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The early experience of smart specialization implementation in EU cohesion policy

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ABSTRACT

This paper discusses the early-stage experience of the smart specialization agenda within EU Cohesion Policy. The analysis examines the types of policy prioritization choices made by different member states and regions and seeks evidence on the extent to which weaker regions, in particular, might be constrained in their choices. The paper then reviews the evidence arising out of various surveys of policy-makers' own experience and perceptions of the agenda, and concludes with a discussion of the major features of the policy progress so far and the main challenges ahead.

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Innovation; regions; policy; experience

1. Introduction

The basic ideas surrounding the smart specialization and the RIS3 agenda have been well articulated elsewhere (Foray, 2015; Foray et al., 2012, 2015; McCann, 2015; McCann & Ortega-Argilés, 2015) so we will not dwell on these issues any further in this paper. Instead, in this paper we investigate the progress of the first broad stage of the implementation of the RIS3 agenda in the context of EU Cohesion Policy. The issues discussed in the paper are positioned subsequent to the ex ante RIS3 policy design stage and prior to the ex post evaluation stage, and as such sit in the space within the policy cycle which is prioritized for early-stage ongoing policy-monitoring activities. Hopefully the analysis here will help us to foster reflection on the part of regional policy-makers regarding how their own RIS3 processes are developing in comparison to other cases. In order to examine these issues, in Section 2 we discuss our own analysis regarding the patterns of thematic and sectoral specializations adopted by different EU Member States and regions. We do this in order to identify the degree of policy homogeneity or heterogeneity across both dimensions in the chosen policy frameworks. As we see, on both dimensions the pattern of policy settings appears to be characterized rather more by heterogeneity than homogeneity, as would be expected from a RIS3 logic. In Section 3 we examine the progress towards the integration of the smart specialization principles in policy programmes and processes on the basis of surveys undertaken by two other bodies. The available evidence suggests that there is indeed progress, and in particular this relates to

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governance and institutional processes, and provides some real grounds for optimism. At the same time, there are significant differences in the take-up of the RIS3 agenda across the EU, with grounds for particular concern in many Eastern European regions. Section 4 provides a detailed discussion of these findings and Section 5 offers some brief conclusions.

2. Patterns of policy implementation

The RIS3 Platform, Regional Innovation System for Smart Specialisation, was established as a service by the European Commission in order to provide professional advice to EU countries and regions seeking to design and deliver their new generation of regional research and innovation strategies for smart specialization (RIS3). Regions and member states are able to sign up and join in with the activities of the RIS3 Platform in order to help with their own smart specialization-related policy deliberation and design processes. As such the Platform is designed to help in the capacity-building activities of the regions, which are essential for upgrading their institutional quality and capabilities. The services of the RIS3 Platform include: providing guidance material and good practice examples; organizing information sessions for policy-makers and participating in conferences; providing training to policy-makers; facilitating peer-reviews; supporting access to relevant data; and participating in high quality research projects to inform strategy formation and policy making. A key objective of the RIS3 Platform is the development of mutual trans-national and trans-regional learning aimed at shifting policy-makers gradually beyond rather general assessments of their potential national and regional smart specialization strategies to more targeted analyses and stakeholder engagement processes, directly linked to the region's assets and features. This is to be achieved via the provision of detailed data and analytical tools designed to help regions with their evidence-based self-analyses and also via mutual peer-review processes between regions from different countries. There is already an energy and green economy agenda incorporated into the RIS3 Platform and a new urban initiative is soon to be developed.

As we see in Table 1, there are a range of benchmarking facilities and tools which are now available to aid regions in their RIS3 profiling and self-analysis. There is an interactive tool developed by Orkestra, the Basque Institute of Competitiveness in association with the RIS3 Platform, which allows regions to identify reference regions across Europe based on a regional benchmarking logic (Navarro et al., 2014). This helps regions to identify opportunities for learning policy lessons and transferring good policy practices and initiatives from other regions. There is also a fully interactive web-based application developed on the basis of the methodology of Thissen, van Oort, Diodato, and Ruijs (2013) in conjunction with the RIS3 Platform. This tool allows for the visualization and the analysis of inter-regional trade flows. The purpose of this tool is to help analyse a region's international and inter-regional economic positioning in the broader context of global value chains as a first fundamental step in the process of understanding and enhancing the outward orientation of a region's innovation system. As well as the RIS3 Platform facilities, as outlined in Table 1 there are also various other European Commission data-based initiatives aimed at helping analysts and policy-makers to better profile, benchmark and position their countries and regions and their innovation performance in the broader context. These include the: RIM Plus—Regional Innovation Monitor Plus; Regional Innovation Scoreboard 2014; Regional Competitiveness Index 2013; KET's Observatory; Digital

Table 1. European innovation benchmarking tools.

Eye@RIS3 http://s3platform.jrc.ec.europa.eu/eye-ris3
Benchmarking regional structure (Orkestra) http://s3platform.jrc.ec.europa.eu/regional-benchmarking
S3 Inter-regional Trade and Competition Tool http://s3platform.jrc.ec.europa.eu/s3-trade-tool
RIM Plus: http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/
European Innovation Scoreboards http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm
Regional Competitiveness Index 2013: http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/6th_report/rci_2013_report_final.pdf
KETs Observatory: https://webgate.ec.europa.eu/ketsobservatory/policy
KETs Technology Infrastructure: https://ec.europa.eu/growth/tools-databases/ketsobservatory/kets-ti-inventory/map
Digital Entrepreneurship Monitor: http://ec.europa.eu/enterprise/dem/
Eurostat «Regional Statistics Illustrated» per NUTS2 region 2003–2011: http://epp.eurostat.ec.europa.eu/cache/RSI/#?vis=economy
Regional Development and Entrepreneurship Index http://blogs.lse.ac.uk/redi/
RIO https://rio.jrc.ec.europa.eu/en
The Horizon 2020 Policy Support Facility
European Service Innovation Scoreboard ESIS http://ec.europa.eu/growth/tools-databases/esic/scoreboard/esis-database/index_en.htm
Sectoral analyses http://ec.europa.eu/growth/sectors/index_en.htm
International Benchmarking Database
BAKBasel http://www.bakbasel.com/fileadmin/documents/bakbasel_ibp_factsheet_2011_english.pdf
The Online Education and Training Monitor http://ec.europa.eu/education/news/2014/20140409-visualisation-tool_en.htm
CityBench—ESPO CityBench for benchmarking European Urban Zones http://www.espon.eu/main/Menu_Projects/Menu_ScientificPlatform/citybench.html
European Localized Innovation Observatory
EUROLIO http://eurolio.univ-st-etienne.fr/?language=en
DG Growth—Internal Market, Industry, Entrepreneurship and SMEs http://ec.europa.eu/growth/tools-databases/sme-best-practices/euromed/index.cfm?fuseaction=welcome.detail
Small Business Act—Database on Good Practices: http://ec.europa.eu/growth/tools-databases/sme-best-practices/SBA/index.cfm?fuseaction=welcome.detail
Example of information provided by industry: Aeronautics and Space: http://www.acare4europe.com/sria
European Cluster Observatory http://www.clusterobservatory.eu/index.html

Entrepreneurship Monitor; Eurostat Regional Statistics Illustrated datasets; Regional Development and Entrepreneurship Index; the European Cluster Observatory; the Research and Innovation Observatory (RIO). These sources are all different and each offers different types of innovation-related data and provides different sets of insights to aid policy-makers in their regional profiling activities. There is also the ‘Eye@RIS3’, which is an online database intended as a tool to help strategy development rather than a source of statistical data. Regions are requested to introduce/update input in the database, which will produce a realistic map of the process of their RIS3 development.

However, while activities such as benchmarking, profiling and positioning are all essential first steps for policy-makers in helping to determine broad sets of priorities and sub-priorities, it is still necessary to move beyond benchmarking and to consider the fundamental aspects driving the local regional system (Capello & Lenzi, 2013; Radosevic & Stancova, 2015) in order to design the optimal mix of policy tools, actions and

interventions. This requires a much deeper examination of the strength and weaknesses of the local innovation system and the tailoring of policies to the local specifics. Indeed, peer-review processes become central at this stage because learning from the experiences of other regions facing similar types of challenges can be very instructive in helping policy-makers to design policy tools, actions and interventions best suited to the particular challenges faced by the region.

One of the greatest challenges facing the application of modern regional innovation policies across EU regions concerns regions with very limited innovation-related assets. Some regions, for example, contain no research institutes; while other regions, particularly in Eastern Europe, as yet exhibit only a very limited capacity for developing an innovation system (ESPON, 2012), constrained by institutional and governance issues as well as by technological issues. There are some EU programmes specifically designed to help such regions in their programme and policy development.¹ However, there remains concerns in various quarters that the mix of innovation policy tools deployed by EU Member States are largely the same in all countries, irrespective of their levels of development (Veugeleers, 2015). Veugeleers (2015) argues that there is still a relative homogeneity between EU countries not only in terms of the overall range of policy instruments for innovation policy but also in terms of the particular mix of deployed instruments, largely irrespective of the levels of development and the country's specific underlying weaknesses (Veugeleers, 2015). She argues that policy mixes involved in innovation policy mixes are a result of many influences, only one of which is the economy's level of innovation capacity development (Veugeleers, 2015). A tendency towards policy homogeneity is encouraged by policy fashions and also a 'one-size-fits all' policy mentality, which inadvertently may also be fostered by EU-wide policy agendas such as the European Innovation Area, Europe 2020 and Smart Specialisation (Veugeleers, 2015). Yet, innovation policy orientation and the policy mix ought to differ in different contexts, exactly as smart specialization argues, and the use of indicators for ex ante policy design, policy experimentation and better ex post evaluation are essential (Veugeleers, 2015). Veugeleers (2015) therefore argues that a tendency towards policy homogeneity will produce wrong policy priorities in particular places; for example, in weaker economies aiming to catch up with more advanced parts of Europe the main priorities should relate to the absorption and adaptation of existing frontier technologies rather than initiatives aimed at fostering features such as creativity (Veugeleers, 2015).

However, whether such policy homogeneity is indeed typical as far as smart specialization is concerned can be assessed by examining the sectoral and thematic priorities which member states and regions have themselves chosen to prioritize in their policy settings. This can be done by using the 'Eye@RIS3 database', which gives an overview of the envisaged RIS3s priorities across different NUTS (Nomenclature of Units for Territorial Statistics) spatial scales as have been indicated by European regions and member states. The data come from a number of sources, such as the regions and countries themselves filling out the database, but also from information found in Operational Programmes and RIS3 and other national and regional strategies. As we see in Table 2, in terms of the various different EU thematic priorities, sub-priorities, business areas and target markets, there is indeed quite a large degree of variation across EU Member States, with different combinations of Member States prioritizing each of the different themes and sub-themes. This is also the case at the regional level, with different regions adopting different priorities, as

Table 2. Covered 'EU priorities', sub-priorities, business areas and target markets by EU Member States and regions.

EU priorities 'EU sub-priorities' (Member States)	Examples of sub-categories	Examples of regions
Aeronautics and space 'Aeronautics Safety and security Aeronautics and environment' CZ, DE, ES, FR, IT, PL, PT, RO, SE, UK	Aeronautics and environment Safety and security	Lombardia (ITC4) Midi-Pyrénées (FR62)
Blue growth 'Transport and logistics Blue renewable energy Aquaculture Offshore mining, oil and gas Shipbuilding and ship repair Coastal maritime tourism Fisheries Marine biotechnology' DE, DK, EL, ES, FI, FR, IE, IT, MT, PL, PT, SE, UK	Marine biotechnology Offshore mining, oil and gas	Lisboa (PT17) Cantabria (ES13)
Cultural and creative industries 'Development of regional cultural & creative industries Support to link cultural & creative industries with traditional industries' BE, BG, DE, DK, EL, ES, FR, IT, MT, NL, PL, PT, RO, SE, SI, UK	Development of regional cultural and creative industries Support to link cultural and creative industries with traditional industries	Midtjylland (DK04) Dytiki Ellada (EL23)
Digital agenda 'Basic broadband: coverage in rural areas Cleaner environment & efficient energy networks (e.g. smart grids) e-Commerce & SMEs online e-Government (e.g. e-Procurement, e-Participation) e-Health (e.g. healthy ageing) e-Inclusion (e.g. e-Skills, e-Learning) ICT trust, cyber security & network security Intelligent inter-modal & sustainable urban areas (e.g. smart cities) New media & easier access to cultural contents (e.g. heritage) Open data & sharing of public sector information' AT, BE, BG, CY, CZ, DE, DK, EL, ES, FI, FR, HU, IE, IT, LT, LV	e-Health (e.g. healthy ageing) ICT trust, cyber security and network security	Cyprus (CY) Basse-Normandie (FR25)
KETs 'Advanced manufacturing systems Advanced Materials Industrial biotechnology Micro/Nano- electronics Nanotechnology Photonics' AT, BE, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PT, PT, RO, SE, SI, SK, UK	Advanced materials Photonics	Région Wallonne (BE3)
Nature and biodiversity 'Biodiversity Ecotourism' DE, EL, FI, FR, IT, PL, PT	Ecotourism Biodiversity	Provincia Autonoma di Bolzano/Bozen (ITH1) Martinique (FR92)

(Continued)

Table 2. Continued.

EU priorities 'EU sub-priorities' (Member States)	Examples of sub-categories	Examples of regions
Public health and security 'Ageing societies Food security and safety Public health and well-being Public safety and pandemics' AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HV, IE, IT, LT, LU, MT, NL, PL, PT, RO, SE, SI, SK, UK	Ageing societies Public safety and pandemics	Castilla y León (ES41) Lappi (FI1D7)
Service innovation 'New or improved organizational models New or improved services processes New or improved service products (commodities or public services)' AT, CZ, DE, DK, EL, ES, FI, FR, HU, IE, IT, LU, NL, PL, RO, SE, SK, UK	New or improved organizational models New or improved service processes	Western Netherlands (NL3) Pomorskie (PL63)
Social innovation 'New organizational models and social relations that meet social needs New products or services that meet social needs Social innovation with regard to child care Social innovation with regard to education, skills and training Social innovation with regard to health, well-being and elder care Social innovation with regard to social inclusion' AT, BE, DE, ES, FI, FR, IT, LV, NL, PL, PT, SE, SI, UK	Social innovation with regard to education, skills and training Social innovation with regard to social inclusion	Friesland (NL) (NL12) Luxembourg (LU)
Sustainable innovation 'Eco-innovations Smart green and integrated transport systems Sustainable energy and renewables Waste management Resource Efficiency' AT, BE, BG, CY, CZ, DE, DK, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, UK	Eco-innovations Sustainable agriculture	Weser-Ems (DE94) Ireland (IE)
Specific local policy priority AT, DE, EL, ES, FI, FR, IT, NL, PL, PT, UK	Mobility Social regulation	Mecklenburg-Vorpommern (DE8) Martinique (FR92)

Source: own elaboration based on 'Eye@RIS3' database.

reflected in the region-specific examples listed in Table 2. Similarly, if we consider just the EU13 Member States, as we see in Table 3 again the patterns of sectoral specialization adopted by these countries clearly differ from each other, with no two countries exhibiting the same pattern and with all different possible arenas being prioritized in different combinations by different EU-13 countries. The available evidence so far therefore suggests that there is quite a large degree of heterogeneity between Member States in terms of their innovation policy priority-setting activities and objectives, at least as far as smart specialization is concerned. If we also examine the categories of EU thematic and sectoral priorities adopted by regions, we see in Table 4 examples of different regions which have chosen each priority. There is no obvious pattern here, with regions from different parts of Europe choosing different individual thematic and sectoral priorities. The required diversity of chosen priorities across regions, which is one of the essential elements of the local tailoring necessary for smart specialization, appears to be evident both across the whole of the EU and also amongst the EU13. The choice of policy tools, actions and interventions deployed in each specific case can only be identified by individual case study observations,

Table 3. EU13 national specialization areas: smart specialization strategies programming period 2014–2020.

	Bulgaria	Croatia	Cyprus	Czech Republic	Estonia	Hungary	Lithuania	Malta	Romania	Slovakia	Slovenia
Food, agriculture and fisheries	X	X	P	X	P	X		X			
Biotechnology	X	P		X	P		P			X	X
Health		P	P		P	X	P	X			
ICT	X		P		P		P	X			X
Nanosciences & nanotechnologies				X					X		X
Materials					P		P		X	X	X
New production technologies		P	P	X	P	X	P	X	X	X	X
Integration of nanotechnologies for individual app				X			P	X	X	X	x
Energy		P	P				P			X	
Environment		P		X			P		X	X	X
Aeronautics	X			X				X	X		X
Space				X				X			
Automotive			P								
Rail				X			P				
Waterborne		P	P					X	X		
Urban transport and intermodalities	X	P	p	X		X	P	X	X	X	X
Socio-economic sciences and humanities				X		X		X	X	X	X
Security		X			P				X	X	

Source: Stairway to Excellence project.

Notes: X (covered), P (partially covered). Latvia is NA. Poland analysis is at the regional level. Covered: research area fully included into S3 priority definition. Partially covered: Research area only partially included into S3 priority definition (S3 priority definition do not cover the full scope the research area).

Table 4. Categories for 'Research and Innovation Capabilities' and 'Business Areas and Target Markets'.⁴

Research and Innovation Capabilities Business Areas and Target Markets	Examples of sub-categories	Examples of regions
Agriculture, forestry and fishing	Agricultural services Forestry and logging	Notio Aigaio (EL42) Kainuu (FI1D4)
Construction	Civil engineering Building construction	Picardie (FR22) Molise (ITF2)
Creative and cultural arts and entertainment	Amusement and recreation Sports activities	Illes Balears (ES53) Jämtlands län (SE322)
Energy production and distribution	Energy distribution Power generation/renewable sources	Flemish Region (BE2) Schleswig-Holstein (DEF)
Human health and social work activities	Residential care activities Social work activities without accomm.	Slaskie (PL22) No example found
ICT	Computer programming, consultancy Telecommunications	Bratislavský kraj (SK01) Galicia (ES11)
Manufacturing and Industry	Chemicals and chemical products Nanotechnology	Nord-Pas-de-Calais (FR30) Sachsen (DED)
Mining and quarrying	Mining support service activities Mining of metal ores	Lubelskie (PL31) Sweden (SE)
Public administration, security and defence	Defence Public administration justice, judicial,	No example found Romania (RO)
Services	Education Security and investigation activities	Luxembourg (LU) Midi-Pyrénées (FR62)
Tourism, restaurants and recreation	Accommodation (hotels, camping) Restaurants and catering industry	Basilicata (ITF5) Provincia Autonoma di Trento (ITH2)
Transporting and storage	Rail transport and related services Road transport and related services	Kymenlaakso (FI1C4) Aquitaine (FR61)
Water supply, sewerage, waste management and remediation activities	Sewerage Water collection, treatment and supply	Etelä-Karjala (FI1C5) Poland (PL)
Wholesale and retail trade	Retail trade Wholesale trade	Nord-Pas-de-Calais (FR30) Nord-Pas-de-Calais (FR30)

Source: 'Eye@RIS3' database.

but the fact that the particular priorities differ so markedly across both countries and regions suggests that policy mimicking and the adoption of 'one-size-fits-all' and 'off-the-shelf' policy toolkits frameworks is not typical. However, whether such diverse innovation policy approaches are understood to be making progress at this stage cannot be gleaned from these data. Rather, it is necessary to employ survey data, as examined in the following section.

3. Implementation of the RIS3 agenda in policy programmes and processes

The performance of the RIS3 approach can be gauged from various perspectives, namely: the degree of heterogeneity of the policy approaches evident across regions; the extent to which observed policy shifts emerged explicitly due to the RIS3 agenda; the extent to which RIS3 agenda encourages prioritization and resource concentration; and the extent to which RIS3 strategies are based on explicit processes of analysis. In order to assess the extent to which these smart specialization-related activities and initiatives

have been successful from these different perspectives, there are two key sources of evidence on these matters, deriving from the various surveys of regional authorities undertaken by the RIS3 Platform and the Fraunhofer ISI. As with all such surveys, there are always caveats to be aware of concerning the possible self-selection into the surveys and the potential bias in responses arising from such self-selection. Moreover, the respondents are generally also policy actors themselves; so, again this may induce additional self-reporting bias. On the other hand, however, the sample distribution of respondents cover regions of very different types, different levels of development, different governance and institutional profiles, different sectoral structures and regions which are geographically located in all parts of the EU. Furthermore, regarding possible self-selection into the surveys, there are arguments which could suggest that any such self-selection might favour either stronger or weaker regions; so, it is not clear a priori in what ways the surveys may be biased, if at all. Taken together, not only do these surveys provide the best evidence to hand, there are also reasons to be confident that the overall picture that they paint is broadly reflective of what is indeed happening on the ground. As we will see below, the results of these various surveys suggest that the early-stage progress of the RIS3 agenda can be viewed either from a 'glass half full' perspective or a 'glass half empty' perspective.

On the one hand, a positive sign of the take-up of the policy agenda is the fact that there are now some 164 regions participating in the activities of the RIS3 Platform plus 18 countries,² of which more or less half have already been through formal peer-review processes, and more than half again return for further peer-review activities (Periáñez-Forte, 2015). At the same time, however, on the downside, formal participation in the RIS3 process is varied, with important players such as many parts of the western Germany and much of England being largely absent (Fraunhofer ISI, 2013). Given these levels of RIS3 participation and engagement, it is interesting to see to what extent such activities have been translated into policy settings. A first source of evidence here regarding the EU-wide take-up and progress of the smart specialization agenda comes from the RIS3 Platform's own survey across EU Member States concerning the level of adoption of smart specialization principles in the drafting of regional and national Operational Programmes. Obviously RIS3 and the European Regional Development Funds (ERDF) Operational Programmes³ are not the same thing, but for smart growth interventions taking place under the ERDF Operational Programmes, the RIS3 principles are intended to be deployed in the design of these programmes. On the upside, this survey concludes that the policy priorities in approximately 60% of Operational Programmes were based on a detailed SWOT analysis of a region's innovation assets and capabilities and approximately one half of the Operational Programmes also incorporated an explanation of the methodologies employed in the policy-prioritization processes. On the downside, typically only 30–40% of Operational programmes contain detailed specific descriptions of how resource concentration is to be achieved, what policy mix and tools are being deployed, how the entrepreneurial discovery process is envisaged, and in particular how it relates to the engagement such small and medium enterprises (SMEs), and how the monitoring and evaluation activities are to be implemented (Periáñez-Forte, 2015). As such, while there are clearly major steps forward from previous programming, there is still much to be done.

A second particularly useful guide to the unfolding roadmap of the first stage of the policy-implementation experience on the part of regional policy-makers can be gleaned by referring to the RIS3 policy-implementation surveys undertaken across all 28 EU Member States by Fraunhofer ISI in 2013, 2014 and 2015. The first survey undertaken by Fraunhofer ISI in 2013 (Fraunhofer ISI, 2013), which examined the initial translation of the concept to a policy-tool practice, was largely supportive of the agenda, as was the OECD (2013) in their initial analysis. The main intention of the survey was to understand the extent to which the new EU Cohesion Policy regulations and guidelines relating to smart growth were in reality being translated into actual changes in policy actions or perceptions and to identify how the policy-makers themselves regarded such guidelines and regulations.

The 2013 survey was based on more than 130 partially completed answers and more than 70 completed responses with representatives of 64 regions completing the survey in full and representatives of 49 regions answering some of the survey questions (Fraunhofer ISI, 2013; Kroll, 2013; Kroll, Zenker, Müller, & Schnabl, 2014). The questions relate to some 230 national or regional Operational Programmes. Usefully, both the fully completed responses and also the partially completed responses were evenly distributed across the EU28, giving the survey some reasonable degree of representativeness (Fraunhofer ISI, 2013; Kroll, Zenker, et al., 2014). There are broadly two major sets of findings, reflecting firstly a general response, and secondly reflecting the specific needs and challenges facing different types of EU regions.

In general terms, the RIS3 approach as a whole was very positively received, even including the issues concerning monitoring, although it was not expected to fundamentally recreate or change the world of regional innovation policy within the EU (Fraunhofer ISI, 2013; Kroll, Zenker, et al., 2014). Rather, it was understood as primarily helping one to improve and upgrade regional innovation policies (Fraunhofer ISI, 2013). Nor was RIS3 expected to bring to a speedy end many of the inherent difficulties and challenges in structural funding (Fraunhofer ISI, 2013). Regions face varying difficulties regarding policy intervention depending on their circumstances, and in particular regarding their ability to leverage private-sector sources of finance in policy actions. At the time of the survey, many regions were still only in the initial stages of trying to implement such approaches and as yet there was little evidence of shifting policy-mixes (Kroll, Zenker, et al., 2014). On the other hand, however, these limitations could also be interpreted as reflecting strengths of the approach, in that it called for a careful and conscious evidence-based review to the tailoring and fine-tuning of innovation-related policies to the local context in a bid to improve their effectiveness (Fraunhofer ISI, 2013). Given that the EU is characterized by highly heterogeneous regions, such an approach can be workable and, indeed, many aspects of the actual policy implementation did appear to be broadly in line with the main RIS3 intention of the European Commission (Fraunhofer ISI, 2013). The emergence of the RIS3 agenda has given rise to a great deal of initial openness on the part of regional policy-makers to the exchange of ideas and this is an important feature which should be maintained and safeguarded (Fraunhofer ISI, 2013).

As we have already discussed above, the departure points from which regions start reshaping their policy design and delivery processes differ enormously (Kroll, Zenker, et al., 2014). In terms of the differential responses of different types of regions, for regions which already had longstanding experience of regional innovation policy, one of themes which

emerged was something of a perceived distance on the part of policy-makers between the rather conceptual and academic narratives contained in the official RIS3 guidance material and the practical realities faced by the policy-makers (Fraunhofer ISI, 2013). In addition, the need for SWOT-type analyses was regarded as being somewhat too restrictive and limiting by some regions which viewed their own strategy developments as already being positioned at rather sophisticated levels. Finally, the timing of some of the guideline documents was also seen as emerging rather late in the day given the timelines required for the development of Operational Programmes (Fraunhofer ISI, 2013). Meanwhile, from the perspective of economically weaker regions, and in particular those which display few (if any) innovation and research-related assets, the challenges associated with implementing RIS3-type strategies are very real (ESPON, 2012).

The 2014 Fraunhofer ISI survey was based on more than 160 partially completed responses and more than 80 completed responses, and with very limited overlaps or double counting (Kroll, Zenker, et al., 2014, Kroll, Müller, Schnabl, & Zenker, 2014). As with the 2013 survey, both the fully completed responses and the partially completed responses were evenly distributed across the EU, providing a broadly representative coverage. Of the respondents, approximately 50 had already submitted strategies and approximately 40 had yet to do so (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014).

As a general rule, the findings from the surveyed regions indicate that during the course of the previous year, the RIS3 agenda was being viewed more positively and had become increasingly accepted by policy-makers (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014). This suggests that across the EU as a whole, the agenda was slowly building on what was already a positive starting basis (Fraunhofer ISI, 2013). The overall conceptual approach of RIS3 appeared to be broadly well understood by policy-makers in many parts of Europe (Kroll, Müller, et al., 2014). Yet, for many regions the entrepreneurial discovery process-based policy approach was not seen as something entirely new, in the sense of causing disruption to existing policy processes, and the degree of novelty of its findings at this stage remained moderate (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014). This raises the issue about the differences between the intended vision and actual implementation, a common feature in policy circles. On the other hand, this is not always a weakness. In particular, the reshaping of the policy and planning culture associated with the adoption of this approach was seen as a positive indirect outcome (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014), and as such the implementing of the vision is itself part of the process of change. Meanwhile, in many cases, the number of chosen priorities appeared not to be closely related to the region's economic potential (Kroll, Müller, et al., 2014). Yet, allowing for the heterogeneity displayed by EU regions on so many economic, social, environmental and governance dimensions, it is not clear a priori whether there should indeed be such a relationship. On the other hand, however, a more substantive aspect of the RIS3 process was the evidence-based understanding of the situation, which was considered by many policy-makers as the key outcome of the RIS3 process (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014), while operationalizing the RIS3 monitoring concepts and agenda were emerging as the next major challenges for policy-makers (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014). However, this was an area in which the initial progress was as yet only very limited and early indications suggested that rather conservative approaches to monitoring and evaluation were being adopted, in the sense that monitoring and evaluation

approaches based on existing indicators were being advocated (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014). The extent to which such conservative approaches facilitate greater learning and understanding regarding a region's future-orientation, outward-orientation or cross-innovation remains to be seen (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014), and is an issue which itself needs to be monitored and evaluated.

Many strategies at this time, however, still remained under processes of negotiation (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014) although it was anticipated by many stakeholders that there would be a high degree of integration between the RIS3 strategies and the relevant Operation Programmes (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014). However, the fact that neither changing policy funding allocations nor greater policy efficacy were mentioned as primary outcomes of the RIS3 strategy raises some doubt on this point (Kroll, Zenker, et al., 2014) in that they imply less of a movement towards greater focus, concentration or targeting than the smart specialization label would imply (Kroll, Müller, et al., 2014). On the other hand, these results may also reflect the fact that in many relatively prosperous regions, existing settings in policy frameworks which have already been running for a period have been adjusted to fit the RIS3 approach rather than fundamental changes are being introduced into the policy arena (Kroll, Zenker, et al., 2014). Yet, there were still major obstacles to implementation (Kroll, Zenker, et al., 2014), and in particular in terms of translating RIS3 conceptual ideas into policy frameworks (Kroll, Müller, et al., 2014). The promotion of bottom-up consultation processes most commonly caused friction with existing and largely top-down planning systems in Eastern Europe (Kroll, Müller, et al., 2014). The requisite redesign of various administration procedures and systems was relatively more costly in these regions, although the overall governance results were still regarded as being positive (Kroll, Müller, et al., 2014). For policy-makers in regions in Central Europe, the major institutional changes wrought by RIS3 were being regarded as improvements in their policy communication and coordination systems, rather than improved learning about their own regions per se (Kroll, Müller, et al., 2014). As such, although the effects of RIS3 were regarded positively, they were perceived to be relatively less transformational than in other regions. Of particular note here are regions in Southern Europe, which appear to have responded and benefitted the most from the RIS3 process (Kroll, Müller, et al., 2014). Genuine improvements regarding both the evidence base and consultation processes appear to be widespread in Southern European regions (Kroll, Müller, et al., 2014). Coming at a time of heavily constrained budgets, the RIS3 agenda was regarded as a welcome tool that was also within their administrative capacity to implement (Kroll, Müller, et al., 2014). The early evidence therefore suggests that the traction gained by RIS3 agenda appears to be higher in regions in which many of the required RIS3 elements were rather newer and less previously evident than in other regions with greater institutional-capacity and with more prior experience of these types of approaches. At the same time, in some cases the gaps between what is required and the region's ability to realize some of these RIS3 elements may be too large to allow for fundamental changes. As such, many regions in the middle of the institutional-capacity spectrum appear on various levels to be most responsive to the RIS3 agenda.

As such, while on face value, there appear to be grounds for doubting the logic, efficacy, workability and practicability of some of the RIS3 principles (Kroll, Müller, et al., 2014), however, when translated into a regional and geographical context, the overall conceptual

approach has been shown to be well-founded and to offer important policy-related opportunities and possibilities for enhancing regional innovation (McCann & Ortega-Argilés, 2015). A largely abstract academic concept has been evolved into a practice-oriented effort to foster greater evidence-based policy-design methodologies and stakeholder consultation processes (Kroll, Zenker, et al., 2014). Political persistence in driving forward and following through with the agenda appears to have paid off in that the approach is becoming more not less popular (Kroll, Müller, et al., 2014, Kroll, Zenker, et al., 2014) and there is no reason to abandon or scale down an increasingly well-accepted process (Kroll, Müller, et al., 2014). Indeed, the greater emphasis on evidence-based policy making, the re-thinking and reconsideration of regional innovation policies, and the improved policy communication and coordination processes effected by RIS3 may in the long run prove to be far more important than the external pressures generated by the ex ante conditionality (Kroll, Müller, et al., 2014).

The 2015 Fraunhofer ISI survey of the RIS3 implementation progress and experiences was based on 98 fully completed survey responses and 88 partially completed survey responses, of which approximately half of the partially completed responses completed a notable part of the questionnaire (Kroll, 2015b). Three quarters of the respondents represented former Regional Competitiveness and Employment regions and one quarter represented former Convergence regions, and this reflects the actual EU-wide regional distribution (Kroll, 2015b). Moreover, as with the two previous surveys, the pattern of both fully completed responses and also the partially completed responses was also evenly distributed across the whole of Europe (Kroll, 2015b), thereby ensuring a good representative coverage of the current state of play of the RIS3 policy progress. Approximately one-third of the respondents responded that their regions already had an RIS3-type framework while another third responded that their regions previously had some sort of similar activity operating (Kroll, 2015b). Moreover, interest and engagement with the RIS3 approach appears to be increasing, with three quarters of regions reporting an active RIS3 process in their region. Some 45% of respondents reported all of most RIS3 working groups to be currently active, while a similar share report that although the RIS3 working groups remain active the continuation of the process is now only partial (Kroll, 2015b). At the same time, some 60% of respondents also reported high or very high, and stable or increasing, political interest in RIS3 (Kroll, 2015b). The overall expectation on the part of some 70% of respondents is that RIS3 is leading or will lead to positive outcomes (Kroll, 2015b).

The regions with some prior experience in RIS3-type activities or methodologies tend to be somewhat more satisfied than other regions, and also more likely to continue such activities in the future (Kroll, 2015b). Indeed, there is already widespread evidence of the benefits in terms of results of continuing these RIS3 processes and working groups beyond simply the activities required to fulfil the ex ante conditionality (Kroll, 2015b). Northern European regions tended to be those regions which exhibited the most progress regarding the outward orientation of their RIS3 activities, incorporating international benchmarking and global value chain considerations in their policy frameworks, and these regions also experienced the greatest benefits regarding the 'stairway to excellence' linking of RIS3 with Horizon 2020 programmes (Kroll, 2015b). Central European regions also demonstrated good RIS3-type performance and progress, although such regions are also somewhat resistant to change and to move away from horizontal policy frameworks

(Kroll, 2015b). As with the earlier Fraunhofer ISI surveys beforehand, Southern European regions report the most positive results on many levels, although they still face challenges regarding certain governance and administration matters, particularly relating to information access and provision-types of issues (Kroll, 2015b). Again, and as with the findings of previous surveys, Eastern European regions face the most difficult challenges in implementing RIS3-types of approaches, in many cases having to start from basics and only making limited progress. A lack of progress may mean that such processes and activities are likely to be discontinued in some regions, although the picture still remains mixed, with some regions reporting progress (Kroll, 2015b). Finally, the UK and Ireland represent rather curious cases, in that the difficulties they have experienced regarding RIS3 programmes appear to largely political, in that the approach was most positively assessed by local policy-makers, but this is allied with ambivalent and fading political perceptions and may not be continued in the future (Kroll, 2015b).

4. Discussion

In the past two decades, evidence-based regional innovation strategies have not been widespread amongst European regions, and where such strategies did exist, they tended to be rather general in nature, contributing relatively little to the overall regional policy schemas (Technopolis, UNU-MERIT, & Fraunhofer ISI, 2012). Little attention tended to be paid to the specific requirements of the region with the result that ‘off-the-shelf’ policies were often adopted, mistakenly (Kroll, Müller, et al., 2014). In marked contrast, the RIS3 approach requires regions to undertake explicit evidence-based assessments of a region’s needs and possibilities, to undertake a consultation and stakeholder engagement process in order to help proprieties to be identified and articulated, to ensure that local and regional stakeholders genuinely play a significant role both in designing and delivering the strategies, and also to develop and explicit programme for monitoring and evaluating the progress of the policy (McCann, 2015). The adoption and translation of the smart specialization concept to the regional context (McCann & Ortega-Argilés, 2015) allowed the approach to be transformed into a policy tool which could be made workable and practicable in different contexts and in difference institutional and economic environments (McCann & Ortega-Argilés, 2013a, 2013b, 2014a, 2014b). However, heterogeneity is a key feature of the EU regional context, with enormously varying economic and institutional realities (McCann, 2015), and the ease with which regions take up and genuinely embody the RIS3 approach within their policy-making agenda appears to depend heavily both on their policy-making history and also their institutional capabilities (Kroll, 2015c).

As already mentioned, the various survey results described above suggest as a whole that the early-stage developments of the RIS3 can be viewed positively, in the sense of the ‘glass being half full’ (Kroll, 2015b, Kroll, 2015c), with a majority of regions actively engaging in RIS3-type processes and methodologies, and a majority also experiencing broadly positively governance effects, including increasing political interest and engagement. On the other hand, from a ‘glass half empty’ perspective, there are clearly inhibiting factors and challenges to the continuation of such processes in some regions. These mitigating factors are evident both in wealthier parts of Europe such as in the UK and Ireland and also in economically weaker regions, and in particular in regions in Eastern Europe.

In an attempt to summarize both the current RIS3 policy state of play and also the likely future challenges, Kroll (2015c) sets out a series of key points or insights based on observations from the range of evidence arising from Fraunhofer ISI surveys. In terms of governance issues, effective RIS3 policies have to become increasingly locally-owned rather than externally imposed by conditionalities, if they are to be genuinely long-lasting (Kroll, 2015a), and the bottom-up ideas underlying RIS3 pre-suppose local ownership of the agenda (Kroll, 2015c). For such policies to continue or to become effective developing greater local and regional ownership of the policy agenda is crucial (Kroll, 2015c). This is also essential in order to ensure that difficult and often controversial policy prioritization decisions can be legitimately made (Kroll, 2015c). The difficulties involved in policy prioritization aimed at enhancing concentration were underestimated by many stakeholders, but one of the features of RIS3 is to promote such open debates and public engagement, many of which are now increasingly well-established in the local and regional context (Kroll, 2015c). Policy-makers have a crucial role here to arbitrate such debates and to make decisions accordingly (Stiglitz, Sen, & Fitoussi, 2009). However, the speed with which smart specialization ways of thinking were introduced into the EU Cohesion Policy arena meant that the agenda somewhat lacked sufficient differentiation in its approach and this is particularly evident in many economically weaker regions which found difficulties in making sense of the RIS3 approach in their contexts (Kroll, 2015c). These negative experiences have reduced the momentum for the continuation of such efforts in these regions (Kroll, 2015c).

In terms of technological issues, as already explained in detail (McCann & Ortega-Argilés, 2015), the RIS3 ideas are intended to reduce policy fragmentation and to foster related diversification and greater variety (Boschma, 2014) rather than to increase sectoral specialization (Kroll, 2015c). The initial focus of RIS3 tended to be largely demand-driven, in the sense of providing practicable and workable solutions to societal problems and those articulated by businesses, with a focus on the technological upgrading of existing embedded and traditional activities, including also the upgrading of medium and low technology sectors (Kroll, 2015c). Moreover, technologically open policy settings are intended as a key element of RIS3 in order to allow for the identification of niches (Kroll, 2015c). Practice suggest that technologically open policies can be perfectly consistent with RIS3 policy prioritization as long as the allocation and division of tasks and responsibilities is clarified between all parties, although the ideas regarding the adoption and adaptation of new technologies were somewhat under-developed in many policy strategies (Kroll, 2015c).

On the other hand, not all institutional and governance arrangements are necessarily fixed or rigid at the regional level and one of the advantages of the RIS3 agenda may be precisely the fact that such rigidity was never assumed by RIS3, but rather the opportunities to adapt such institutional and governance arrangements for better policy alignment were explicitly acknowledged (Kroll, 2015a). Indeed, any outcome-oriented reshaping of local and regional governance in response to the RIS3 consultation and public participation processes may prove to be a genuine long run benefit of such approaches (Kroll, 2015a).

One criticism sometimes raised against the RIS3 agenda is that it does not take sufficient account of regional specifics and as such is not sufficiently place-based, whereas others view RIS3 as being rather too specific and techno-oriented in nature. However,

RIS3 makes no specific recommendations regarding which particular policy approaches to adopt in which places (McCann, 2015) but rather requires structured (Kroll, 2015a) and explicit processes of analysis, reflection, prioritization based on key principles, allied with monitoring and evaluation activities, all of which are to be tailored to the context. The place-based fundamentals of the RIS3 approach are intended to be articulated and developed by the local actors on the basis of the analysis, consultation and engagement activities, and cannot be imposed top-down authorities, exactly as the Barca (2009) report argued. Yet, these requirements also make significant demands on governance capabilities, and especially so in regions with more limited institutional capacity, most of which are also in economically weaker regions. Lagging regions, and especially those in Eastern Europe, have a relatively greater need to develop innovation processes while at the same time they face a lower capacity to successfully absorb and utilize development funding (Muscio, Reid, & Rivera Leon, 2015). Training and infrastructure-type investments are still critical in these regions in order to foster development, but in order to escape the ‘middle income trap’ (Muscio et al., 2015) and to deliver innovation programme platforms aimed at market-driven rationale (Muscio et al., 2015), these regions also need to develop more robust innovation systems involving collaboration, stakeholder engagement, the upgrading of the research-related assets, including universities. However, the key inhibitor in many lagging regions to develop such platforms and systems remains their weaker institutional and governance capacity (Charron, Dijkstra, & Lapuente 2014, 2015; European Union, 2014), which often needs significant upgrading in order to develop such platforms. Indeed, the effectiveness of Cohesion Policy investments is crucially dependent on upgrading the quality of the local and regional governance context (Garcilazo & Rodriguez Pose, 2015). At the same time, many aspects of institutional upgrading necessarily require the learning from actions and experience (Rodrik, 2004, 2007), and the challenges set down by the RIS3 agenda can engender such learning processes as regions and localities engage in RIS3-type activities and efforts (Kroll, 2015a). Yet, obviously the RIS3 agenda cannot be the only remedy to Europe’s cohesion-related challenges (Kroll, 2015a), and nor was it ever seen or intended as such. Rather, RIS3 is one important component of a series of interlocking policy reforms all of which together helped to re-shape and re-orient EU Cohesion Policy (McCann, 2015). The use of conditionalities, along with greater emphases on partnership and multi-level governance roles, an increased urban emphasis, the wider use of new financial instruments and the explicit move towards a results-oriented policy, all play key roles. However, the RIS3 agenda can play a major positive and constructive role within the larger policy schema by organizing policies in a manner which is conducive to cohesion (Kroll, 2015c), although in the medium term much greater attention to the links between the RIS3 agenda and other Cohesion Policy elements is still required (Kroll, 2015c).

5. Conclusions

RIS3 is not a one-off process, necessary simply to respond to *ex ante* conditionalities, but rather an ongoing process of governance and policy-making upgrading. There appear to be many opportunities for developing further the RIS3 agenda both from a conceptual and a practical perspective (Kroll, 2015c). Observation of the early-stage experience of RIS3 implementation across many EU regions suggests that the benefits of RIS3 tend to be

multi-dimensional rather than purely technological and research-related (Kroll, Zenker, et al., 2014), also involving institutional and governance dimensions. Yet, this multi-dimensionality also reflects the fundamental nature of innovation. Earlier understandings of innovation tended to focus purely on scientific and R&D-related aspects, whereas today we understand that many aspects of innovation are fundamentally both local (Hughes, 2012; Moretti, 2012; World Bank, 2010) and societal in nature, involving public and civil society actors as well as private-sector actors. In economically strong regions with more robust institutional and governance systems, RIS3 often leads to a refining and sharpening of existing practices, while in many Southern European regions in particular, RIS3 activities appear to have led to real progress. On the other hand, in the economically weakest regions with less robust governance arrangements, and in particular in Eastern Europe, RIS3 has often proved to be very challenging (Kroll, Müller, et al., 2014). RIS3 poses challenging demands on fragile or limited institutional frameworks, but at the same time this also offers real opportunities for institutional learning and the upgrading of governance capabilities. Even in these latter cases, RIS3 can still help initiate or galvanize public engagement and consultation processes and can also aid with the better realignment of existing policy trajectories to more meaningful results-oriented long term directions (Kroll, Müller, et al., 2014). In the case of effective EU Cohesion Policy, the need for improving local governance capabilities is absolutely critical (Garcilazo & Rodriguez Pose, 2015) and no one should underestimate the challenges involved in upgrading the quality of governance and enhancing institutional capabilities. However, unless weaker regions respond as best they can to many of the challenges posed by RIS3 agenda, the opportunities for such learning will not come about. Learning by doing combined with learning by evaluating is essential (Rodrik, 2004, 2007) and there is no substitute for such experience. These same lessons are also being increasingly applied to countries and regions with similar or even lower levels of development than any of the EU's regions (World Bank, 2010, 2011); so the imperative for economically weaker EU regions to continue with these governance advances still remains. At the same time, finding ways to better utilize EU Cohesion Policy resources to help with institutional upgrading and enhancing the quality of governance in these regions is also a key priority (Muscio et al., 2015) in order to better foster both smart innovation-driven growth and also wider aspects of sustainable and inclusive growth.

Increasing the outward orientation and global engagement of regions is also a big part of the smart specialization story (Thissen et al., 2013), and this is one area which needs bolstering. In particular, there is a need to better integrate and exploit potential opportunities with foreign direct investment linkages in Eastern Europe relating to downstream activities closer to the market (Radosevic & Stancova, 2015). In some cases, the relevant domains for smart specialization are activities or specific technological functions within firms, rather than firms themselves (Radosevic & Stancova, 2015), or alternatively networks of local SMEs supply chains. In some aspects, weaker regions from eastern Europe can learn from the policy-making experience of institutionally well set-up regions in Central or Northern Europe. On the other hand, valuable lessons may also be gleaned from observations of some Southern European regions, which have attempted to overcome governance blockages via participatory actions in order to move the RIS3 process forward. If any are evident, there are also likely to be tensions in some countries, depending on their institutional structures, between regional and national approaches to

RIS3. In some countries, there are no regional managing authorities, with policy decided and implemented at a centralized and national level, whereas in the majority of EU countries regional policy actions are determined to varying degrees at the regional level. However, where such national-regional or central-local tensions do exist, they are unlikely to exist in isolation, in that where such tensions are evident there are also likely to be similar types of multi-level governance tensions in other quite different policy arenas. As such, the territorial governance challenges faced by RIS3 are unlikely to be either specific or unique to RIS3. Indeed, the evidence presented here suggest that RIS3 and smart specialization has already proved to be an important narrative for beginning to overcome various institutional blockages and bringing about changes to policy making both within and beyond the sphere of technological matters (Rodrik, 2014). However, understanding the short-, medium- and long-term implications of the RIS3 agenda also highlights the importance of maintaining these aggregate EU-wide performance surveys of the type undertaken by the RIS3 Platform and Fraunhofer ISI, alongside the individual monitoring and evaluation exercises to be undertaken at the local and regional levels.

Notes

1. There are various projects that support the use of EU funds in EU13 Member States. The *Stairway to Excellence* (S2E) project aims to support EU13 regions and countries in developing and exploiting the synergies between European Structural and Investment Funds (ESIF), Horizon 2020 (H2020) and other EU funding programmes. The programme aims to assist these countries in closing the innovation gap, and to stimulate the early and effective implementation of national and regional smart specialisation strategies. There is also a *Capacity Mapping* project which aims to help regional and national actors to successfully adopt and finance support structures for R&D and innovation-related instruments via the building of synergies between EU funds and also to assess the past performance of EU13 countries and regions in Framework Programmes, analysing their strengths and weaknesses in terms of R&I capacity, institutional features, the alignment between public R&I and business innovation needs, and the policy design methodologies employed.
2. As of 8 March 2016.
3. See EU (2007) for an explanation of the overall architecture of EU Cohesion Policy and the positioning and role of the ERDF Operational Programmes within the system. McCann (2015) also provides a detailed discussion of how RIS3 agenda links to the policy architecture.
4. There are some sub-categories of priorities that have not been chosen by any region or member states while there are also sub-categories that have been chosen by member states at national level, without any specification of the region of exploration.

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