to complete. On the other side, it is also well aligned with the specific objectives of the Lower Austrian S3. By using the BSC, there is a highly transparent approach in place. The indicators and KPI are agreed between policy makers and cluster organisations and vary between the different cluster initiatives. There are regular monitoring meetings in order to jointly discuss the progress and whether adaptations are needed. The overall system is pretty flexible and allows cluster organisations to react properly on changing framework conditions. However, such modifications have to be agreed with policy makers beforehand. Moreover, the BSC is designed in a way that dedicated success stories can be indicated and communicated to the public.
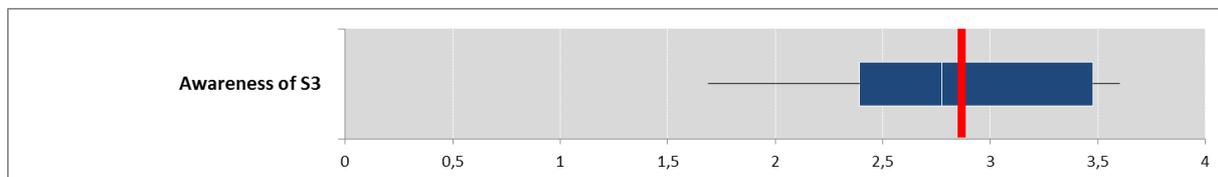
Impact of S3 on Cluster Organisations

The interplay between S3 and Clusters implies a two-way relationship between the two concepts. As an important tool in the implementation of S3, cluster organisations can directly benefit from their new tasks defined in the S3 and the thereby related increased recognition. Furthermore, "generating a vibrant innovative cluster" is considered to be "a logical outcome" of S3.[7] "Smart Specialisation Strategy focuses on the early effort, the opening of a domain and the emergence of a new activity".[8] In other terms, S3 is about the "genetic causal moment",[9] the spark of entrepreneurship which will create spillovers and foster the development of new activities, notably within cluster initiatives. As such, S3 can help cluster organisations to explore their potentials for newly emerging transformative activities and value chains. To achieve this goal, cluster initiatives should not only be used to provide networking among companies, they should be seen as integrative part of the regional development approach. However, cluster initiatives must be open to adapt the ideas and concepts of S3 and integrate them into their daily work.

Effects of S3 Implementation on Cluster Organisations

Regional Perspective

As already pointed out, a dual nature appears to emerge in the relationship between clusters and S3. On the one hand there is full awareness of the role and tools of the S3, on the other hand, seems to emerge a non-complete alignment in the practice of the instruments. It will be necessary to study how much this is due to a distorted perception of the tools or rather the symptom of a legitimate request for greater efforts in public policy for innovation.
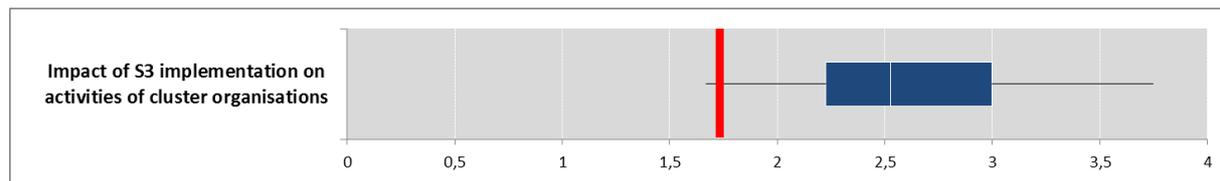
Figure 18: Awareness of S3

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[7] Foray, Dominique (2015): *Smart Specialisation, Opportunities and Challenges for Regional Innovation Policy*, Routledge, p.59.

[8] Ibid. p.15.

[9] Ibid. p.59.

Figure 19: Impact of S3 implementation on activities of cluster organisation

Good Practice Case:

Basically **Slovenia** is a Good Practice that demonstrates how seriously a region (nation) considers the approach of S3. Due to the close involvement of the S3, concerning all relevant stakeholders during the development phase, there is, consequently, a high awareness. The SRIPs approach will have, even not fully implemented yet, a significant impact on the cluster landscape in Slovenia, especially after a longer discontinuation.

Another Good Practice, showing how especially smaller regions benefit from the S3 approach, is **Salzburg**. The Science and Innovation Strategy Salzburg 2025 has been made accessible to the general public. It is precisely the smallness of Salzburg's structure that requires a high degree of networking and cooperation, both internally and externally; So as to attain critical sizes, capacities and competences as well as creating an unmistakably distinctive profile for this region. Specialisation means that development priority is placed on those areas where existing knowledge, technologies and possible application-users provide reason to expect that there is an added-value for the region. ITG as S3-4AlpClusters-Partner plays a key role in the implementation on operational level in context with the activities that will be set.

Regional Cluster Portfolio

By a regional perspective, not a single cluster or cluster initiative is of relevance for regional development but rather the entire regional cluster and cluster initiative landscape (regional cluster portfolio). Transformative activities today happen cross-sectoral, often at the interface between clusters (or sectors). There is evidence that companies located in strong clusters have a higher growth rate and capability to innovate. Hence, strong clusters are source of great strategic potentials. Professional cluster organisations can provide a higher impact in terms of innovation and competitiveness than weak ones. They can also contribute to develop multi-stakeholder governance mechanisms and setting strategic priorities in a better way.

A well-balanced regional cluster portfolio provides a good potential to unleash transformative activities towards emerging industries.

Capabilities of cluster organisations to implement S3

Regional Perspective

Data demonstrate a good ability of clusters in ensuring, through their activities, support for innovation networks by implementing the S3.

The minimum dimension useful to activate networks and policies seems to be fulfilled as well as a good degree of maturity (remember that all Lombard clusters have at least one "Bronze" certification). The ability of clusters in activating networks for innovation and a good level of independence, seems to be recognized.

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Lombardy Region, in addition to funding clusters and coordinating theirs activities, give them autonomy in organizing theirs activities ensuring at least a minimal level of quality.

It emerges, however, that clusters, though capable and active, are still little structured from the point of view of staff. On the one hand this demonstrates a good ability of managers in activating clusters on the other, denounces the need to strengthen and better structure these organizations.

Figure 20: Critical mass of cluster actors
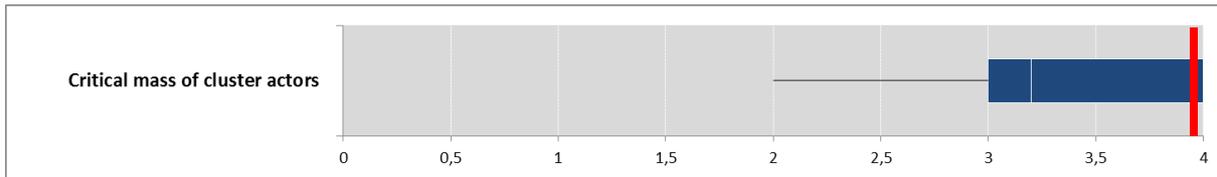
Number of cluster participants: 0: all undercritical (less than 40); 1:75 % of cluster organisations are undercritical; 2: 50 % of cluster organisations are undercritical; 3: 25 % of cluster organisations are undercritical; 4: none of the cluster organisations are undercritical

Figure 21: Capacities within cluster organisations
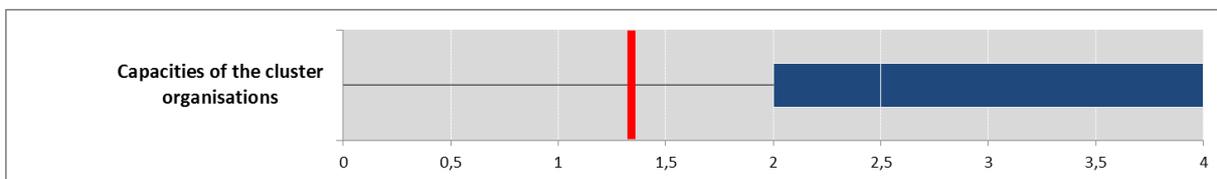
Staff in cluster organisations: 0: all less than 2 full-time equivalent (FTE); 1: 75 % of cluster organisations have less than 2 FTE; 2: 50 % of cluster organisations have more than 2 FTE; 3: 75 % of cluster organisations have more than 2 FTE; 4: all cluster organisations have more than 2 FTE

Figure 22: Maturity of cluster organisations
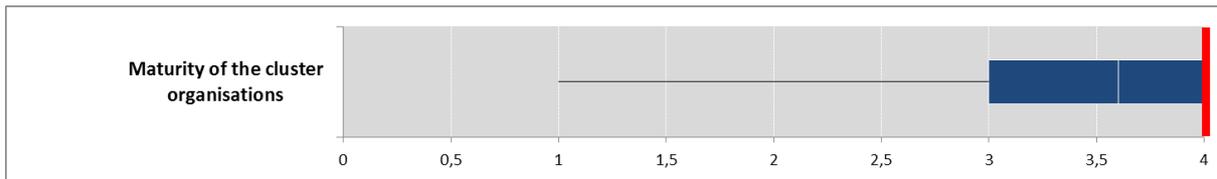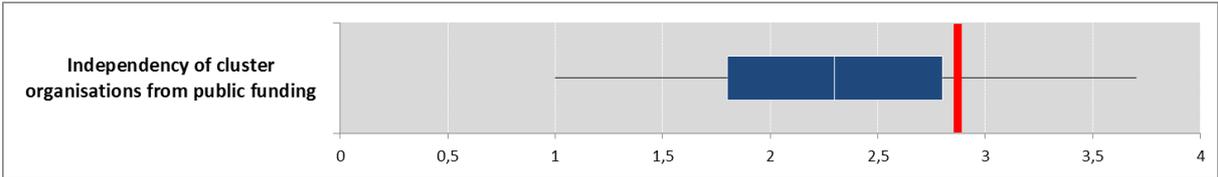

Maturity of cluster organisations: 0: all are younger than 2 years; 1: 75% of all are younger than 2 years; 2: 50 % of all are younger than 2 years; 3: 25 % of all are younger than 2 years; 4: all are older than 2 years

Figure 23: Capability of cluster initiatives
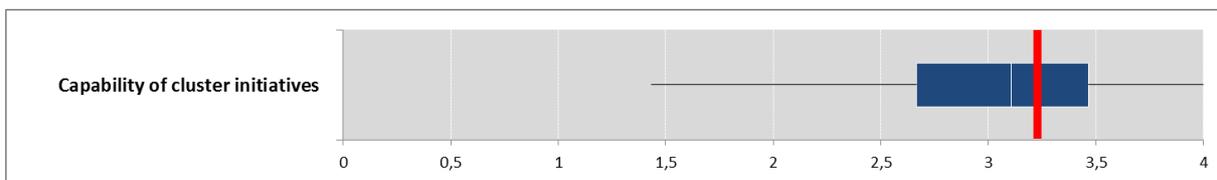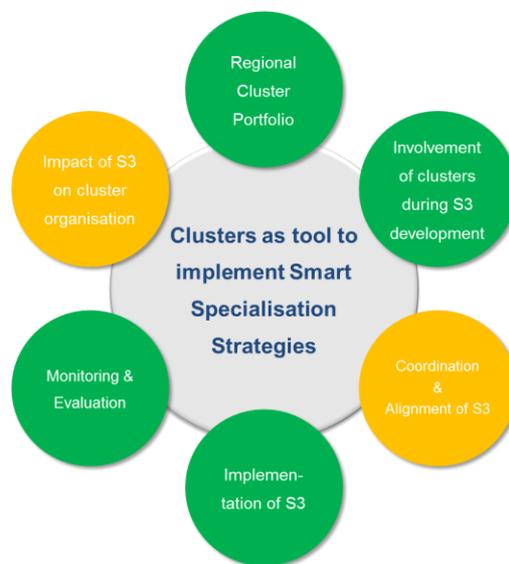

Composite indicator for Fig. 20 - 22

Figure 24: Independency of cluster organisations from public funding

Summary

StressTesting addressed both the cluster-based development and implementation process of S3. The approach examined the role of cluster initiatives in the design phase of S3 and investigated to what extend clusters are being used in order to implement the procedure. The findings of the StressTest revealed a strong focus of the S3 on cluster initiatives in Lombardy region. Figure 25 summaries these findings according to the dimension of the policy-making and implementation process in connection with S3 (s. Fig. 1). Significant attention has been put on the involvement of cluster initiatives during the development process, which led to comparable clear roles and tasks of cluster initiatives mentioned in the S3. The S3 is fairly aligned with the neighbor regions, which will facilitate cross-regional cooperation in the future.

Figure 25: Maturity of the dimensions of the policy-making and implementation for Lombardy

Composite indicators for all dimensions. Red: values between 0 – 1.4; yellow: values between 1,5 – 2,5; green: values over 2.5

Figure 26 displays all individual indicators for Lombardy region in comparison with the average value of the composite portfolio. The average value for Lombardy regions lies at 64,0, compared to the average value of the 25 regions gathered in the comparative portfolio, which is 62,5.

The overall approach conducive to implement S3 through a cluster-based approach is very consistent with a certain impact on cluster initiatives.

Figure 26: Survey of the StressTest indicators for Lombardy

Dimensions	StressTest Question	Determinants	Indicators	Lombardia	Median
Development phase of S3	b 1.1	Role of cluster organisation during development and design of S3	Involvement of clusters initiatives during development phase	2,88	3,2
Development phase of S3	b 1.2	Focus of S3 on clusters, cluster organisations	Aligment of cluster strategies with S3	2	2,5
Development phase of S3	b 2.1	Focus of S3 on clusters, cluster organisations	Clarity of roles and tasks of clusters given in S3	2,88	2,7
Composite indicator Development Phase				2,6	**2,8**
Coordination & Alignment	c 1.1	Alignment of the implementation of S3 with other policies instruments on national level.	Aligned of S3 with other policies and measures on national level.	2,67	2
Coordination & Alignment	c 2.1	Alignment of the implementation of S3 with other policies instruments of neighbouring regions	Alignment of S3 and related cluster activities with neighbour regions	2	2
Composite indicator Coordination & Alignment				2,3	**2,0**
Implementation (of approach to use clusters as tool)	d 2.1	Practical use of clusters as tool to implement S3	Extend policy makers make active use of cluster initiatives	3,75	3,3
Implementation (of approach to use clusters as tool)	d 2.2	Practical use of clusters as tool to implement S3	Dynamics of cooperation between policy makers and clusters initiatives	2,33	2,635
Implementation (of approach to use clusters as tool)	d 3.1	Cluster support schemes	Budget for cluster organisations	2,5	2,47
Implementation (of approach to use clusters as tool)	d 3.2	Cluster support schemes	Spectrum of instruments to support cluster organisations	1,8	2,05
Implementation (of approach to use clusters as tool)	d 3.3	Cluster support schemes	Continuation and sustainability of support of cluster organisations	2,33	3
Implementation (of approach to use clusters as tool)	d 1.1	Alignment of Demand and Availability of Policy Instruments	Availability of policy instruments and regional funds	2,2	2,5
Implementation (of approach to use clusters as tool)	d 1.2	Alignment of Demand and Availability of Policy Instruments	Access of cluster actors to regional funding programmes	2,43	2,335
Composite indicator Implementation				2,4	**2,6**
Impact of S3 on cluster organisation	a2	Effects of S3 Implementation on Cluster Organisations	Awareness of S3	2,77	3,125
Impact of S3 on cluster organisation	d 2.3	Effects of S3 Implementation on Cluster Organisations	Impact of S3 implementation on activities of cluster organisations	1,67	2,525
Composite indicator Impact on cluster organisations				2,2	**2,8**
Monitoring / evaluation	e 1.1	Approach to monitor cluster development according to S3	Tailor-made evaluation and monitoring approaches for cluster development in place	3	2
Regional cluster portfolio	f 1.1	Capabilities of cluster organisations to Imp	Critical mass of cluster actors	4	3,33
Regional cluster portfolio	f 1.2	Capabilities of cluster organisations to Imp	Capacities of the cluster organisations	1,32	2,69
Regional cluster portfolio	f 1.3	Capabilities of cluster organisations to Imp	Maturity of the cluster organisations	4	4
Regional cluster portfolio	f 1.4	Capabilities of cluster organisations to Imp	Independency of cluster organisations from public funding	2,88	2,2
Regional cluster portfolio	f 1.5	Capabilities of cluster (organisations)	Common long term financial model for clusters	1,66	2
Composite indicator Regional Clusterportfolio				2,8	2,8
Regional cluster portfolio	composite indicator	Capabilities of cluster (organisations)	Capability Cluster Initiatives	3,11	3,17
Overall Score				**64,0**	**62,8**

S3-4AlpClusters in a nutshell

Interreg Alpine Space S3-4AlpClusters

Smart Specialisation with Smart Clusters

Smart Specialisation Strategies (S3) are a lever of EU Cohesion Policy. One of the biggest challenges is to make use of the interplay between S3 and clusters. How can S3 be used to foster innovation processes and spark entrepreneurship within clusters? How can S3 be implemented through clusters to gain sustainable and inclusive growth? There is a lack of experience among regions on how to use clusters in the implementation of S3 and how to develop implementation tools to fully benefit SMEs. In addition, alignment between and knowledge about other regions' strategies are very limited.

This is exactly the focus of the S3-4AlpClusters project, which believes that the interplay between S3 and clusters is an innovative approach that could spread innovation in the whole Alpine Space. S3-4AlpClusters will launch cross-regional coordinated actions between the different sectors/regions involved and enhance transnational cluster cooperation. The final aim is to generate critical mass for SMEs and to improve the framework conditions for innovation in the Alpine Space.

S3-4AlpClusters will develop:

✓ A joint transnational cluster action plan to improve transnational, cluster-based cooperation
✓ An S3-based innovation model for cluster development
✓ A fully synchronized call scheme
✓ New services validated by pilot clusters

The S3-4AlpClusters community includes cluster managers, entrepreneurs, academics and policymakers, and is supported by public authorities and S3 experts.

The NUMBERS of S3-4ALPCLUSTERS

15 Partners

9 Observers

830 SME

35 decision makers

11 Alpine Regions

10 pilot clusters to be involved

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