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RIS3 Implementation and Policy Mixes

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Abstract

This paper discusses how the policy mix concept applies to RIS3. The paper argues that the RIS3 implementation phase – and the development of an efficient policy mix supporting RIS3 orientations – is at least as important as the design phase. Countries and regions are now embarking on the implementation phase of the RIS3. If a sequential approach is taken, disconnecting design and implementation, RIS3 will not be effective as they will remain at the stage of intentions while not influencing policies. The paper also reflects on the discussions held during a peer review workshop organised in Riga on 23-24 February 2014 where four countries presented their RIS3 work on implementation and policy mix (Estonia, Latvia, the Czech Republic and England). The paper concludes underlining the challenges and the way forward in designing and implementing RIS3-oriented policy mixes.

The main recommendations for building RIS3 policy mixes are: 1) to include policy instruments with both a direct and indirect contribution to RIS3 goals, thus adopting a wide approach for the policy mix, crossing policy domains and governance levels; 2) to scrutinize interactions between the policy mix components and identifying a variety of sources of tension between instruments; 3) to integrate an outward-looking dimension in designing the policies, which means to treat the region as a local node in global networks; and 4) to develop and use policy intelligence tools for a more strategic management of RIS3-relevant policy mixes.

Keywords: RIS3, Smart Specialisation, Policy mixes, Implementation, Estonia, Czech Republic, England, Latvia

^a The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

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1. Introduction

Smart specialisation is a concept that has been introduced recently in regional development policy. Originally based on academic developments, it has been quickly turned into a policy concept thanks to the strong demand for more effectiveness in EU Cohesion policy. The idea that public investments for RDTI should be more focused on regional knowledge strengths, to leverage these specific assets with a view of transforming productive structures towards higher value-added activities, resonates well with EU policy-makers. Such an approach is particularly interesting to address the “regional innovation paradox” (Landabaso and Morgan 2002), namely the problem that those regions most in need to lift up their RDTI potential are also those that pay less attention to innovation as a factor for regional growth, and experience more difficulties in absorbing European Funds dedicated to this goal. With smart specialisation strategies, all regions, including the ones that are far from the technology frontier, are trying to identify their innovation niches, based on bottom-up search processes. The expectation is that such strategies, when successful, will lead to policy shifts, overcoming the current fragmentation and ineffectiveness of policy mixes.

This ambition explains that adopting research and innovation strategies for smart specialisation (RIS3) has been made a condition for accessing European Structural and Investment Funds (ESIF). As a result, many Member States and Regions of the EU have been deploying efforts in preparing their policy plans for the new ESIF period (2014-20), trying to incorporate RIS3 at the heart of their regional development policies.

By spring 2014, many EU Member States and Regions had gone through the first stages of RIS3: involving key stakeholders and adopting a shared vision for knowledge-based development, and setting priorities in terms of focus domains for the upcoming policies. By mid-summer, a number of Regions and Member States throughout the EU have adopted their RIS3, including an analysis of the development challenges as well as the identification of smart specialisation domains.

However, such strategies are unlikely to be effective if they remain at the stage of intentions and do not concretely impact the use of policy instruments. Hence it is important to turn towards the RIS3 implementation stage and understand what the adoption of such strategies could mean in terms of actual policies. This is a surprisingly little developed issue in the burgeoning RIS3 literature, yet it is a fundamental one if these new rules of the game are to transform the future of EU regions.

This policy brief addresses the challenge of RIS3 implementation, and investigates a key question: how to translate smart specialisation strategies into efficient policy mixes? The paper is structured in three parts followed by the conclusions:

- Section 2 discusses the policy mix concept with policy instruments and policy interactions.
- Section 3 discusses the novelties of RIS3 which address obstacles and barriers to overcome in order to implement RIS3 successfully. It also reflects on the discussions held during the peer review workshop organized in Riga on 23-24 February 2014 by the IPTS S3 Platform and the Ministry of Education and Science of Latvia.
- Section 4 presents a process for designing RIS3-relevant policy mixes.
- The conclusion underlines the challenges, and the way forward in designing and implementing RIS3-oriented policy mixes.

2. The concept of Policy Mix

In this paper, we propose the following concept of policy mix, applied to the innovation policy field: "A *policy mix* is the combination of policy instruments which interact to influence framework conditions, alleviate barriers and raise capabilities for innovation" (Nauwelaers et al. 2009). The two elements at the core of the policy mix concept are discussed in this section: Policy instruments and Policy interactions.

2.1 Policy instruments

This includes a wide range of programmes, organisations, agencies, rules and regulations in which the public sector has an active involvement (as initiator and/or funder), and which affect innovation. Influences on innovation are either *direct* (instruments from innovation policy field) or *indirect* (policy instruments from any policy field which indirectly impact on innovation). Thus, influences of policies on innovation are both intended and non-intended, the last type of influences being typically underestimated in policy mix design. A policy mix incorporates instruments with direct and indirect influences on innovation. The key question for the policy maker is: what combinations of policy instruments should a policy mix incorporate?

There is no single model for a policy mix valid everywhere. A recent analysis of innovation policy trends across the European Union indicates that, when EU-27 countries are grouped according to the main orientations of their policy mix towards R&I and their position on the Innovation Union Scoreboard¹, there is no superior innovation policy mix model (European Commission 2013b).

Different regions need different policy mixes, according to: 1) the profile, opportunities and bottlenecks in their innovation systems; 2) the types of system connectivity;² 3) the types of competences held by regional versus national authorities; 4) the strategies followed and priorities assigned to policies, and; 5) the policy history (OECD 2011).

Nevertheless, typologies of policies and policy instruments are useful to design policy mixes. Different typologies have been elaborated in various policy circles. For instance, the RIS3 Guide (European Commission 2012) deals with the definition of coherent policy mix, roadmaps and action plan (see step 5).³ As an example, table 1 shows an inventory of innovation policies across the EU, used and improved over time by the European Commission, in the framework of the Innovation Trendchart. This inventory depicts the relevant policy instruments for innovation promotion classified along broad policy objectives, which corresponds very closely to the reality of policy-making in the EU. Likewise, the OECD has proposed different analytical angles to assess and compose a policy mix with the aim to ensure its alignment with policy objectives, finding the right balance between instruments addressing firms in isolation v. systemic relations in and outside the region; addressing inputs to innovation and behavioral changes (Table 2). Likewise,

Such all-encompassing view of relevant policy instruments helps when drawing effectively on interactions between several policy domains. It helps, for example, to identify frequent shortcomings in the policy mix concept, such as the exclusion of vital components (*e.g.* human resources for innovation) or the lack of consideration of demand-side policy instruments.

1 See Annex 2 for Typology of innovation policy goals: type of RIS connectivity and Annex 3 for Groupings of the EU27 countries into policy mix groups.

² See Annex 1 for typology of RIS3 connectivity and policy goals.

³ Step 5 of the RIS3 Guide covers the definition of coherent policy mix, roadmaps and action plans and stresses the importance of consistence between strategic objectives, pilot projects, timeframes for implementation, identification of funding sources and budget allocation.

Table 1. Typology of innovation policy instruments by policy objectives

Policy objective	Policy instrument	Description
Enhancing skills for innovation	Support to human resources for R&D	Measures that support the development of human resources for research such as doctoral grants to support research in a specific field or encourage the involvement of a specific group in research, support to further professionalization of research staff, post-doc programmes, supporting researchers to participate in international networks, etc.
	Innovation related skills education	Support to developing innovation and entrepreneurship skills of researchers, business managers, students, support to vocational training with an innovation/research dimension, support to innovation management trainings of staff in enterprises/universities.
Supporting investment in research and technologies	Competitive funding of research (e.g. universities and public research organisations)	Competitive grants provided to academic research institutions, universities, and public and private non-profit research institutions. The focus is on conducting basic research projects or research projects addressing a societal challenge and less on involving companies or industry.
	Direct business R&D support	Competitive grants provided to enterprises to engage them in pre-competitive, industrial research.
	R&D infrastructure	Support to the development of national research infrastructures (both general or tied to a specific programme) and to ESFRI - European Strategy for Research Infrastructure plans.
	Centres of Excellence	A centre of excellence is a structure where research and technology development (RTD) is performed of world standard, in terms of measurable scientific production (including training) and/or technological innovation. (Erawatch, 2007)
Enhancing innovation competencies of firms	Direct business innovation support	Direct support to enterprises encouraging them to conduct innovation projects supporting product development, commercialisation, marketing, services innovation, innovation management, industrial design, support to investment readiness; to acquire modern machinery, equipment, know-how, promotion of internationalisation.
	Support to start-ups	Support provided to the creation and early development phase of innovative enterprises, including spin-offs from large firms and venture competitions.
	Innovation networks and platforms	Support that is fostering networking of enterprises, the development of business associations, and support to setting up innovation platforms of businesses, universities, and research institutions.
	Innovation support services	Support to innovation intermediaries or for the creation of innovation advisory structures, organisations that provide support to enterprises such as advisory services, hands-on trainings and networking events, internationalisation etc.
	Innovation vouchers schemes	Support provided to companies to access knowledge resources in research centres (public, private) located within the same region or country or in some cases outside
	Technology incubators	Setting up and development of technology or innovation incubators as a specific instrument to channel innovation support to enterprises.
	Collaborative R&D programmes	Measures to support R&D projects conducted in some form of co-operation between public/academic/not-for-profit sector research institutions and enterprises (including specific schemes to encourage the business sector to fund research in research institutions).

Strengthening linkages within innovation systems	Cluster programmes	All policy initiatives aimed at specifically promoting cluster development and support to cluster management at national or regional levels. This includes all state aid measures classified as aid for innovation clusters in the Community Guidelines for State Aids for R&D and Innovation
	Mobility between academia and business	Support provided to encourage the recruitment of researchers by enterprises; 'industrial resident schemes' where industry staff enrolls in academia, including recruitment of skilled personnel in enterprises.
	Technology transfer	Support given to establish structures and mechanisms to encourage the transfer of know-how and technology from research to business: funding of technology transfer offices and other knowledge transfer structures between academia and industry, SME-academia networks and other research commercialisation support structures, matching SMEs with an appropriate "technology provider" in order to address similar technological problems, relay projects between academia and business.
	Competence centres	Competence Centres are investments by Member States made to encourage greater efficiency in the interaction between researchers, industry, and the public sector, in research topics that promote economic growth by their direct relevance to industry agendas. They can be considered as public-private partnerships, aimed at enabling research which might not otherwise take place, and facilitate better interaction with industry towards producing tangible economic benefits (CREST, 2008).
	Spin off support programmes	This type of instrument has the objective to commercialise research results, bring innovation to the market through supporting spin-offs from universities through providing professional support for scientists in turning a good idea into a viable business. They enforce the commercialisation of research results via patenting, licencing or through business training for scientists, awareness-raising activities.
	Science and technology parks	Science and technology parks aim to establish concentrations of firms in a particular area. It is a property-based initiative which has a high quality physical environment, is located within a reasonable distance of a university or research institute and emphasise activities which encourage the formation and growth of a range of research new technology or knowledge-based enterprises. (Phillimore and Joseph, 2003)
Ensuring demand and framework conditions for innovation	Awareness raising	Funding of activities aimed at promoting awareness of the benefits of innovation to the economy and society and to encouraging a more innovative culture. Activities supported could include: studies, surveys and dissemination of the results, workshops, conferences, exhibitions, networks, publications, broadcasting, competitions for creativity, innovation or new venture awards, etc.
	E-society	Support measures that address the development of broadband infrastructures, the ICT skill development of citizens, awareness raising to ICT, putting in place e-governance solutions such as electronic health cards etc.
	IPR measures	Support provided (incl. provision of information through road shows, open days, exhibitions, IP to promote business success, patent information centres, training, direct support to IPR) for patenting, trademarks, copyright, design rights and their commercial exploitation.
	Financial instrument (loans and guarantees)	Subsidised loans, guarantees, support to private equity etc.
	Support to venture capital	Public funding provided to private (or public-private) financial service providers with a view to leveraging an increased private investment into innovation activities of existing enterprises, including guarantee mechanisms (development stage capital).
	Public procurement	Contracting authorities acting as a launch customer for innovative goods or services which are not yet available on a large-scale commercial basis, and may include conformance testing.
	Tax incentives	Tax credits with the objective to encourage R&D or innovation investments, innovation.

Source: Adapted from European Commission (2013b)

Table 2. Typology of innovation policy instruments: targets and focus of interventions

Innovation policy instruments: targets and focus of interventions		
Targets	Form and focus of innovation support services for SMEs	
	Reactive tools providing inputs for innovation	Proactive tools focusing on learning to innovate
Global connections	Excellence poles Cross-border technology centres Funding for international R&D or innovation projects	International technology transfer schemes Mobility schemes Support for global networking of firms Cross-border innovation vouchers Lead market initiatives
Regional system	Collective technology or innovation centres	Cluster policies Proactive brokers, match-makers Innovation vouchers Support for regional networking of firms Schemes acting on the culture of innovation
Individual Firms	Incubators with “hard” support Traditional “reactive” technology centres Seed and venture capital funds R&D subsidies or tax incentives	Management advice Incubators with “soft” support “Proactive” Technology centres Audits, monitoring of needs Innovation Coach Innovation management training Techno-economic intelligence schemes

Source: OECD (2011), expanding from Asheim et al. (2003)

2.2. Policy interactions

The influence of one policy instrument is modified by the co-existence of other policy instruments in the policy mix. *“Almost always, the influence of policy instruments is effectively a blend, or combination, of different instruments, sometimes enacted at different times and often for somewhat different purposes. Instruments are not parachuted onto an empty stage to debut a policy-relevant soliloquy”* (Bressers and O’Toole, 2005, p134), cited in (Flanagan et al. 2010).

The policy mix concept makes an important contribution to the policy-making scene. It acknowledges that policies do not work independently from each other, but rather interact, having an impact on its final effect. Possible interactions can be grouped according to their effects as follows:

- *Positive and complementary*, with the use of one policy instrument amplifying the effect of another instrument, in terms of impacts on innovation. Here, the final impact on innovation from the combined use of instruments is larger than the sum of individual impacts of each instrument taken individually. This is the case for example, when direct funding to support innovation investments by SMEs is complemented with soft support for the management of innovation.
- *Negative and interfering destructively*, with one policy instrument attenuating the impact, or even cancelling completely the impact of another instrument. This happens for example, with conflicting incentives at universities, where individual criteria for researchers’ careers focus on publications only while criteria for organizational funding incorporates “third mission” activities.
- *Neutral* when policy instruments function independently from each other, and where the impacts of the instruments are also independent from each other. In this case the final impact of the combined use of different instruments equals the sum of individual impacts.

These interactions between policy instruments, from a user/beneficiary perspective, are all at play at the same time even if their origins/policy instruments differ. Some instruments may target the same actors or the same types of activities but with different perspectives (*e.g.* universities and spin-off companies from the point of view of promoting research excellence or supporting industrial transformation). Likewise, similar policy instruments –promoted by either regional or national authorities or consisting both of "old or traditional" and "new or a-typical" instruments– can co-exist (*e.g.* traditional cooperative research programmes promoting targeted applied research and, simultaneously, competitiveness poles, which are newer instruments).

In practice, a frequent shortcoming in policy mixes is the tendency to respond to each policy problem by the creation of a new policy instrument, without revising the overall shape of policy mixes after the addition of the new instrument. The extensive implementation of new instruments, on top of existing instruments, bears increased risks of unwanted interferences or negative interactions. The final effect of the combined use of instruments is often unknown. This holds true especially when instruments that belong to different policy levels and domains, are delivered by different agencies or ministries, lacking communication channels and coordination mechanisms.

This creates a large web of possible interactions, which need to be taken into account in order to identify possible inconsistencies in the implementation of the policy instruments. These inconsistencies may concern the rationales for intervention (*e.g.* solving market failures or acting on innovation behaviour); the goals of the instruments (*e.g.* promoting expansion of critical masses of existing activities or supporting emerging activities); or the implementation approaches (*e.g.* competitive calls versus fixed allocation of resources).

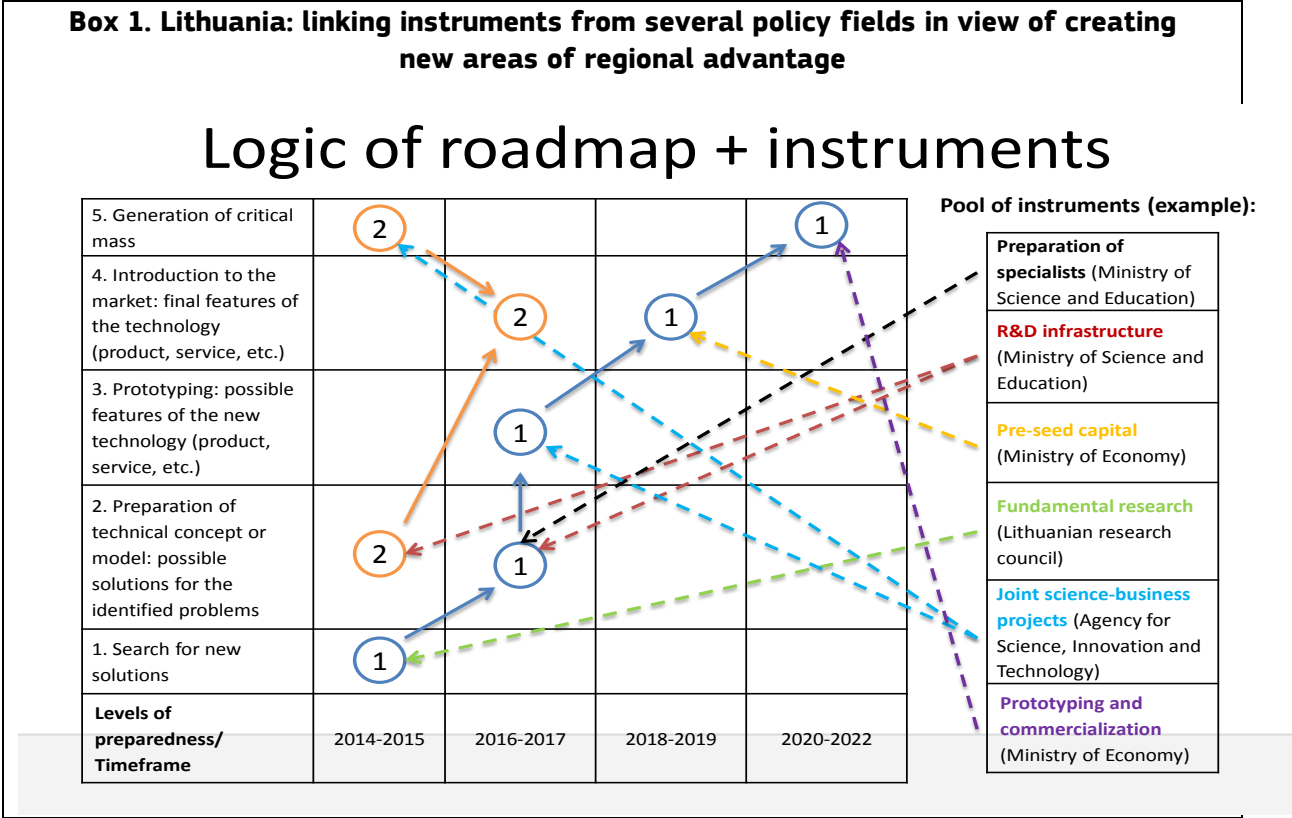
Table 3 summarises how instruments which are *de facto* part of a policy mix may originate from various policy domains, various institutional levels of intervention; and can be part either of a new generation of instruments or have a longer history. Box 1 gives an example from Lithuania on how policy interactions from various domains interact and depend on each other to deliver valuable results over shorter or longer period of time.

Table 1. Conceptualising policy mix interactions: Dimensions, forms of interaction and potential sources of tension

Dimensions of interaction	Forms of interaction	Possible sources of tension between instruments in the policy mix
<p>Policy domains (<i>e.g.</i> education policy, innovation policy, health policy, environment policy, etc.).</p> <p>Governance (<i>e.g.</i> interactions between Ministries, agencies, promoting coordination/synergies).</p> <p>Geography (<i>e.g.</i> interregional coordination).</p> <p>Time</p>	<p>Between 'different' instruments targeting:</p> <ul style="list-style-type: none"> - <i>The same actor or group</i> within or across dimensions (<i>e.g.</i> universities targeted by research policy and by economic policy). - <i>Different actors/groups</i> involved in the same process within or across dimensions (<i>e.g.</i> funding for researchers mobility and direct support to spin-off companies). - <i>Different processes</i> in a broader 'system' within or across dimensions (<i>e.g.</i> different layers of institutional funding for technology centres and funding for cooperative R&D, accumulated over time). <p>Between nominally 'the same' instruments –within or across dimensions– (<i>e.g.</i> funding for clusters in neighbouring regions).</p>	<p>Conflicting:</p> <ul style="list-style-type: none"> - <i>Rationales</i> (<i>e.g.</i> market failures, coordination failures, and systemic failures). - <i>Goals</i> (<i>e.g.</i> focus on high-tech versus innovation in traditional sectors) - <i>Implementation approaches</i> (<i>e.g.</i> positive and complementary; negative and interfering destructively; neutral).

Source: Based on Flanagan and *et al.* (2010)

This box provides an example of cross-domain policy process in Lithuania involving instruments from Science, Education and Economy ministerial competences. The Figure highlights the contribution of policy instruments from various policy domains to two different types of activities: Activity 1 which is science-based, benefits more from support for R&D creation and generates results in longer term; and activity 2 which is more market-driven, relies more on public instruments fostering synergetic use of public resources and delivers its results in a shorter term.



Source: presentation of MOSTA at IPTS peer review workshop in Riga, February 2014.

3. The Policy Mix concept adapted to RIS3

3.1. Novelties and difficulties

The observation of real-world policy-making indicates that designing effective policy mixes with positive and complementary interactions, as discussed in section 2, is not yet a well understood issue. Several difficulties stand out and should be taken into account. In this section we outline how the RIS3 approach can provide responses to some common shortcomings of the past:

- *Governance of cross-domain policies.* RIS3 requires an integrated policy mix that goes beyond both R&D policies to wider “transformation policies” (e.g. education, labour market, foreign investments and entrepreneurship policies) and policy levels (e.g. regional, national, European level). RIS3 encourages the adoption of governance models that ensure a coherent policy mix to support S3 priorities. However, it is often the case that an efficient communication across governments is missing. This implies that, rather than being a purpose-oriented construction, existing policy mixes are often the unintended product of an accumulation of instruments over time and across policy domains and levels.

- *Overcoming path-dependency.* RIS3 encourages policy makers to overcome path-dependencies in order to support emerging activities. Path dependency is a frequent barrier in the design of efficient and balanced policy mixes: structures, instruments, institutions and regulations are often characterized by inertia and this impedes the move towards a re-organization and design of new policy configurations. RIS3 requires screening existing policies with the perspective of the new objectives and in relation with the chosen priorities.
- *Increasingly inter-related economies.* RIS3 brings in an open view to regional policies. European economies are increasingly integrated and any sound definition of RIS3 specialisation domains will acknowledge that all regional economies are only a node in a wider value chain. However, policy intelligence tools and methods needed for the design of effective policy mixes are still under-developed. RIS3 requires an open view on the flows of foreign inward R&D investments; the attraction of innovation talent; the formation of cross-border clusters; and, the connection of the regional economy with other parts of value chains, meaning for instance supporting companies not only in their R&D and innovation efforts but also in their internationalisation strategies. RIS3 requires that these elements are considered as important as internal R&D and innovation efforts and investments.
- *An open view of the region or a country* also underlines the need to identify functional areas for innovation within a country, which often do not conform to administrative borders: A more strategic use of Interreg money or the exploitation of the ESIF possibility to use 15% of funds outside borders provide opportunities to move along this path. Furthermore, with clear RIS3 priorities, the exploitation of the potential for complementarity in specialisation domains across regions, creating inter-regional partnerships for the reinforcement of international value chains becomes evident. With this comes also the acknowledgement that regions should accept “loosing” some areas of competences as a result of the definition of priorities.
- *From administrative to strategic policy management.* RIS3 provides an opportunity to move from administrative to strategic policy management. The adoption of experimental policy approaches, led by entrepreneurial discovery processes focused on new niches of excellence, reinforces the need for adequate policy intelligence and policy learning capacities. RIS3 requires, as each priority area might have different objectives and obstacles to overcome, that the policy mix is individually designed to meet the needs and challenges within each area. It might also be useful to distinguish between horizontal and vertical policy instruments.

These novelties may explain current difficulties experienced by EU countries and regions in implementing their RIS3 in the form of integrated and goal-oriented policy mixes. The OECD enquiry on smart specialisation collected evidence that points towards a gap between RIS3 design and implementation (OECD 2013a) as an efficient RIS3 implementation incorporating the novelties above requires a deep shift in investments and a more holistic view than the existing administrative and governmental structures allow. The difficulties found among the countries participating in the OECD study can be summarised as follows:

Box 2. Gap between RIS3 design and RIS3 implementation

Genuine prioritization of investments.

RIS3 implies selection and de-selection of a range of investments, the capacity to cope with various lobbies which are impacted by the choices, and the resistance to politically-driven criteria which are sometimes used to allocate funds.



Cross-domains, cross-level and cross-border policies.

Such investments blur the “paternity” of public investments, a situation which is not favoured by policy-makers which are sensitive to public recognition



Long-term investments.

RIS3 demands a long-term approach while the time horizon under which policy-makers tend to work is typically organized around 4-years legislatures.

Priorities to which the policy mixes should respond are often unclear.

Explicit priorities are more frequent for R&I than for economic development, and the co-existence of various sets of priorities introduces confusion on the goals to be pursued by the policy mixes.



There are inconsistencies in content between i) policy documents; ii) budgetary allocations; and iii) existence of major institutes, organizations or programmes dedicated to the priorities. In many cases, there is no clear link between priorities and policy mixes.



There are inconsistencies in time between

the phases of definition of policy priorities and policy mixes, the latter being often set before the former (cfr. the policy inertia problem mentioned above); Missing strategic view on public R&D budget, which would allow identifying the range of instruments contributing to the priorities

Source: OECD 2013a

3.2 The situation in Latvia, Estonia, England and Czech Republic

This section presents briefly the situation in Latvia, Estonia, England and Czech Republic related to the design of policy mixes. This was discussed in the S3 Platform Peer Review workshop organized in Riga in February 2014.⁴ The workshop aimed at supporting policy-makers to move from the design phase of the RIS3 process to the next step; translating the strategies into effective policy mixes. Discussion focused on the RIS3 implementation phase in four EU countries which, due to their institutional structure, take a national approach to RIS3.

Table 4 summarises the state of the art of the four countries at the time of the workshop. The four countries were, given the very beginning of the new programming period, in the very initial phase of design and implementation of the policy mix. The need for a specific RIS3 policy mix was acknowledged by the four countries, but the implementation plan still remained to be outlined. The workshop discussions were seen as part of the analytical phase to reach the appropriate composition of instruments, taking the various policy areas, existing instruments and RIS3 priorities into account.

⁴ Riga was the 13th peer review workshop organised by the S3 Platform (<http://s3platform.jrc.ec.europa.eu/peer-review-workshop-for-national-ris3-riga-25-26-february>). While being an event in a row of peer review workshops following a developed methodology (Midtkandal and Rakhmatullin, 2014) it intended to shift the focus precisely from the design and development of the RIS3 itself, to the implementation of the strategy and the chosen policy mix. The timing of this shift was linked to the beginning of the new programming period starting in 2014.

Table 2. RIS3 policy mix in England, Czech Republic, Latvia and Estonia

Country	RIS3 geographical approach	S3 policy mix situation
Czech Republic	<p>The Czech Republic has adopted a national perspective on RIS3 incorporating a consideration of territorial diversity. The RIS3 is led by the Ministry of Education, Youth and Sport.</p>	<p>The Czech Republic acknowledged that there is a risk that the prioritisation process remains a “paper” process, unless it has a real impact on the distribution of public funds. Nevertheless, the parallel process of elaboration of horizontal (i.e. , cross-cutting) and vertical priorities (domains of future specialisation) might be an effective approach to reach the “transformative” goal of RIS3.</p> <p>One key question for Czech Republic was: <i>How to transform the Czech policy mix in line with RIS3 priorities?</i></p>
England	<p>The English RIS3 is led by the national Ministry in charge of innovation (BIS-Department of Business, Innovation and Skills). The other parts of the UK (Wales, Scotland and Northern Ireland) have each developed their own RIS3.</p>	<p>The RIS3 policy mix for England was planned to be refined as the LEPs develop their ESIF programmes. Though the existing portfolio of policies was not developed through explicit use of the smart specialisation methodology a similar approach, involving a process of entrepreneurial discovery and the application of a robust evidence base, was applied. The English RIS3 policy mix was presented as future national instruments (including both R&D tax credit measures and the development of intermediate research capability in key sectors), national instruments delivered locally, and instruments managed locally by the LEPs (co-funded by ESIF).</p> <p>One key question for England was: <i>What changes does the adoption of the RIS3 priorities imply in terms of the architecture and orientation of the policy mix?</i></p>
Estonia	<p>The Estonian RIS3 is national and covers only research related to business. The RIS3 is designed as a bridge between two other strategies, a research and innovation strategy and an entrepreneurial strategy.</p>	<p>The policy mix is still not designed and agreed in the sub-committees for each of the RIS3 priorities, but budget from two ministries are allocated for different typologies of policy instruments directed directly to RIS3. All the measures have in common that they follow the logic of filling the “valley of death”. The authorities have acknowledged that policy mix for different specialisation areas may vary and that the most suitable instrument set should be selected.</p> <p>One key question for Estonia was: <i>How could Estonia improve RIS3 management and policy mix?</i></p>
Latvia	<p>The RIS3 in Latvia has a national policy status. The Ministry of Education and Science and the Ministry of Economics are both responsible for the design and implementation of the RIS3. The RIS3 was accepted by the Cabinet of Ministers in Dec 2013.</p>	<p>Latvia has been working on its policy mix for RIS3 implementation, and as for Estonia, the authorities acknowledge that policy mix for different specialisation areas may vary and that the most suitable instrument set should be selected.</p> <p>One key question for Latvia was: <i>How to ensure an efficient policy mix and an effective co-ordination of policy interventions, to enable strategic alignment (e.g. across policy areas, ministries, agencies and entrepreneurial actors such as “Biomedicine, biopharmacy, biotechnology” and “Knowledge intensive bio-economy”)?</i></p>

Source: The table draws on presentations and discussions during the IPTS workshop in Riga, February 2014.

4. The design of RIS3-relevant policy mixes⁵

This section depicts a process for designing RIS3-relevant policy mixes. In the RIS3 Guide⁶, *implementation and policy mix* is presented as step 5 of the six steps in the RIS3 process. In reality the conditions for a successful implementation are to be found in all the steps of the RIS3 process which underlines the importance of not following the RIS3 steps in a strictly linear fashion. This means that after completion of the prioritisation stage of RIS3, one might need to return to some of steps to include the outlined dimension to ensure coherence and effectiveness of policy mixes.

Setting the scenery (Closely linked to step 1 of RIS3 Guide⁷)

The analytical framework developed for the RIS3 should provide a good analysis for the composition of the policy mix. This analysis should provide information on regional innovation systems challenges – as the basis for defining policy priorities and articulating policy mixes–; bottlenecks impeding that the “functions” in the system perform well and; the “activities” which are present in the system.

Table 5 provides a list of functions and activities of an innovation system; however, this does not mean that all of them should be equally strong in every regional system (*i.e.* some systems will find their strengths in knowledge development while others will mostly connect to outside sources and be efficient in absorbing this knowledge). RIS3 should be based on system-specific features, rather than on “best-for-all” features.

Ensuring transparent governance's structures for the implementation of RIS3 (Closely linked to step 2 of RIS3 Guide⁸)

Successful implementation of the S3 policy mix will depend on the transparent and trusted governance of the policy system and the alignment of the agenda of the involved stakeholders. For this, the following elements should be taken into account:

- *Ensuring good governance of the policy system.* Step 2 investigates whether mechanisms are available to ensure that policy interactions are positive. If these mechanisms are insufficient, effective horizontal and vertical coordination mechanisms might need to be created (*i.e.* within the same level of government and across levels). Nonetheless, it is also important to evaluate the effectiveness of existing mechanisms as creating new ones might not always be the best answer (Magro et al (2014)).
- *Enlightening and aligning actors' agenda* is necessary in order to understand how the (hidden) agendas of key actors in the innovation system influence the shape of the policy mix. This implies efforts first to reveal these agendas (this should also be part of the entrepreneurial discovery process); and second, the deployment of incentives to help aligning the agendas to the policy objectives. It is indeed frequent that official missions assigned to structures or programmes differ from their actual activity, because the concrete incentives are misaligned with goals. Aligning actors' strategies to the policy objectives will be facilitated by a broad stakeholder's involvement at the policy design phase.

⁵ Inspired from Nauwelaers et al. 2009

⁶ <http://s3platform.jrc.ec.europa.eu/s3pguide>

⁷ This step is focused on analysing the innovation for the elaboration of the RIS3.

⁸ This step is focused on setting out the RIS3 process and governance for the elaboration of the RIS3.

Table 3. Functions and Key Activities in an innovation system

Innovation Systems		
Functions	Market formation Knowledge development Resources mobilization Guidance of the search Entrepreneurial activities Creation of legitimacy/counteract resistance to change Knowledge diffusion through networks	
Key Activities	Provision of knowledge inputs to the innovation process	<ul style="list-style-type: none"> - Provision of R&D and, thus, creation of new knowledge. - Competence building, e.g. through individual learning (educating and training the labour force for innovation and R&D activities) and organisational learning.
	Demand-side activities	<ul style="list-style-type: none"> - Formation of new markets. - Articulation of quality requirements emanating from the demand side with regard to new products, processes, services.
	Provision of constituents for Sis	<ul style="list-style-type: none"> - Creating and changing organisations needed for developing new fields of innovation. Examples include enhancing entrepreneurship to create new firms and intrapreneurship to diversify existing firms; and creating new research organisations, policy agencies, etc. - Networking through markets and other mechanisms, including interactive learning between different organisations (potentially) involved in the innovation processes. This implies integrating new knowledge elements developed in different spheres of the SI and coming from outside with elements already available in the innovating firms. - Creating and changing institutions – e.g., patent laws, tax laws, environment and safety regulations, R&D investment routines, cultural norms, etc. – that influence innovating organisations and innovation processes by providing incentives for and removing obstacles to innovation.
	Support services for innovating firms	<ul style="list-style-type: none"> - Incubation activities such as providing access to facilities and administrative support for innovating efforts. - Financing of innovation processes and other activities that can facilitate commercialisation of knowledge and its adoption. - Provision of consultancy services relevant for innovation processes, e.g., technology transfer, commercial information, and legal advice.

Source: Based on Hekkert et al 2007 (for functions) and Edquist 2011 (for key activities).

Linking priorities to policy instruments (Closely linked to step 3 and 4 of RIS3 Guide⁹)

RIS3 implies selection and de-selection of a range of investments. This should be done once a clear picture of the innovation system is available, where the challenges are identified and taking into account the objectives and the vision of the RIS3. To overcome path-dependency and allow for a genuine prioritisation of investments, RIS3 requires the capacity to cope with lobbies which are impacted by the choices and to resist too politically/driven criteria which are sometimes used to allocate funds.

⁹ These steps are focused on developing a shared vision and objectives for the elaboration of the RIS3 and on the selection of a limited set of priorities.

To fully understand the mechanisms and the challenges to overcome, further analysis might be needed within the chosen priority areas. It is time to consider which policy instruments to use that correspond best to the policy objectives *within each priority*. For this, the following elements should be taken into account:

- *Considering the range of instruments from various policy domains and policy levels* is important to broaden the boundary of policies targeted by a coordinated RIS3 –as seen in section 2– (i.e. across domains and government levels). The selected instruments should contribute to solving system bottlenecks identified and responding to the RIS3 priorities.
- *Identifying gaps between policy objectives and existing policy instruments* in order to assess how well the instruments correspond to the policy objectives. This is a central piece of RIS3 implementation, as it ensures that different priorities are matched by different policy mixes. In doing this analysis, one is able to explore the inertia problem and understand how the history of policies is playing a role in terms of stickiness of the policy structure. This analysis will show broad balances within a policy portfolio (i.e. between broad types of objectives, broad types of actors, broad types of instruments). As shown in section 3.2, the OECD enquiry on smart specialisation collected evidence that points towards a gap between RIS3 design and implementation (OECD 2013a).
- *Choosing policy instruments for RIS3-oriented policy mixes*: The process sketched above suggests that RIS3-oriented policy mixes can include the whole range of instruments traditionally used in knowledge-based regional innovation policies, filtered according to their contribution to the RIS3 priorities. Although it is important to adapt the selected instruments to the context, two types of instruments stand out as candidates at the heart of RIS3 policy mixes, targeting specific priorities or their system failures (see table 6 below).

Table 4. Non-exhaustive list of traditional instruments targeted to RIS3 specialisations and a-typical instruments supporting discoveries in emerging fields of specialisation

Policy instruments		Description
Traditional	Dedicated institutes, competence centres devoted to the elected domains.	This is the most widely used instrument to serve the needs of actors in the specialization domains. They can be created as new organisations (e.g. establishment of a new specialized centre in food-oriented biotechnology) or result from an evolution of existing ones (e.g. shift in missions of universities to serve the new regional domains of specialisation (see example for Finnish universities in Box 3).
	Thematic R&D funding programmes	These instruments are indeed increasingly found in policy mixes in the EU (European Commission 2013b).
	Bonus systems	Bonus systems in generic funding programmes favouring the selected RIS3 domains (a much less frequent mechanism than thematic programmes).
	Cluster policies	Clusters policies with the caveats that such policies should not be equated to RIS3 policy mixes and face conditions to be effective (Ketels et al. 2013).
A-typical	Dedicated pilot and exploratory projects	More a-typical instruments than the range of classical instruments above; they are useful to fuel the entrepreneurial discovery process in a more experimental way. However they run the risk of remaining anecdotic as one-off experiments which are not fundamentally impacting existing policy mixes. Here, strategic policy intelligence is essential to embed and upscale successful experiments at the core of policy mixes.

Source: Own elaboration

- *Adopting strategic policy intelligence:* taking this range of instruments into account, strategic policy intelligence is essential to embed successful experiments at the core of policy mixes. Box 3 provides an example of a policy instrument designed for and targeted towards an identified shortcoming in the regional innovation system: the lack of qualified personnel with university formation.

Box 3. Creative use of traditional organisations to reach regional transformation goal: The Finish concept of University Consortium

Finnish University consortia are set up in a peripheral rural area or a small industrial town. The basic regional investment is a house fitted for education. Scientific equipment (laboratories etc.) is to a large degree donated by industries in the region and other sources, such as EU Structural Funds. They do not hire their own employees; the staff is employed by world-leading national Finnish universities located in other parts of Finland. The scientific quality of research and education is guaranteed by the national universities.

The funding mechanism emphasizes regional development goals: staff's salaries are based on regular state funding to these universities according to the number of students and degrees (state university policy) and also on innovation projects for regional firms. The educational agenda and direction of research is coordinated with local industries and regional planners. Students are mostly adults, working in the regional industries, and the award of their academic degrees takes into account innovation projects in the firms where they are working, carried out in the university laboratory with equipment donated by the industry, and guided by the university professor paid by the state.

Source: Presentation of Mariussen at IPTS review workshop in Riga, February 2014

- *Considering interaction and policy modes:* RIS3 policy mixes frequently involve the creation of new dialogues between agencies, Ministries, advisory bodies, etc. at various institutional levels, to uncover the linkages, similarities and differences between goals, targets and modes of delivery of instruments bearing potential for such interactions. The composition of a set of instruments is a key element to *Understanding interactions* (i.e. positive, negative, neutral between policy instruments), as discussed in section 2, but it is not enough to design an efficient policy mix.
- *Defining effective implementation mechanisms or modes for the policies* determines to a high degree the impact of policy instruments. Indeed, similar instruments may deliver very different results according to their mode of operation (e.g. competitive versus non-competitive funding allocations; performance-based structural funding for agencies versus funding allocated on other bases such as size; innovation vouchers with restricted scope for suppliers versus larger, even cross-border, scope, etc).

To ease the challenging task of implementing a policy mix for RIS3, it might be recommended to have policy instruments integrated in "packages". Box 4 on the next page illustrates the value of integrated ("packaged") policy instruments, also called "mini-mixes", which internalise the interactions into single programme/tool for the case of R&D policy.

Box 4. The mini-mix: a useful ingredient in a policy mix

A 'packaged' approach is an approach where certain policy issues are tackled simultaneously with more than one policy modality. A "mini-mix" is a policy programme that explicitly uses different types of policy instruments (e.g. human resource initiatives, fiscal exemptions, grant schemes, regulation) to achieve a specific RTDI policy goal (e.g. R&D investments in bio-tech) or support a specific target group (e.g. new technology based firms). These instruments can be non-R&D policies – regulation, fiscal, innovation oriented- as well.

There is hardly any literature available that has analysed or described the mini-mix approach as a specific concept in RTDI policy. The concept has been introduced in the Policy Mix project and is not yet a commonly accepted concept in the innovation policy literature. There are however some studies that have discussed aspects of mini-mixes such as the topic of 'packaged' instruments, the involvement of stakeholders in programme design, and the involvement of multiple actors in the governance system and so on. As the concept is still emergent, rather than providing a precise definition, it is more fruitful to provide a few components that help characterizing mini-mixes:

1. Mini-mixes combine several types of R&D policy instruments that are usually designed as single instruments, with the assumption that positive synergies will emerge from a packaged approach and that negative trade-offs are avoided;
2. Mini-mixes combine R&D and non-R&D instruments to tackle the issue in a coherent manner;
3. The design and implementation of the mini-mix are shared across different governance boundaries (e.g. ministries, domain related agencies);
4. There is an element of user oriented programming or systemic analysis involved in an attempt to tackle issues in a coherent and multifaceted manner;
5. In some cases there are different geographic governance levels involved (e.g. local, regional, national and international) with pre-defined divisions of labour.

Source: Nauwelaers et al. 2009

Integration of Monitoring & Evaluation mechanisms (Closely linked to step 6 of RIS3 Guide¹⁰)

Installing and using policy learning mechanisms is essential as policy-makers need both policy-relevant evidence and policy learning capacities to assess the coherence and effectiveness of policy mixes. RIS3, with its experimental character, reinforces this need. Policy learning mechanisms and capacities should be created to understand and take on board the lessons from policy experimentations, both successes and failures. Often this evidence is dispersed across a variety of actors and is not accessible from a "policy mix" perspective. A first action thus consists in gathering this evidence in a systematic and coordinated fashion.

A main shortcoming of the current monitoring and evaluation systems is that they are hardly tuned to priorities. The creation of new sources of information focusing on the S3 domains (i.e. obtained through surveys, analysis of administrative data, evaluations, etc.) will often be necessary to cover all the evidence needed by policy-makers. The creation of policy intelligence units within or closely linked to Ministries or agencies involved in RIS3 design is a condition to ensure absorption and use of this knowledge. Furthermore and again, there is a need to consider the differences between the priority areas also when it comes to monitoring and evaluation. Mechanisms put in place should ideally not only serve the need for reporting the results, but feed back to the central actors in useful learning loops adjusted to the specificities of the individual priorities.

The evaluation systems should rest on an agreed definition of RIS3 "success". This definition has to be a dynamic one: the target is regional or national transformation and this inevitably incorporates as a success condition the increased involvement of the private sector in RIS3 strategic lines. Monitoring and evaluation mechanisms need to be well-integrated into the policy cycle in view of adjusting the policy mix over time.

¹⁰ This step is focused on monitoring and evaluating of the RIS3.

5. Conclusion: Recommendations for Policy Mixes for RIS3

Many EU regions have experienced that conducting a RIS3 exercise implies a “major change in perspective regarding regional development and competitiveness support” (quoted from the Czech Republic presentation in the Riga workshop).

Indeed, RIS3 are open, multi-domain, strategic exercises. This creates important challenges with respect to policy-making in the field of regional development: adopting and implementing RIS3 implies potentially radical changes in the way policies are designed and delivered. Policy mixes supporting RIS3 need to overcome well-established phenomena of path dependency.

This policy brief, taking a RIS3 implementation perspective, identifies a number of RIS3 “policy mixes” challenges, and suggests ways to address them. It should be noted, however, that the brief is illustrated with cases from the four countries discussed at the S3 Platform Peer Review workshop in Riga, which all adopted a national perspective on RIS3. Regions designing and developing regional smart specialisation strategies will in addition face a different range of challenges as several relevant policy areas and connected policy instruments will not be under their responsibility and competences. Multi-level governance coordination and good dialogue will therefore be of uttermost importance for an efficient and effective policy implementation with positive interactions. Nevertheless, the lessons drawn from this policy brief and the workshop should also be valid for regional authorities.

First, RIS3 policy-mixes need to evolve *from «silo»-driven to «outcome»-driven policies*. This implies the following moves:

- The design of policy mixes should start from policy objectives (desired outcomes) rather than from a re-alignment of the instruments machinery seen from programme managers’ perspective;
- RIS3-relevant policy mixes may imply more than incremental improvements in existing portfolios: in some cases, when funds are widely dispersed, radical restructuring is needed (e.g. the Estonian case is interesting in this perspective, as it focuses on a clear missing spot in the policy mix –“the valley of death”-);
- Policy mixes for RIS3 should cross several policy domains and incorporate instruments covering both vertical and horizontal priorities (i.e. a remark that applies particularly to the development of the Czech Republic RIS3);
- Policy mixes for RIS3 implementation will vary according to different specialization areas. The most suitable instruments for each specialization area set should be selected for each priority (i.e. acknowledged explicitly by both the Latvian and Estonian authorities);
- A wider policy mix approach is necessary to overcome the inefficient policy accumulation process where the view on the range of instruments linked to priorities is too narrow (i.e. “one problem – one policy instrument as a response”);
- The potential of ‘mini-mixes’ - packaged set of instruments designed as coherent whole, addressing various aspects of innovation in a single programme, seems yet underexploited. There is an important opportunity from systemic instruments and integrated policies to feed RIS3 policy mixes;
- Developing systems for policy accountability focusing on effectiveness rather than efficiency is a must to ensure that policy mixes are adequately serving the RIS3 goals.

Second, RIS3 should favour *an open view of the region or country*, seen as local node in global networks and not as an autarchic entity, a flaw that has been a characteristic for regional development policies in the past decades.

Third, there seems to be a gap in the availability of suitable indicators and processes for monitoring and evaluating policy mixes for RIS3. There is a need for more robust, systematic and systemic policy evaluations focusing on the transformative role of RIS3 and allowing different approaches for the different priorities.

Focusing on these success conditions for RIS3 implementation should now come to the fore of the policy agenda in regions, countries, and at European level. This is necessary to turn the RIS3 prioritisation process, based on entrepreneurial discovery, into a powerful tool for economic transformation for EU regions.

Annexes

Annex 1. Typology of innovation policy goals: type of RIS connectivity

RIS types	No external connection	Single external connection	Multiple external connections
Centralised RIS	Build hinge through hub	Build multiple global connections	Regional networking
Decentralised Dense RIS	Find external connection/get a global perspective	Build multiple global connections	Anchor global firms regionally
Decentralised Sparse RIS	Change system/path-breaking grand project	Increase regional networking/build global connections	Increase regional networking/prepare for global linkages

Source: OECD (2011)

Annex 2. Groupings of the EU27 countries into policy mix groups

Group	Brief description	Countries
Group 1	Structural Funds-driven; Dual orientation on science and business R&D but with stronger focus on science (competitive R&D) orientation.	<i>Ireland, Malta, Poland, Slovenia</i>
Group 2	Science and collaborative R&D oriented policy	<i>Estonia, Finland, Germany, Greece, Latvia, Sweden, Switzerland</i>
Group 3	Orientation towards commercialisation of public R&D coupled with support to framework conditions (fiscal incentives)	<i>France, Italy, Netherlands, United Kingdom</i>
Group 4	Business R&D and innovation focused policy coupled with support to competitive R&D	<i>Austria, Belgium, Czech Republic, Denmark, Hungary, Norway, Portugal, Spain</i>
Group 5	Structural funds driven; Dual orientation on science and business R&D but with stronger focus on business R&D orientation	<i>Bulgaria, Cyprus, Lithuania, Luxembourg, Romania, Slovakia</i>

Source: European Commission (2013b)

**Annex 3. Groupings of the EU27 countries based on the Innovation Union Scoreboard
2013 position and policy mix groups**

	Policy mix group
Innovation leaders	2 – Science-collaboration focused: Finland, Germany, Sweden 4 – Business R&D and innovation: Denmark
Innovation followers	1 – Science-competitive R&D focused: Ireland, Slovenia 2 – Science-collaboration focused: Estonia 3 – Commercialisation-driven: France, Netherlands, UK 4 – Business R&D and innovation: Austria, Belgium 5 – Science and business R&D focused: Cyprus, Luxembourg
Moderate innovators	1 – Science-competitive R&D focused: Malta 2 – Science-collaboration focused: Greece 3 – Commercialisation-driven: Italy 4 – Business R&D and innovation: Czech Republic, Hungary, Spain, Portugal 5 – Science and business R&D focused: Slovakia, Lithuania
Modest innovators	1 – Science-competitive R&D focused: Poland 2 – Science-collaboration focused: Latvia 5 – Science and business R&D focused: Bulgaria, Romania

Source: European Commission (2013b)

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Abstract

This paper discusses how the policy mix concept applies to RIS3. The paper argues that the RIS3 implementation phase – and the development of an efficient policy mix supporting RIS3 orientations – is at least as important as the design phase. Countries and regions are now embarking on the implementation phase of the RIS3. If a sequential approach is taken, disconnecting design and implementation, RIS3 will not be effective as they will remain at the stage of intentions while not influencing policies. The paper also reflects on the discussions held during a peer review workshop organized in Riga on 23-24 February 2014 where four countries presented their RIS3 work on implementation and policy mix (Estonia, Latvia, the Czech Republic and England). The paper concludes underlining the challenges and the way forward in designing and implementing RIS3-oriented policy mixes.

The main recommendations for building RIS3 policy mixes are: 1) to include policy instruments with both a direct and indirect contribution to RIS3 goals, thus adopting a wide approach for the policy mix, crossing policy domains and governance levels; 2) to scrutinize interactions between the policy mix components and identifying a variety of sources of tension between instruments; 3) to integrate an outward-looking dimension in designing the policies, which means to treat the region as a local node in global networks; and 4) to develop and use policy intelligence tools for a more strategic management of RIS3-relevant policy mixes.



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