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INTERREG IVC Project:

Enhancing regional competences in strategic management of innovation policies

KNOW-HUB Handbook on:
Effective policy mix and instruments for Smart Specialisation



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With the collaboration of:

Poznań Science and Technology Park, Poznań University of Economics– Wielkopolska (PL), European Association of Regional Development Agencies (BE), INNOVA Észak-Alföld Regional Development and Innovation Agency (HU), Basque Government (ES), Nord France Innovation Développement (FR), ARII-PACA, Agence Regionale pour l'Innovation et l'Internationalisation des entreprises (ex Méditerranée Technologies) (FR), Lower Austrian Government (AT), Association of Counties and Cities in the Weser-Ems (DE), Banská Bystrica Self-Governing Region (SK), Castilla y León Regional Government. The Castilla y León Universities and Foundation (ES), Applied Research and Communications Fund (BG), Municipality of Gabrovo (BG).

Publication available online at www.know-hub.eu

Publisher:

Adam Mickiewicz University Foundation

Designed & Printed by

FUESCyL & Trama Comunicación, Valladolid (Spain)

ISBN: 978-83-932640-8-7

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Introduction

The majority of the regions have today designed strategies with a focus on the prioritization process, of utmost importance is now their implementation. Indeed, the regions have to ponder how to achieve the objectives set up in their strategies or which portfolio of instruments are most effective to fulfil the objectives. The answer to those questions needs to be provided by the “policy mix” definition stage, the fifth step of the process of Smart Specialisation of Regional Innovation Strategies.

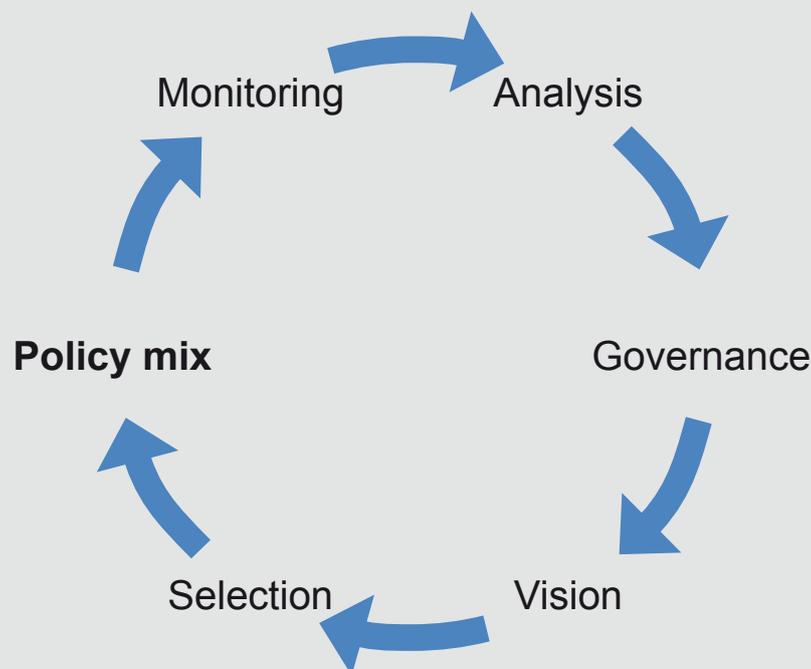


Figure 1. Policy mix in the smart specialisation process
 Source: Guide to research and innovation strategies for smart specialisation,
 May 2012 – European Commission

Issues of all 6 steps are tackled in the KNOW-HUB Handbook on: Challenges for smart regional specialisation as a way to escape from uniformity of innovation policy. This paper focuses on multiple nature of problems that arise at the definition and implementation of policy instruments so that they make a coherent policy mix adequate for the region’s strategy.

On one hand they are related to process – as the regional strategies for smart specialisation should be approached in this way. In this respect it is necessary to make sure that all stakeholders are involved in the definition of instruments, that the implementation of different activities is well delivered and coordinated within the region as well as to other level of policies (local, national, crossborder, European).

On the other hand effective measures need be taken to achieve the strategy goals in the fields of the strategy. The questions that arise are related to all the variety of topics covered by the strategy as for example stimulation of innovation in non-innovative companies, more entrepreneurship, successful research results commercialisation, enhancement of competitiveness of a given sector, mobilising clusters for more innovation and competitiveness and many more. It is not possible to furnish a “how to” manual that provides fixes for any questions that may arise.

The present document provides some hints and guidelines sourced by the expertise of European specialists and practitioners to define and establish suitable regional policy mixes to implement RIS3. This handbook is based on the content of the Mutual Learning Workshops on effective instruments of innovation policies that have been carried out during the Know Hub project through exchanges on good practices and experiences among partners with the support of high level experts, in order to improve knowledge, capacities and practical skills for the effective policy implementation.

The first part of the document introduces the policy mix approach in the smart specialisation process, and assesses the major questions to be taken into account for designing a policy mix (interactions in the ecosystem, policy objectives, instruments, actors, etc. ...).

The second part addresses the challenges in governing the RIS3 policy mix: synchronisation of strategies, articulation of priorities, communication and coordination mechanisms.

The third part deals with the establishment of suitable regional policy mix with regards to policy implementation: definition of targets, tools, intervention path within the innovation ecosystem to fulfil the RIS3 objectives set. Along this content, the reader could go deeper on some subjects thanks to references to articles written by experts in the framework of the project. Those articles dealing with topics related to the RIS3 implementation process are attached at the end of the document.

1 Policy mix in the smart specialisation process¹

Policy mix is a “**Combination of policy instruments, which interact to influence framework conditions, alleviate barriers and raise capabilities for innovation**”.

In this definition, are considered behind the term **instruments**, all programmes, organisations, rules and regulations with an active involvement of the public sector, which intentionally or unintentionally affect innovation.

Because of the **interactions**, the influence of one policy instrument is modified by the co-existence of other policy instruments in the policy mix.

Influences on innovation are either direct (instruments from innovation policy field) or indirect (all policy instruments from any policy field which indirectly impact on innovation).

Article n°1 - p.31
Policy Mix
by Christian
Saublens

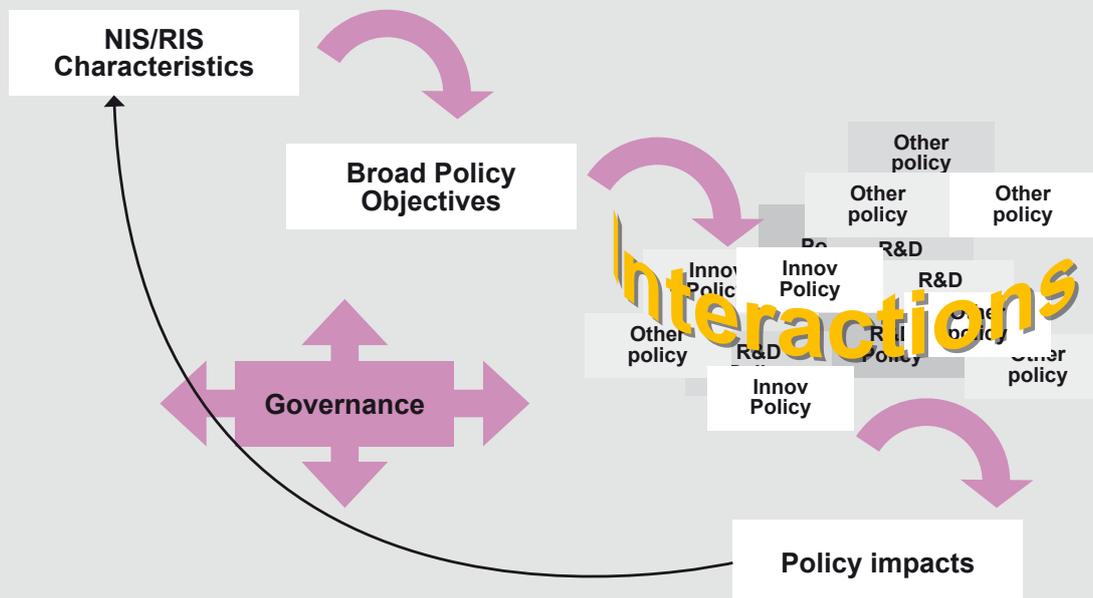


Figure 2. Influences on innovation

¹ This first part is based on the inputs of the presentation delivered by Claire Nauwelaers (Policy Analyst and Governmental Adviser, specialised in research and innovation policy) during the Know Hub workshop on policy mix held in Aix-en-Provence (France) in January 2013.

1.1 Policy mixes approaches

Two types of policy mixes approaches can be considered:

- **A macro view** focusing on routes and balances
In this case, one wonders what is the balance of instruments from various domains in a portfolio, and with which policy objectives are these better aligned?
- **A micro view** focusing on interactions: how do various policy instruments interact within a portfolio of policies? What is the final effect?

It is obvious that policy domains are interrelated.

For instance, interactions between R&D and non R&D policies can be:

- Positive and complementary, with one amplifying the effect of the other in terms of impacts on R&D activities;
- Negative and interfering destructively, with one attenuating the impact of another;
- Neutral and functioning quite independently, with impacts also independent.

Because one policy problem leads most of the time to one new instrument, the extensive implementation of new instruments bears increased risks of substitutive effects or unwanted interferences.

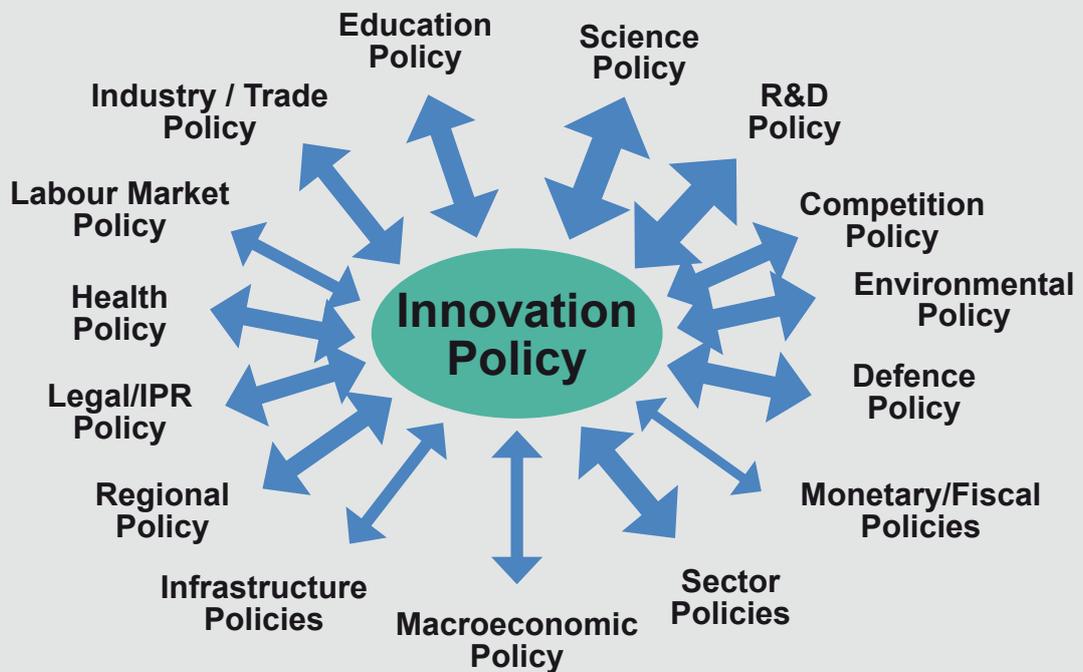


Figure 3. Policy domains interlinkages

1.2 Dealing with policy mix issues

It supposes to:

- Deliberately design a coherent policy mix (which is a theoretical approach);
- Incrementally adjust existing programmes to better interact with each other;
- Join-up policy making to involve actors from different policy areas;
- Reform the network to increase connectivity among policy actors through governance structures and processes.

1.3 Major questions to be taken into account for the design of policy mixes

Challenges for Regional Innovation Strategy or National Innovation Strategy

National and regional innovation strategies have to give answers to challenges at different levels. We can easily perceive that interactions exist between international, national and regional instruments. Considering this framework, we shouldn't lose sight of the fact that only the budget distribution can be measured, but the limit of the exercise is that some cheap instruments can have huge effects and vice versa.

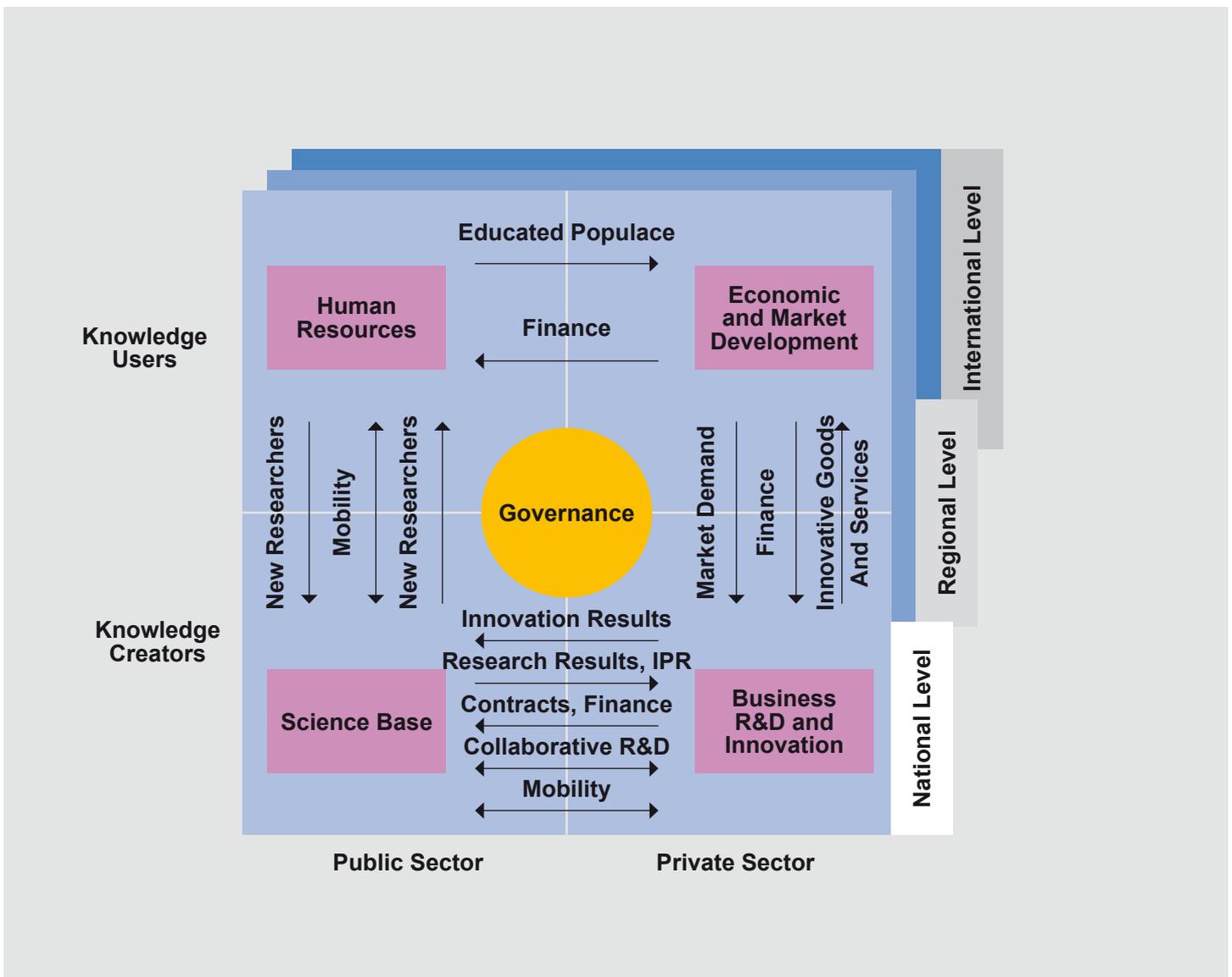


Figure 4. Interactions between instruments

Policy objectives: challenges, vision and priorities

The choice of various routes to increase innovation will result in different policy mixes. This implies a need for prioritization between goals and between policy portfolios.

Five possible routes can be defined to increase innovation depending on what directions we want to take:

- Route 1 : Promote the establishment of new indigenous innovative firms
- Route 2 : Stimulate further innovation in innovative firms
- Route 3 : Stimulate innovation in non-innovative firms
- Route 4 : Attract innovative firms from abroad
- Route 5 : Increase innovation in cooperation with public sector

Then defining priorities between routes should ideally be informed by:

- NIS/RIS SWOT analyses
- Policy reviews and evaluation
- Intelligent trans-national benchmarking practices

In reality, priorities are often product of:

- Policy fashions or fads, EU “standards”
- Naive imitation strategies from trans-national observations
- Pressure of lobbies: priorities as addition of narrow specific interests
- Parallel views between “science” and “economy” ministries

Article n°2 - p.32
Innovation in traditional sectors
by Teodora Georgieva

The evolution of priorities amongst the routes is characterised by:

- History weight: stickiness of main policy orientations, stability of structures, path dependency
- Cumulative processes: attention to new routes adds up to previously retained routes
- Changes in the NIS: need for radical changes, need for a threshold of changes to be effective...

Condition: high degree of strategic policy intelligence AND/OR radical shifts in NIS

Article n°3 - p.33
Outward looking strategy
by Nicola Bellini

Instruments: typology and mini-mixes

When designing a policy mix, it is fundamental to carefully select instruments among the available ones to ensure an optimized reach of the objectives.

Article n°4 - p.34
Policy instruments
by Christian Saublens

Portfolios composition associated to routes:

- There is no standard portfolio by route but some typical menus
- Similar instruments with different characteristics contribute to different routes (e.g. conditions for R&D grants; various types of tax incentives)
- Systemic instruments and mini-mixes span through many routes
- Often limited view on range of instruments linked to routes (“one problem” – “one response”)
- When made explicit, limited to innovation policy domain
- Subject to trade-offs : broadening versus deepening R&D efforts / excellence versus cohesion
- Other horizontal priorities run across the Routes: thematic, internationalization, human resources

During portfolios composition, it's collectively adopted to use mini-mixes process because this method is supposed to have a more 'synergetic' approach and might therefore be more effective and have fewer internal conflicting influences.

Mini-mixes combine programmes that package different instruments (funding mechanisms - programme objectives - delivery mechanisms- target groups) and/or routes, into one coherent initiative. Designed in such a way that the elements complement each other to achieve a specific policy goal (e.g. innovation in bio-tech) or support a specific target group (e.g. NTBFs).

Mini-mixes often cross different governance boundaries.

Mini-mixes success factors:

- Require some form of stakeholder involvement and/or expert opinion; Governments thus need to develop / mobilise the strategic intelligence for such a process;
- In cluster type mini-mixes, consider tax-payers perspective and ensure open and transparent process
- Systematic review of existing mechanisms is necessary
- No single recipe for the implementation of such mini-mixes, this is context - specific
- The evaluation and monitoring of mini-mixes is an area that needs further development

History

As soon as you start to design a policy mix, you have to take into account the co-existence of old and new policies and instruments in the definition of the future ecosystem. Because we can't suddenly bring an end to one policy to launch a new one to go towards new objectives, "historical" policy mixes should be taken into account along with new policy formulation.

Actors (stickiness, agility, hidden agendas...)

In an ecosystem, all the actors are, as subsystems, part of the system. Thus, the stickiness and agility of the stakeholders play an important role in the achievement of the objectives.

*Article n°5 - p.36
Universities
in regional
innovation policy
by Christian
Saublens*

Importance, weights and interactions within policy portfolio

Balance in policy mix for innovation

- "Science" and "Innovation" policies running parallel: prospective role of "competitiveness poles" of other "mini-mixes" instruments to ensure linkages between policy domains
- Invisible contribution of non-national instruments (EU, sub-national)
- No metrics to picture the real balance – but budgetary analyses and detailed systemic overviews should help clarify the situation
- Distance objectives/routes – instruments in practice
- Missing demand-side: Important gap in policy mix portfolio: policy instruments that directly stimulate the demand for innovation (innovation friendly procurement policies, lead markets promotion initiatives)

*Article n°6 - p.37
Consensus
building in
regional
innovation policy
by Hans-Christian
Jäger*

Governance (horizontal, vertical, cross-border)

Considering the policy governance aspects, what strategies are available to meet the need for coherence and coordinated implementation of policy mixes?

3 complementary approaches can be considered:

- **Strategic statements**... to provide clear signal and roadmap to all involved stakeholders (goals, indicators...)
- **High level coordination bodies**...with high-level political support and involving quadruple helix stakeholders
- **Mini-mixes**: smaller scale, packaged set of instruments designed as coherent whole, addressing various aspects of innovation

2 Challenges in governing the RIS3 policy mix¹

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According to the OECD, Governance for smart specialisation requires strategic capacities to grasp future opportunities, mainly in order to identify local strengths and implement the innovation strategy for the regions; thus the importance of strategic policy intelligence as a tool for governance of smart specialisation².

¹ This second part is based on the inputs of the presentation delivered by Elizabeth Zaparucha (senior consultant at Technopolis Group, specialised in research and innovation systems at the regional, national and European level) during the Know Hub workshop on policy mix held in Lille (France) in July 2014.

² OECD (2013) Innovation-driven Growth in Regions: The Role of Smart Specialisation www.oecd.org/sti/inno/smart-specialisation.pdf

2.1 Multi-level coordination challenges

The major challenge for policy makers is to **synchronise** regional and national strategies for a better articulation of priorities and to clearly **link** the policy **instruments** to the **priority setting** and **budgetary process**.

In this context, **various challenges of multi-level coordination are overriding**.

- **The first challenge concerns the multi-disciplinary dimension of emerging activities in terms of knowledge, activities and actors.** The emerging of cross-sectoral and cross-technological activities require multi-level communication and policy coordination across a higher number of different ministries and agencies (local, regional, national and supranational) and across a higher number of policy areas (e.g. industrial, innovation, education, energy, transport and entrepreneurship).
- **The second one deals with growing STI governance at regional level.** Indeed, co-ordination of STI policies is affected by a growing regionalism, in which more control over policy and resources is devolved to sub-national authorities. This requires development of governance models allowing national, inter-regional and regional co-ordination.
- When governing the RIS3 policy mix, **another challenge is linked to the definition of new cross-border governance mechanisms** to support and coordinate the emerging activities, which increasingly involve actors that go beyond administrative borders. This demands inter-regional co-operation between different authorities. It also brings new challenges to national governments where regions enjoy different degree of autonomies.
- **Growing international governmental organizations and regulations shaping governance regimes** is a trial as well because multi-level alignment of policies could help to push emerging activities further and create the critical mass needed to play a role globally.
- The increasing multi-disciplinary, cross-sectoral and cross-border profiles of key actors involved in socioeconomic development challenge traditional innovation systems and require development of adequate conditions to build trust, effective communication and commitments. Thus, having an **efficient eco-system management** is not to neglect.

Article n°7 - p.38
Cross-border regional innovation policies
by Claire Nauwelaers

2.2 Definition of activities and technology domains

Another risk when governing the RIS3 policy mix is to **loosely defined activities and technology domains**.

It can concerns a **lack of clearly defined set of actors** of the emerging activities which are less organised and have a lower critical mass than traditional activities. This is a particular challenge for policy makers when identifying and ensuring the participation of key actors (even within governments) during the self-discovery process. (i.e.: silver economy). It can also be a **lack of institutional or formal arrangements and a clear agenda**. Some of these activities are still homeless or sit in between different “ministries”. The horizontal fragmentations in policy-making hinder co-ordination and more efficient public intervention.

Article n°8 - p.40
Emerging sectors and industries as important element of regional innovation policy
by Pavla Bruskova

2.3 Synchronisation of strategies

An important additional issue is to **synchronize strategies**, to make national, regional and infra-regional levels consistent and to understand, with a special focus on how infra-regional decision makers are involved.

2.4 Reactivity to market conditions

When we think in terms of **market conditions**, the changing observed require new, flexible and innovative governance mechanisms to allow governments to react, adjust or re-direct rapidly their public support to the new needs (e.g. new market requirements demanding new skills).

Some of the exogenous factors restricting government's reactivity arise from various origins.

- One of them is the **path-dependences**. The stickiness of public allocations to existing organizations, programmes or initiatives may prevent a 'quick' shift of the public support towards new activities.
- The **regulatory constraints** are another factor to take into account. Long-term programmes are sometimes difficult to reshape because of regulatory conditions. The smart specialisation approach requires flexible tools, for example, to allow the abandonment of failure programmes.
- Likewise, **proliferation of policy frameworks** plays a role into government's capacity to react. The growing interconnectedness of economies re-enforce the need for increased regional and international collaboration and for a coherent alignment of policy frameworks to adjust policies to business reality (e.g. simplification of policies and removal of regulatory barriers).
- Moreover, considering the **vested interests**, we know that each programme benefits a particular set of actors, who may resist its suppression.

*Article n° 9 - p.43
Frugal innovation
by Christian
Saublens*

2.5 Institutionalisation of smart specialisation

The question of **how to institutionalise smart specialisation** or in other words how to bring the results obtained from the self-discovery process (knowledge exchange between the public and private sector) into prioritisation, in order to both engage in strategic co-ordination and fine-tuned priorities can be addressed by considering few points:

- **Current priority setting processes mainly target broad domains** (life science, biotech, health; ICT; Environmental technologies; mobility and logistics; and new materials), whereas smart specialisation requires narrowing down these broad domains into activities of competitive advantages.
- **Not all regions choose to prioritise** between thematic domains or support quite a broad set of domains or functional priorities (e.g. Lower Austria and South Moravia).
- There is little information on how decisions/priorities are adopted (e.g. empirical evidence basis used is not clear or possibly masks a factual **lack of decision making mechanism?**).
- There is a need to increase the **inter-linkages between quantitative and qualitative inputs** into strategy formation process, prospective data and analysis.
- **Selecting and engaging key actors**, necessary for their expertise and knowledge, is an increasingly difficult task due to the cross-border, multi-disciplinary and cross-sectorial dimensions of emerging activities.

2.6 Policy hints and tips

In order to face these above mentioned challenges, some **policy hints and tips** can be formalized:¹

- “Governance structures vary enormously from one setting to another, with no hard evidence that one type of structure is more conducive to the formation of better policy mixes than another, or that the policy mixes evolved in one setting will necessarily be better than those evolved in another. The need for **good communication and coordination mechanisms**, however, is self-evident.
- When determining a policy response to system challenges, attempt to **establish a vision of the future** via the extensive use of inclusive consultation exercises such as foresight, in order that the vision is shared by as many stakeholders as possible.
- Within such a shared vision, establish a **clear hierarchy of goals and objectives**, with low-level goals clearly subservient to high-level goals rather than becoming detached goals in their own right.
- **Establish and empower advisory groups** representing a broad mix of key R&D and innovation stakeholders to advise on strategies for the future. Ensure their advice is taken seriously by requiring government to make formal responses to their inputs.
- Note that **coherence, coordination and communication** are key concepts underpinning the development of appropriate policy mixes. Coherence – in the sense of policies acting to support rather than detract from each other – can be viewed as a policy mix goal, with coordination the means to achieve it and good communication the basis for effective coordination.
- Establish **good coordination and communication mechanisms between the major bodies** in the governance system responsible for policy formulation and implementation. Often these links need to be made at the highest levels to ensure that the tendency for ‘silo’ policy development is countered.
- Remember that coherence, coordination and communication have their costs. Coordination and communication have time and resource implications, and absolute coherence itself is an unattainable (and undesirable) endpoint in democratic and pluralistic societies. All these considerations have to be factored in when devising ways of improving the coherence of policy mixes.
- Develop a strong strategic intelligence capability to inform future policymaking efforts. This should span **monitoring, evaluation, benchmarking, policy learning, foresight, road-mapping, technology assessment** etc.
- Think carefully about **strengthening communication and coordination links between national and regional authorities**. R&D and innovation actors are affected by policy formulation and implementation at both levels, yet attempts to encourage synergy between these policy efforts are comparatively rare”.

¹ The ‘Policy Mix’ Project (2009) Monitoring and Analysis of Policies and Public Financing Instruments Conducive to Higher Levels of R&D Investments, Methodology Deliverable, Task 3.

3 Establishment of suitable regional policy mix with regards to policy implementation¹

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¹ This third part is based on the inputs of the presentation delivered by Christian Saublens (Director of European Association of Development Agencies, specialised in regional development, enterprise cooperation, innovation and capacity building) during the Know Hub workshop on policy mix held in Valladolid (Spain) in October 2013. Its presentation was partly based on the content he produced in August 2013 for the publication for the European Commission (Directorate-General for Regional and urban policy) : "Regional policy for smart growth of SME".

3.1 Designing a regional policy mix

When designing a regional policy mix which matches the RIS3 objectives with ERDF thematic priorities 1 & 3 (i.e. enhance private investment in R&D+I and supporting SME competitiveness), **8 variables** have to be taken into consideration:

Support services:

- They are part of an ecosystem
- They should be aligned with the RIS³ priorities
- They should match ERDF priorities, i.e. R&D+I or
- Competitiveness should be taken into account

A segmentation is needed to target the different types of ...

Article n°10 - p.44
Economic development for cultural and creative industries
 by Daniel Kipp

- SMEs (entrepreneur by necessity, spin-off, phoenix, start-ups, gazelles ...)
- Innovation (technological & non-technological)
- Markets (local, national, global)
- Knowledge intensity of the support service (from awareness to tailor-made ones)

Support services have to take into consideration ...

Article n°11 - p.46
First time innovator
 by Christian Saublens

- The capacity and capability of the entrepreneur to manage the innovation cycle
- The need to receive financial and non-financial support
- Specific needs related to first time innovation or internationalization

Their design has to be well thought in order to avoid:

- One size fits all
- Fragmentation of the offer
- Buzz and vintage
- Business as usual

Evaluation and impact assessment are more than:

Article n°12 - p.46
RIS3 focus on results
 by Hans-Christian Jäger

- An eligibility check
- A transaction count

To do better evaluation exercises, a regional intelligence system is required.

Avoiding traps of the 8 “myths”

- Myth 1: Jobs and knowledge are created by SMEs (not all of them do since more than 50% die before reaching 3 years).
- Myth 2: All enterprises are the same.
- Myth 3: Access to venture capital faces a chronic market failure (if the risk is too high, who will invest? Investment readiness schemes can help to solve the market failure).
- Myth 4: Innovation stems from R&D efforts.
- Myth 5: Evaluation is essentially an instrument to measure transactions such as the accounting use of budgets and the number of beneficiaries.
- Myth 6: The public sector constantly needs to socialize private sector losses.
- Myth 7: Intermediary organizations have to check the eligibility of the files submitted for obtaining of grants.
- Myth 8: Public policies can support fast growing enterprises.

Taking those myths into consideration can lead to develop alternative options or additional support services.

Policy makers should build their own “logical intervention path” made of:

Regional policy objectives	RIS ³ horizontal priorities	Means to be deployed	Schemes	Outputs
<ul style="list-style-type: none"> • Job creation • Economic growth • Sustainable development • Social inclusion 	<ul style="list-style-type: none"> • Supporting private investment in R&D • Stimulating innovation • Enhancing SME competitiveness 	<ul style="list-style-type: none"> • Supporting industrial research • Strengthening human capital development • Fostering University/SME collaborations • Transforming publicly funded knowledge into market applications • Encouraging the creation of new firms • Boosting the introduction of new products/services into the market • Supporting non high tech innovation • Favouring geographical diversification • Helping sectorial diversification • Promoting the up-scaling of the product range • Supporting the reduction of raw material and adopting environment friendly practices 	<ul style="list-style-type: none"> • Business support infrastructure • Financial support • Advisory services • Support to commercialization of innovative products/services • Key stakeholder matching services 	<ul style="list-style-type: none"> • Creation of start-ups/spin-offs • Growth of existing companies • Skills acquisition • Job creation • Attraction of foreign direct investment • Phoenix enterprises • Up-scaling the product range • Development of market niches

Figure 5. Intervention paths' parameters

Source: Regional policy for smart growth of SMEs, EU. Commission, 2013.

In this process, policy makers have to liaise the RIS3 priorities with the policy mix thus each step has its role to play at the good time.

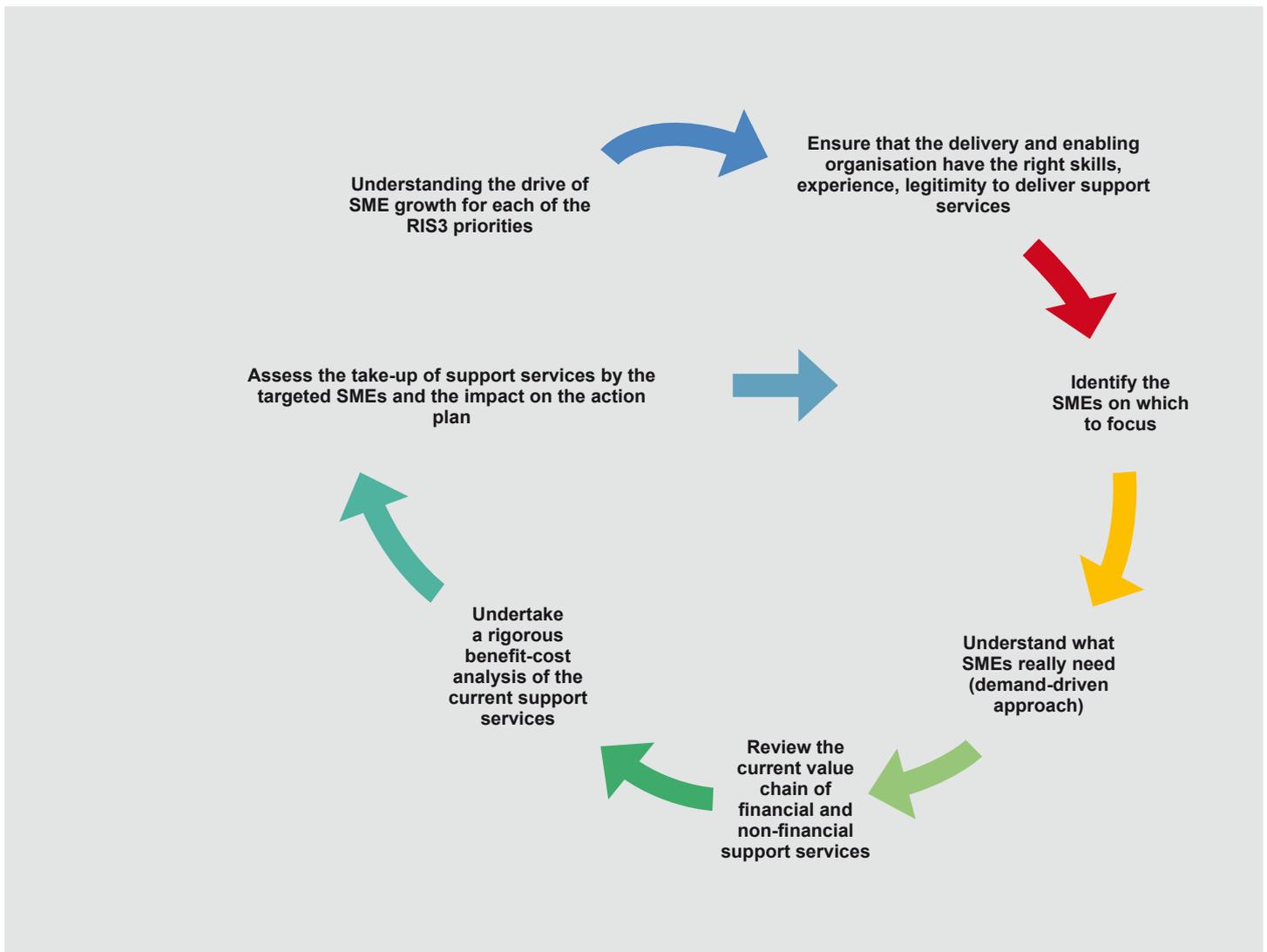


Figure 6. How to liaise the RIS3 priorities with the policy mix?. Source: EURADA

Questions related to the “virtuous circle”

- What are the RIS horizontal priorities?
- What means should be deployed to reach the RIS³ goals?
- What tools or schemes are most suitable to generate the expected outcomes?
- What are the options available?
- Which types of enterprises should be targeted?
- How to diagnose the individual SME needs and strengths to absorb benefits of the tools?
- What type of administrative delivery process should be put in place?
- What could be the nature of public support?
- How to follow the enterprise transformation process?
- What outcome measures to take into account?

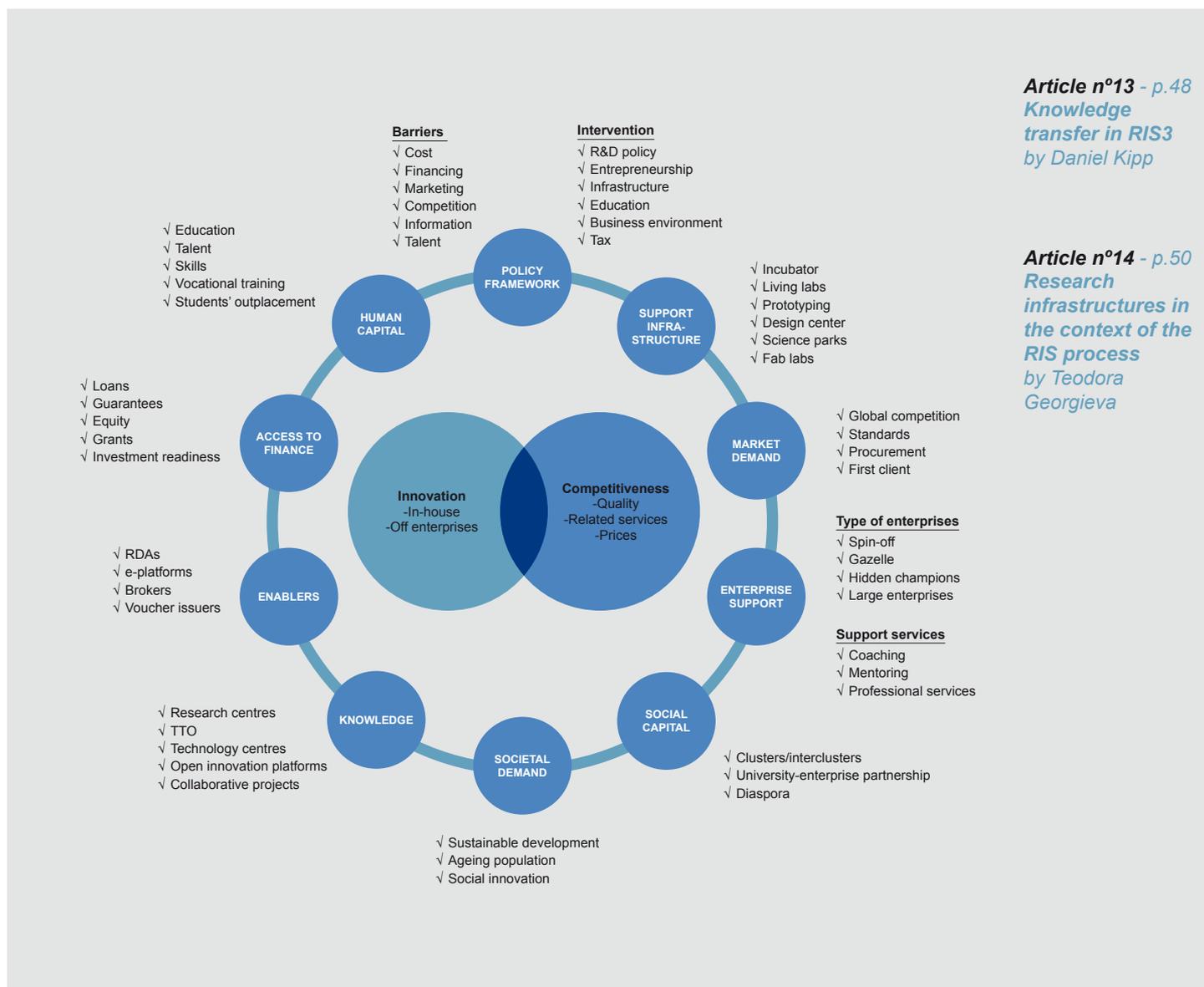


Figure 7. RIS3 support service eco-system. Source: EURADA

3.2 Targeting and reaching SMEs

To deliver a policy mix, there is a need to **know which SMEs are targeted and how to reach them**. For that, two aspects have to be taken into account:

The SME typology:

- Newly-developed companies
- Spin-outs and spin-offs of large businesses, research centres and universities
- Start-ups (less than five years in existence)
- Locally-rooted companies (micro-businesses and craft companies)
- Entrepreneurial growth companies
- Globally born companies

- Innovative businesses and companies leveraging RTD outcomes
- Companies in the process of being transferred
- Subcontractors
- Companies at risk of bankruptcy
- Phoenix enterprises
- Multinationals
- Social enterprises
- Entrepreneurs by necessity
- Lifestyle entrepreneurs
- Hidden champions

The segmentation of the services offer:

The segmentation of the services offer will depend on 3 criteria:

- Number of beneficiaries (large number or limited to those who are able to absorb the knowledge related to the services)
- Type of support services (from basic to world-class support)
- Increased knowledge intensity in the support services (simple to excellence)

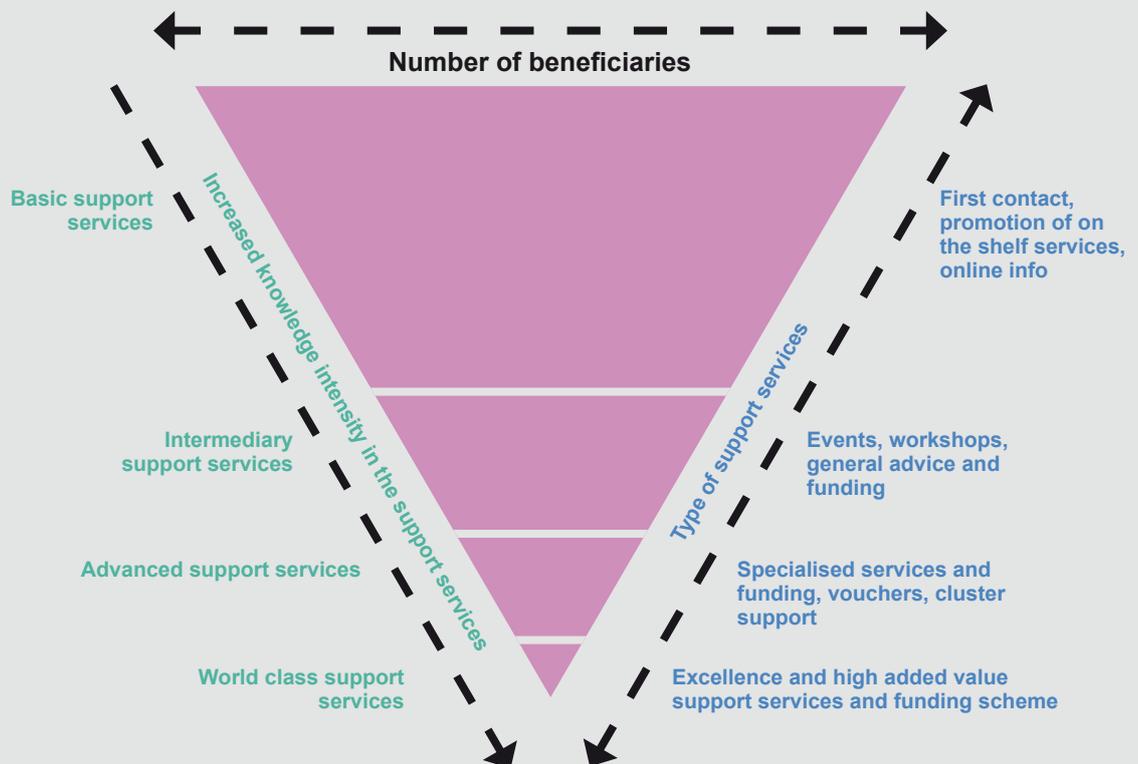


Figure 8. Segmentation of the services offer

Source: Eurada, adapted from presentation by Graemen Rennison of Scottish Enterprise (UK) at DG CNECT 15.5.2013

3.3 Defining tools to support competitiveness

To define which tool for which policy objective to support competitiveness.

The selection of the instruments depends on the needs and objectives to fulfill:

- Business support infrastructure
- Financial support
- Advisory services
- Support for innovative product/service commercialization
- Stakeholders matching services

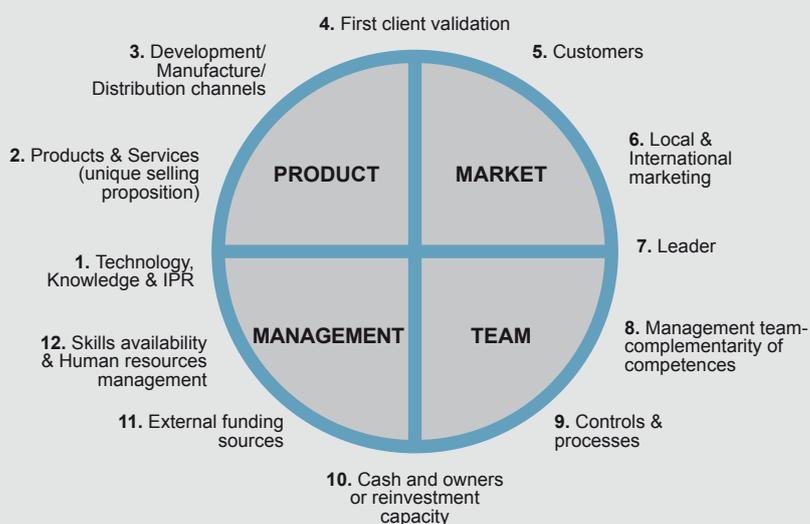
For instance, packaging financial and non-financial support services can be a better option than a single support mechanism:

Packaging financial and non financial support services	
Financial support	Related non-financial support
I. Debt finance (SMEs in need of competitiveness support) <ul style="list-style-type: none"> • Micro-loans • Guarantee schemes • Loans II. Equity finance (high growth SMEs) <ul style="list-style-type: none"> • Seed capital • Venture capital • Technology transfer fund • Proof of concept ... 	<ul style="list-style-type: none"> • Investment readiness scheme • Accelerators management • Investment forum • Business angel networks

Article n°15 - p.52
Financial Engineering
 by Christian Saublens

Figure 9. Packaging financial & non-financial support services

To assess the capacity of enterprises to absorb the services provided in the most efficient way, a diagnostic tool dealing with the 4 pillars of an SME (product, market, management and team) can be developed to better match the real needs and to offer coaching.



Article n°16 - p.53
Innovation management in companies
 by Merion Thomas

Figure 10. Diagnostic tool

Source: EURADA – based on Sally Goodsell from Finance SouthEast's presentation at EURADA's investment readiness training events in Timisoara and Riga

In addition, setting up a catalogue of support services and a customer intelligence service is a complementary approach for managing authorities to support competitiveness.

Ref. number	Policy priority	Objective of the scheme	Nature of the service	Target	Form of the support	Deliverables	Impact	Implementation enabler	Supported enterprise

Figure 11. Example of template to set a catalogue of support services
 Source: Eurada, based on INFO Murcia Catalogue created within the framework of the PYME+I Initiative.

In order to help managing authorities figure out how such a catalogue will look like, the table below shows a few examples of support services which could be included:

01	Management/ Organisation	02	Training
01.001	Strategic innovation plan	02.001	R&D management
01.002	Introduction of ICT from a strategic point of view	02.002	Market and technology intelligence
01.003	Outsourcing plan	02.003	Learning how to use innovative ICT tools
03	Access to external funding sources	04	Access to business infrastructure
03.001	Investment readiness	04.001	Incubators
03.002	R&D FP7 / Horizon 2020	04.002	Living labs
03.003	R&D national projects	04.003	Fab labs
03.004	Micro-credit	04.004	Prototyping
03.005	Grants for export	04.005	Design centre
05	Innovation services	06	Legal services
05.001	Vouchers	06.001	IPR
05.002	Mentoring / coaching	06.002	Knowledge & technology services
05.003	Proof of concept	06.003	Export
05.004	Business plan for start-up/spin-off	06.004	Licensing agreements
05.005	Hiring PhD students		

Figure 12. Examples of support services
 Source: Regional policy for smart growth of SMEs, EU. Commission, 2013.

Which tools for competitiveness RIS3 objectives?

For each RIS³ objective there are dedicated tools available:

RIS ³ Objectives	Dedicated Tools	Improving product/ service/process quality
Improving product/ service/process quality	<ul style="list-style-type: none"> • Coaching/mentoring • Vouchers • Living labs • Design 	The Riga Declaration: Realising the Full Potential of Innovation Voucher Programs http://hytetra.eu/d/news/Riga_declaration.pdf Living labs http://openlivinglabs.eu/ Design http://ec.europa.eu/enterprise/policies/innovation/files/design_swd_sec501_en.pdf
Increasing export turnover	<ul style="list-style-type: none"> • Coaching/mentoring • Export guarantee scheme • Soft landing 	Coaching/mentoring http://www.intertradeireland.com Soft landing http://www.ebn.be/DisplayPage.aspx?pid=128
Access to external funding sources	<ul style="list-style-type: none"> • Investment readiness • Public financial engineering scheme 	JEREMIE http://ec.europa.eu/regional_policy/the_funds/instruments/jeremie_en.cfm Investment readiness http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=1170
Supporting market diversification	(Inter)cluster	Cluster observatory http://www.clusterobservatory.eu/index.html Inter-clustering http://www.intercluster.eu/en/
Hiring qualified staff	<ul style="list-style-type: none"> • Vocational training schemes • Student and PhD placement 	Leonardo da Vinci Programme http://ec.europa.eu/education/lifelong-learning-programme/ldv_en.htm Students' placement http://www.eue-net.org/_download/EUE-Net_Guidelines.pdf
Improving resource efficiency	Coaching/mentoring	REMake project http://www.greenovate-europe.eu/completed-projects/remake
Access to high value added support services	<ul style="list-style-type: none"> • Vouchers • Clusters 	
Enhancing growth	<ul style="list-style-type: none"> • Coaching/mentoring • Financial engineering 	Financial engineering: All Money is not the Same http://www.eurada.org/files/All%20Money/All%20money-E%20Rev_5.pdf DG Enterprise: Quick Guide to Funding http://ec.europa.eu/enterprise/policies/finance/guide-to-funding/index_en.htm
Enhancing innovation management	<ul style="list-style-type: none"> • Mentoring / coaching • Vouchers 	IMP ³ rove https://www.improve-innovation.eu/
Increasing the number of SMEs engaged in cooperation	<ul style="list-style-type: none"> • Clusters • Vouchers • Meet the buyer • Matchmaking 	Meet the buyer: Aeromart http://www.bciaerospace.com/toulouse/en/ Matchmaking: Enterprise Europe Network http://een.ec.europa.eu/

Article n°17 - p.55
Clusters in RIS3
 by Guillermo
 Alexandre

Figure 13. Example of tools depending on competitiveness RIS3 objectives
 Source: Regional policy for smart growth of SMEs, EU. Commission, 2013.

3.4 Defining tools for R&D+I RIS3 objectives

To define which tool for R&D+I RIS3 objectives, the innovation life cycle has to be taken into account.

TRL (Technology Readiness Levels)

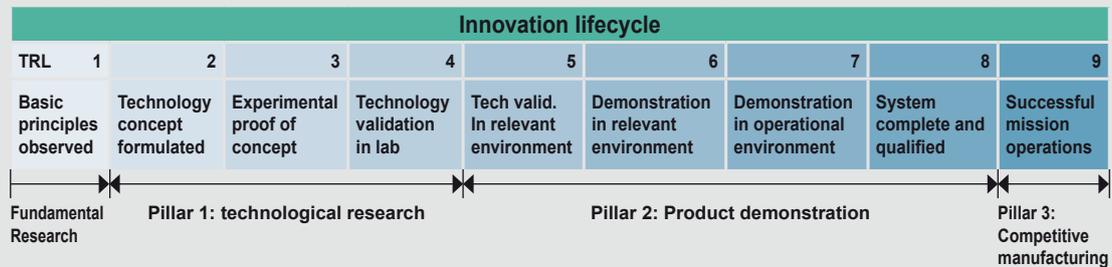


Figure 14. Technology readiness levels

Source: Doc. COM(2012) 341 final, 26.6.2012, 'A European strategy for Key Enabling Technologies – A bridge to growth and jobs'

Which tools for R&D+I RIS3 objectives?

For each RIS³ objective there are dedicated tools available:

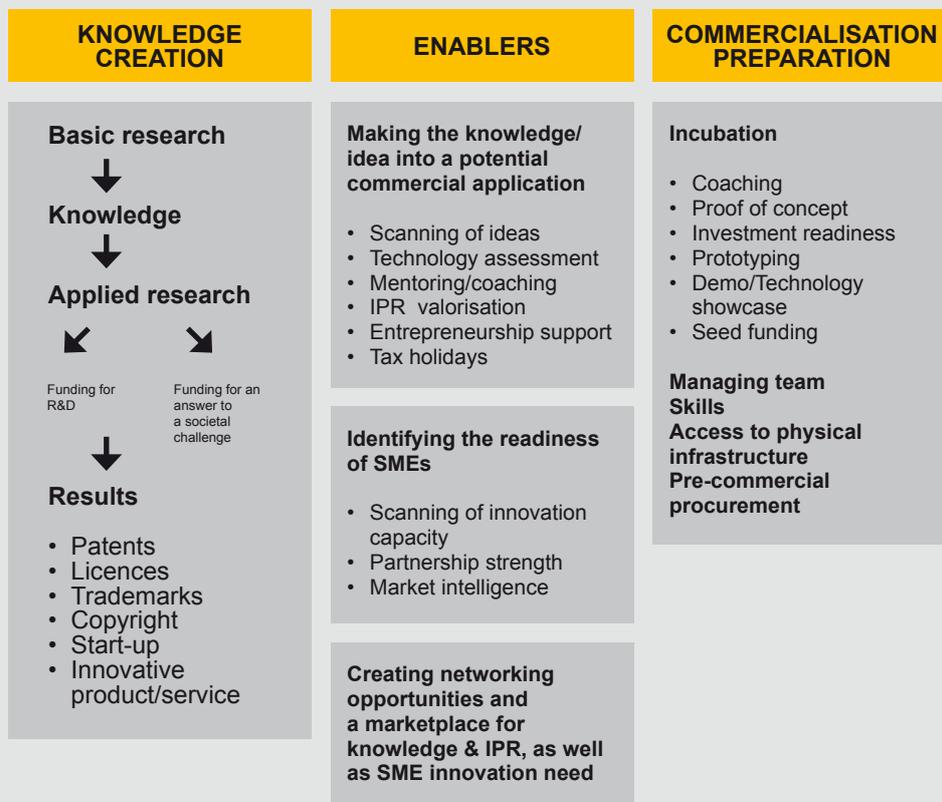
RIS ³ Objectives	Dedicated Tools	Practice references
Increasing the number of enterprises engaged in R&D activities	<ul style="list-style-type: none"> Enterprise/university networks Grants for R&D activities Feasibility studies to access grants Reimbursable loans Research intensive clusters Vouchers 	Connecting Universities to Regional Growth: A Practical Guide http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/documents/connecting_universities2011_en.pdf University-Business Cooperation: 15 Institutional Case Studies on the Links Between Higher Education Institutions and Businesses http://ec.europa.eu/education/higher-education/doc/studies/technopolis_en.pdf The Riga Declaration: Realising the Full Potential of Innovation Voucher Programs http://www.europe-innova.eu/c/document_library/get_file?folderId=132988&name=DLFE-9801.pdf
Increasing the number of enterprises engaged in transnational R&D activities	Advice and support for feasibility studies to participate in transnational consortia	Supporting enterprises to take part in FP7 http://www.eurada.org/files/Catalonia_Emilias-Romagna_FP7ParticipationSupport.pdf
Commercialisation of R&D results through spin-offs/start-ups	<ul style="list-style-type: none"> Proof of concept Seed capital Incubator Prototyping Fab labs Living labs Accelerator 	Proof of concept: Practice cases http://www.eurada.org/files/Proof%20of%20concept_good%20practice%20cases.pdf The Smart Guide to Innovation-Based Incubators (IBI) http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/documents/innovation_incubator.pdf The CAMPUS Programme (Technological Transferability and Business Support), operated by IDEA Andalusia (E) http://www.proinno-europe.eu/sites/default/files/repository_files/11/06/CAMPUS%20report%20public%20version.pdf Fab labs http://fab.cba.mit.edu/ Living labs http://knowledgecenter.openlivinglabs.eu/ Start-up Europe's Accelerator Assembly http://www.acceleratorassembly.eu/
Commercialisation of R&D results through licensing	<ul style="list-style-type: none"> Coaching/ mentoring IPR valuation Technology brokerage 	IPR valuation http://www.iprhelpdesk.eu/library Licensing of research results http://www.wipo.int/sme/en/documents/academic_patenting.html
Supporting service innovation	<ul style="list-style-type: none"> Living labs Voucher for design advice 	The Smart Guide to Service Innovation http://s3platform.jrc.ec.europa.eu/documents/10157/0/Smart%20Guide%20to%20Service%20Innovation.pdf

Article n°18 - p.57
Commercialization of research results
 by Christian Saublens

RIS ³ Objectives	Dedicated Tools	Practice references
Improving the quality of R&D+I infrastructure	<ul style="list-style-type: none"> Grants 	ERDF grants http://ec.europa.eu/regional_policy/projects/stories/search.cfm?LAN=EN&pay=ALL&region=ALL&the=45&type=ALL&per=2 FP7 grants: research infrastructures http://ec.europa.eu/research/fp7/index_en.cfm?pg=infra
Supporting the introduction of new innovative products/ services to the market	<ul style="list-style-type: none"> Coaching/mentoring Market replication Pre-commercial procurement Large-scale demonstrators 	Market replication DG Environment http://ec.europa.eu/environment/eco-innovation/index_en.htm Pre-commercial procurement http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/files/meeting-procurement-feb2012/study-eu-support-public-procurement-innovative-solutions_en.pdf Large-scale demonstrators http://www.mobilise-europe.mobi/large-scale-demonstrators-real-live-testing/
Supporting social innovation	<ul style="list-style-type: none"> Incubator User-driven innovation 	Guide to Social Innovation http://s3platform.jrc.ec.europa.eu/documents/10157/47822/Guide%20to%20Social%20Innovation.pdf User-driven innovation http://ec.europa.eu/enterprise/policies/innovation/files/consultation/background-paper-demand-side-policies_en.pdf

Figure 15. Examples of tools depending on R&D+I RIS3 objectives
 Source: Regional policy for smart growth of SMEs, EU. Commission, 2013.

The objective is to support the whole process from knowledge creation to the market



*Article n°19 - p.58
 Absorption by SMEs of external knowledge in regional innovation policy-delivery mechanism
 by Christian Saublens*

Figure 16. Process from knowledge creation to the market

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Article n° 1 Policy mix

A policy mix describes a combination of different but complementary public policy interventions in the regional economy to achieve a particular objective.

Written by Christian Saublens

The concept

The idea behind this concept is that market failures in the regional economy are rarely caused by single factors, but by several. Effective solutions are therefore likely to be dependent on a mix of policies to address the problems simultaneously.

Each strand of policy may require a number of different instruments, resulting in a complex pattern of activity overall. For example, if the policy objective is to boost the level of research and development activity in a region's SMEs, there may be a need to design a call for innovative projects, improve business/university links, stimulate the supply of specialist finance, help attract suitably qualified managers, provide supportive, specialist working environments such as business incubators, and provide management coaching on IPR and project management.

Today's regions should be able to combine well established measures, such as those listed above, with new, experimental interventions, and designing bespoke measures to suit their particular circumstances. This depends on development agencies keeping themselves well informed about policy interventions and instruments nationally and internationally.

The following graph tries to illustrate the concept by showing how a set of horizontal and vertical policies are interacting among each other (Figure 1).

How to implement it?

To think in terms of value chains and to remember that there is a law in physics which tells us that a chain is only as strong as its weakest link. This approach is in line with the need to take into account the systemic interactions of different policy instruments.

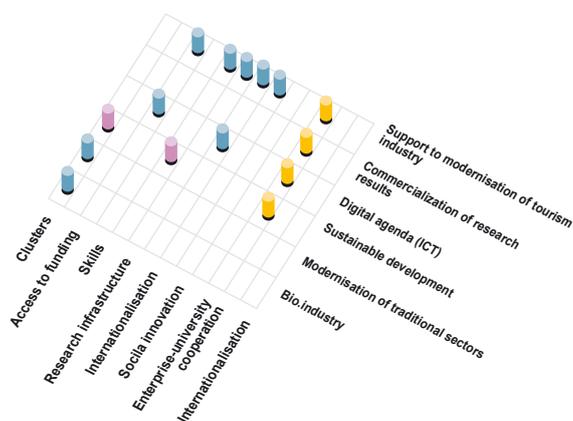


Figure 1. Source: EURADA

What can be expected?

A qualitative and quantitative increase of private and public investments for a given policy priority.

A review of the uniqueness of the regional policy instruments: often regional public authorities are using the same types of instruments without integrating them in a real regional eco-system.

An answer to the question: which portfolio of policy instruments are most effective for a given aim, such as: (i) how to increase private investment in R&D+I; (ii) how to support SMEs to innovate; (iii) how to enhance cooperation between SMEs; (iv) how to support the take up of key enabling technologies by SMEs; (v) how to help SMEs to diversify geographically or technologically; ...

A quote

*"A policy mix perspective places less emphasis on the design and evaluation of individual instruments of innovation policy and focuses more on questions of completeness, balance and interaction among policy instruments."*¹- OECD's Working Party on Innovation and Technology Policy

References

- [1] DG Research website on "Policy mix tool for R&D"
- [2] OECD: Reviews of regional innovation policy: "Regions and innovation"
- [3] OECD: "Draft synthesis report on innovation driven-growth in regions: The role of Smart Specialisation"

¹ OECD: "Report on the policy mix for innovation in Iceland".

SECTORS	Aeronautics	Skills	R&D+I	Non-technology & social innovation	ICT	Export
	Biotechnologie					
	Alternative energies					
	Automotive					
TYPES OF ENTERPRISES	Medium-sized companies	Skills	R&D+I	Non-technology & social innovation	ICT	Export
	Multinationals					
	University start-ups					
ENABLERS	Universities/research centres	Skills	R&D+I	Non-technology & social innovation	ICT	Export
	RDAs and innovation agencies					
FUNDING SOURCES	Financial engineering fund	Skills	R&D+I	Non-technology & social innovation	ICT	Export
	Business Angels					
	Grants					

Article n° 2 Innovation in traditional sectors

Innovations have specific features in different sectors in regard to the content, process of development and implementation, determinants, visible and invisible effects. Success factors and drivers of innovative projects and policies affecting them differ, too.

Sectoral differentiation reveals how the participants in the technological chains and sectoral innovation systems interact within the process of creation, integration and deployment of technological, organizational and marketing innovation.

Written by Teodora Georgieva

The concept

Prioritizing high-tech services while disregarding traditional low-tech sectors¹ leads to ignoring factors critical for economic growth and competitiveness of national and regional economies, as well as to missing opportunities for spreading know-how and new technologies created in the country on a broader basis. Encouraging innovation in the traditional sectors creates higher demand for innovation solutions generated by the economic activities related to them. This intensifies the interaction in support of open innovation within the national innovation system.

How to implement it?

To achieve an impact on the speed and effect of innovation through national and sector policies (by means of well-considered regulation, educational and scientific technological priorities, fiscal and tax framework, and rules of public-private partnership) it is necessary to understand the mechanism of innovations at company and sectoral level.

The analysis of sectoral innovation systems provides evidence of the essence and significance of innovation activity at the companies, thereby supporting the establishment of sector-based innovation-oriented policies and measures. Devising mechanisms of impact – ones that have not been imposed from without but are instead the result of and have been indicated by the transformation processes in the relevant sectors – ensures a healthier environment for the functioning of the innovation ecosystem as a whole.

Shifting the focus to sectoral innovation systems and the value added chains is more closely related to the concept of open innovation. For this reason, in addition to the familiar indicators of R&D intensity, additional indicators have to be used in order to:

- measure the contribution of the individual sectors to the development of the national economy;
- define the specific factors that drive sectoral innovation activity;
- understand the mechanisms of innovation and the varied forms of manifestation of its expected effect.

Regardless of low investment in R&D and patent activity, the low-tech sectors demonstrate a potential for the introduction of know-how and new technologies generated by them, a strong involvement along the value added chain and considerable organizational and marketing innovations.

Medium and low-tech sectors are a field for the application of technological knowledge from other sectors and thereby act as a driving force behind the research and innovation activity of high-tech activities and science intensive services. In some of the cases, they have a sectoral innovation ecosystem with a high intensity of interaction which guarantees the fast dissemination and diffusion of (un)protected and (un)codified new knowledge.

What can be expected?

- Sectoral value chains
- Innovation hubs
- Regional/sectoral networks
- Innovation clusters
- Increasing traditional sectors' value added

A quote

“Despite the leading status of Israel’s advanced technology industry, including information and communications technologies (ICT), and its crucial contribution to improving the balance of payments over the past two decades, the high-tech sector cannot single-handedly maintain the targets for GDP growth and increased employment set by this plan. This is due to the relatively small dimensions of the high-tech sector, and its minor share in employment.

Our vision for traditional and services sectors seeks to achieve their stable, sustainable growth and development and to enable their employees to maintain a high standard of living. The majority of the population is employed in these sectors, for the most part earning low wages. Making changes in these sectors’ development, then, will be very significant for the entire economy. Their increased productivity will produce a parallel increase in income and wages, facilitating an increase in employees’ standard of living. This is also a significant key to resolving social gaps, as a close relationship exists between economic

duality and social duality.” from Israel 2028: Vision and Strategy For Economy and Society in a Global World

References

[1] Hidden Innovation. How innovation happens in six ‘low innovation’ sectors, Research report: June 2007, NESTA

[2] Measuring sectoral innovation capability in nine areas of the UK economy, Report for NESTA Innovation Index project, Index report: November 2009, NESTA

¹ Distinction between high, medium and low technology sectors according their innovation intensity is based on the latest OECD’s classification of economic activities NACE 2008. ‘High-technology’ and ‘knowledge based services’ aggregations based on NACE Rev. 2, http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf

Article n° 3 Outward-looking strategy

Written by Nicola Bellini

The concept

According to the Guide to Research and Innovation Strategies for Smart Specialisation¹, “A major novelty of the smart specialisation approach is that a region has to make its strategic decisions taking into account its position relative to other regions of Europe, which implies that the RIS3 approach requires looking beyond the regional administrative boundaries. (...) This type of analysis is important because the concept of smart specialisation warns against ‘blind’ duplication of investments in other European regions. Such blind duplication of efforts could lead to excessive fragmentation, loss of synergy potential, and ultimately could hamper the reach of the critical mass required for success. On the contrary, interregional collaboration should be pursued whenever similarities or complementarities with other regions are detected.”

In the world of open innovation and global value chains no serious innovation policy can be effective without the ability to connect the local asset knowledge with knowledge existing “elsewhere” (in other regions, in other countries of Europe and much beyond). The risk of a self-referential innovation policy at regional (as well as at national) level is leading to the risk of its irrelevance, because in most cases the achievement of critical mass and the viability of “smart” specialisations depend on their international / inter-regional framing. Furthermore, having an outward-looking approach allows also to identify opportunities that may not derive from the present critical mass of innovative activities within the region, but, e.g., from some especially valuable link with outstanding research centres or world-class companies located elsewhere.

Although many would agree on all this in principle,

the translation of this concept into policy practice is far from obvious and easy. First of all, it requires a significantly increased availability of (comparable) data about other regions in Europe and worldwide. Secondly, it implies to assess the position of a regional economy not just in terms of rankings, but also with reference to the “value chains” and to the “relational assets” of regional actors (institutions, companies, universities etc.). Thirdly, as interregional cooperation is a complex and uncertain process, it suggests the need for institutional conditions favouring trust and effective cooperation between regional governments.

How to implement it?

Implementation requires a sound and consistent analysis of the regional economy in an inter-regional / inter-national perspective, especially through:

- benchmarking and the “comparative positioning” with respect to other regions, i.e. by identifying leading regions and similar regions as reference for the areas of specialisation. This exercise is not without limitations: e.g. similar regions are not necessarily better partners for cooperation than different, but complementary ones;
- the analysis of the position of regional actors, and especially companies, within value chains.

In policy terms, actions should aim at:

- exploiting the existing inter-regional networks for the development of joint or complementary initiatives: this requires an assessment of results and opportunities to go beyond the exchange of knowledge on “good practices”;
- capitalizing on and mobilizing the relational assets of the whole regional society, especially of those actors with a distinctive inter-regional and inter-national activity (e.g., universities and

- companies);
- opening the process by adopting an international dimension (e.g. involving international experts in monitoring and evaluation).

What can be expected?

Emphasizing the outward dimension of the strategy:

- increases the range opportunities for the differentiation strategies based in the co-invention of applications and related variety;
- allows for a faster development of niches that are actual or potential part of trans-regional (or even global) value chains;
- increases the opportunities to attract viable inward investments and/or human resources (talents);
- increases the quality and speed of policy learning.

A quote

"There are more things in heaven and earth, Horatio, Than are dreamt of in your philosophy." W. Shakespeare, Hamlet, Act 1.

References

- [1] Bellini N., Hilper, U. ed.s (2013), Europe's Changing Regional Geography. The Impact of Inter-regional Networks. London: Routledge
 [2] Mariussen Å., Virkkala S. ed.s (2013), Learning Transnational Learning. London: Routledge.

¹ Foray D. et al. (2012), Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3) - May 2012. European Commission, S3 Platform, May

Article n° 4 Policy instruments

Policy instruments are interventions made by government/public authorities in local, national or international economies which are intended to achieve outcomes which conform to the objectives of public policy. They can take many forms, ranging from regulatory regimes to the provision of services to help improve the performance of businesses.

Written by Christian Saublens

The concept

Instruments to support businesses can take many forms, for example:

- Provision of infrastructure such as real estate to accommodate businesses, laboratories and business incubators, and high speed broadband
- Provision of expert coaching to support the management of small businesses
- Programmes to address the financial needs of businesses, including grants and more sophisticated investment instruments
- Provision of technical support to businesses
- Developing and supporting the means by which businesses can work together through clustering and other networks, creating social capital in the business community
- Provision of particular expertise to businesses to assist with, for example, forecasting, technical development of new product ideas and developing international business
- Provision of demonstration facilities to better enable firms to develop, test and market their products
- Programmes to help small firms market innovative

- products, including public procurement
- Setting up specialist agencies to attract foreign direct investment in existing businesses or to set up new operations.

These support measures can be classified as direct support, usually of a financial nature for firms, or indirect support through the provision of services. Experience suggests that a combination of the two types has a greater impact than the use of just a single instrument.

Some support services provide more added value than others. From the low knowledge intensity to the highest added value, they can range from providing information, raising awareness, acting as a coordinator / catalyst, offering accommodation in real estate / resorts; facilitate matching / interfaces between stakeholders, supporting the assessment of the business' strengths, providing intelligence / knowledge, giving advice, offering training, forging partnerships, supporting the first client search, facilitating transfer and brokerage, to investing in financial engineering tools.

Examples of policy instruments: domain

DIRECT	INDIRECT
Grants	Clusters
Loans	Incubators
Reimbursable advance	Research centres
Equity	Technology centres
Guarantees	Demo centres
Proof of concept	Living labs
Market replication	Fablabs
Pre-commercial procurement	Coaching/mentoring
Tax holidays	Technology transfer
	Market intelligence
	Foresight
	Talent attraction

How to implement it?

Public authorities can provide grants, guarantees or revolving funding sources. They can apply different forms of public calls or put in place a voucher scheme. They can provide a 100 % of the eligible cost or ask the beneficiary to co-fund part of the project.

A good way to apply the concept is to design support services to SMEs, combining financial and non-financial instruments. For instance grants and coaching; investment readiness and equity finance; mentoring and export support; grants for innovative projects and management capability or recruitment of PhD students.

Regions often face the dilemma of “picking the winners” vs “supporting the winners”. Therefore some regions are currently providing added value support services through cluster initiatives and others through a portfolio of strategic enterprises for the region.

What can be expected?

- Addressing market failures (access to external funding sources, innovation in SMEs, ...);
- Improved management capacity in SMEs;
- Eliminate the asymmetry of information between stakeholders;
- Enhance cooperation between enterprises or between enterprises and other stakeholders;
- Speed up enterprises' take up of new business attitudes (R&D+I, internationalization, networking, technology transfer ...).

A quote

“Although much of enterprise and innovation support is delivered through grants, there are early indications that loans are more effective than grants. There are also signs of the effectiveness of non-financial, “soft” support such as business

advice. There are also some hints that combining financial and non-financial support in one package contributes to impact.”¹ - DG Regio.

References

- [1] DG Regio: Regional Focus, February 2012: “What are counterfactual impact evaluations teaching us about enterprise and innovation support?”
- [2] EURADA: All money is not the same.
- [3] PRO INNO EUROPE: Making public support for innovation in the EU more effective.

¹ Regional Focus, February 2012: “What are counterfactual impact evaluations teaching us about enterprise and innovation support?”

Article n° 5 Universities in regional innovation policy

Universities can have an impact upon regions through their contribution to human capital, economic, social and cultural development.

Written by Christian Saublens

The concept

Universities, even as a distinct organization from their R&D centres, are part of the research triangle or the quadruple helix innovation system. Indeed, universities can contribute to regional development through their involvement in:

- training and education;
- attracting and retaining talent;
- providing vocational/lifelong training;
- stimulating R&D+I activities and enhancing innovation through research;
- entrepreneurship, via activities such as:
 - promoting entrepreneurship;
 - developing new businesses (spin offs);
 - collaborative R&D+I projects;
 - offering high added-value services;
- leveraging knowledge from:
 - marketing project outcomes;
 - technology/knowledge transfers;
 - small business consulting;
 - placing talented people in SMEs;
- offering access to local infrastructure including:
 - preincubators;
 - incubators;
 - science/technology parks;
 - laboratories shared with regional players;
 - living labs
- economic coordination by means of active participation in structures such as:
 - clusters;
 - university/SME interfaces;
 - seed/spin-off capital funds;
- development of public-private partnerships.

How to implement it?

Involve university representatives in the governance and implementation process by designing ad hoc financial mechanisms. Unfortunately, in some regions there is a disconnection between university excellence and the local economic tissue, as well as a lack of systematic approach to assess potential commercial applications of knowledge created by local universities. Sometimes, universities and enterprises seem to live in two separate worlds. The means of involving universities are critical: often regional public stakeholders face the dilemma of providing additional funding to universities to develop schemes to develop local enterprises or to support local enterprises in helping them to access expertise from universities (vouchers, PhD placements ...).

What can be expected?

- Aligning universities' activities with local priorities and emerging opportunities;
- Better collaboration between universities and enterprises;
- Enhancing knowledge creation;
- Improving knowledge transfer and absorption by enterprises;
- Upgrading of skills;
- Creation of start-ups, based on university findings;
- Solving problems faced by local enterprises.

A quote

"The university is the institution in society most capable of linking the requirements of industry, technology and market forces with demands of citizenship." - Gerard Delanty.

References

- [1] DG Regional Policy: Connecting Universities to Regional Growth: A Practical Guide.
 [2] DG Education and Culture: 30 Good practice case studies in university-business cooperation.
 [3] Center for American Progress: Universities in Innovation Networks - The Role and Future Promise of University Research in U.S. Science and Economic Policymaking.

Article n° 6 Consensus building in regional innovation policy

Consensus building is an interactive conflict resolution process with involvement of numerous parties to solve complex situations and to come up with mutual agreements – in the framework of regional innovation policy consensus building is applicable for different purposes like building the regional vision, developing the regional innovation strategy as well as for conceptualisation and implementation of policy instruments.

Written by Hans-Christian Jäger

The concept

In opposite to the top-down-approach which is usually neglecting the opinions of the regional stakeholders the consensus building approach allows various stakeholders to jointly find mutually acceptable solutions for the regional innovation policy in the light of their respective interests and capabilities. Due to the complexity and diversity of these interests and capabilities – but also due to limited financial and human resources in regional innovation policy – a common mutual understanding with agreement on the most important topics from the regional point of view is necessary.

The “high art of consensus building in regional innovation policy” is to agree on a regional innovation policy with clear priorities for key enabling technologies and for distinctive powerful innovation instruments. It has to be ensured that resources are not spread too thinly and too widely just to give every stakeholder something with minor or even no impact on the regional innovation capacity. Resolving the conflicts of interests of individual stakeholders and fostering the unique selling proposition of the region by shaping the regional technology and innovation profile with critical mass is a challenge which nowadays has still to be mastered in many European regions.

As regional innovation policy is always in movement due to political changes, new insights into the effectiveness of single instruments or due to changes in economy and technology, the respective consensus building in regional innovation policy has to be a continuous and long-term process in order to ensure the “just-in-time” improvement of the regional innovation policy and its adaptation according to changing framework conditions.

How to implement it?

Every process like the consensus building in regional innovation policy requires clear leadership and a process moderator. Both tasks must not necessarily be carried out by the same organisation. The leadership is ideally taken over by the public authority being responsible for the regional innovation policy and having sufficient influence on the required financial resources while the process moderator can have a neutral role in

the regional innovation system in order to facilitate the consensus building.

Experiences of former RITTS and RIS projects (see also [1] and [2]) point out the importance of a Steering Committee (SC) for the consensus building process and identification of core issues. This SC is composed by the most relevant stakeholders. Its size needs to be manageable with a recommended number of approx. 15 to 25 members. The question whether individual companies should be members of the SC is discussed very controversially among experts and practitioners and handled in different way in the regions. On the other side there is no doubt about the fact that mutual confidence and trust among the SC members and further regional stakeholders is smoothing the decision making procedures substantially. Confidence and trust can be achieved by establishing personal relationships with intensive communication among the stakeholders and involving them in surveys and studies. When starting a consensus building process on regional innovation policy it often turns out that the relevant stakeholders even don't know each other. Improving the interchange among regional stakeholders is at the same time increasing the transparency of the regional innovation system and the candor of stakeholders' contributions and provided information, e.g. when it comes to the decision on the key enabling technologies for the region or allocation the responsibilities to singles implementation measures of the regional innovation policy.

Another important success factor for the consensus building process is the objectivity of available information about regional companies' needs in innovation, their satisfaction with offered innovation services and its impact on the companies. Therefore the direct participation of regional companies in large scale surveys is required – the larger the sample the better. This information gathered directly from the customers of the regional innovation policy helps to avoid unnecessary interpretation of what could be the companies' needs and their perception of the innovation services.

Beside the Steering Committee, large scale surveys and studies with direct involvement of the stakeholders working groups on specific topics are also a helpful instrument in the consensus and decision making process.

What can be expected?

- Improved collaboration and innovation culture in the region regarding innovation policy
- Increased acceptance of regional innovation policy and increased contribution by regional stakeholders
- Higher quality and reliability of gathered data and information
- Joint forces and effort for more effective and efficient regional innovation policy
- Smart regional innovation strategy with focus on regional capabilities and potentials.

A quote

“The RIS3 process for Regional Innovation Strategies for Smart Specialisation needs to be interactive, regionally-driven and consensus-based. This is because, far from the stereotype of heroic individuals in labs and garages, the innovation process is increasingly a collective social

endeavour in which success, for regions as well as firms, depends on the inter-organisational capacity to absorb, generate and exchange knowledge in a timely and cost-effective manner.” [1]

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Article n° 7 Cross-border regional innovation policies

Cross-border regional innovation policies are policies that are defined according to “functional areas”, crossing over boundaries of administrative regions.

Written by Claire Nauwelaers

The concept

Cross-border regional innovation policies are policies that are defined according to “functional areas”, crossing over boundaries of administrative regions. It is widely acknowledged that proximity plays an important role when innovation is seen as an interactive process: development of innovation relies on trust, facilitated by face-to-face exchanges and geographic, socio-cultural and cognitive proximity. This proximity is seldom confined into administrative borders: for actors located in a region, the relevant resources and partners for innovation, bringing the benefits of proximity, may well be located in bordering regions, within or outside the country. Hence policies have to adapt to this reality: they have to be designed and implemented at the « right » spatial scale and facilitate - or at least not hinder – favorable interactions for innovation, even if these go beyond their jurisdiction.

What can be expected?

Cross-border innovation offers two types of potential opportunities:

1. Combining the advantages of proximity and diversity: the combination of different factor endowments, industrial and research traditions, skills sets, connections to international networks, etc., in regions and countries on different sides of the border, provides an extended range of opportunities for innovation. Such a wider pool of actors, still working in proximity, enhances the chances to build relevant synergies for innovation, and to create “new combinations” of ideas and assets with commercial value. These new combinations can lead to the identification of new diversification paths for the regional economies, thus helping to address a frequent regional development problem, that of lock in. Many regions face inertia and vested interests from incumbent actors, which makes changes of regional trajectories difficult. Combining actors and resources over the border can foster changes and unlock new regional potential.
2. Creating higher and more attractive critical masses: the joining up of actions and resources of complementary innovation actors over the border can create critical masses around innovative combinations of expertise. The expansion of innovation networks and clusters

over national or regional borders augment their size and their outreach. Cross-border strategic initiatives in innovation enhance the visibility and attractiveness of the whole area for talent, companies, capital and investors. In addition, collaborative innovation partnerships crossing borders opens the possibility to access more diversified public funding sources.

How to implement it?

Identify the functional region for innovation

Cross-border regional innovation policies should be implemented in areas corresponding to functional regions: functional regions for innovation are regions which show a high density of internal interactions in innovation-related activities. Examples are the Öresund between Denmark and Sweden, the Top Technology Region-ELAt between Germany, Belgium and the Netherlands and Centrope at the border between Austria, Hungary, the Czech and the Slovak Republic.

Not all cross-border areas qualify as functional regions for innovation: there is a need to check whether complementarity of expertise and assets are present and can be exploited in view of mutual benefit, whether sufficient critical mass around innovative activities is present (or can be developed); and whether existing collaboration barriers are low or can be overcome. The following conditions need to be present on either sides of the border:

- Productive specialisation: industrial structures and knowledge bases need to show a sufficient degree of complementarity, or “related variety” (i.e. they need to share a common knowledge and skills base);
- Business innovation: development paths need to be based on innovation and not on exploitation of costs differentials, business innovation practices need to be open to external cooperation, and show a high degree of absorptive capacity;
- Knowledge infrastructure: an advanced set-up of research organisations, educational bodies and transfer agencies need to be present in the area; they need to show a high degree of orientation towards the needs of the economy and be adaptable to the different institutional contexts over the border;
- System interactions: a high level of cross-border knowledge flows and interactions needs to be present, most notably in the private sector, reflecting the cross-border innovation potential;
- Accessibility: physical barriers to knowledge, people, goods and services flows within the area should be low; external accessibility to the cross-border area should be high;
- Socio-cultural context: there needs to be a sufficient degree of socio-cultural proximity, including language proximity, within the area;
- Institutional context: it should be possible to overcome regulatory, administrative and

institutional barriers created by the border. Differences in institutional contexts for innovation policies (e.g. extent of decentralization of powers) should not constitute strong obstacles for cross-border cooperation.

Define a strategy and a governance framework

A suitable governance framework for cross-border regional innovation policies needs to be implemented. This involves cooperation between actors on either sides of the border on the following:

- Defining joint strategic orientations: this involves an effort to identify and define a vision and joint interest in developing the cross-border area, within a “positive sum game” framework (by joining forces, all sides recognize they will gain advantages);
- Aligning innovation policies: the goals and priorities set to innovation policies over the borders need to be made compatible and complementary;
- Defining bridging organisations: cross-border governance structures need to be set up to manage the mutual exchanges and the cooperation, and provide joint fora to define priorities and actions (e.g. European Grouping of Territorial Co-operation, or cross-border committees);
- Identifying and establishing financial incentives: public funding sources for cross-border innovation structures, programmes and projects (such as Interreg) need to be made available and their effectiveness checked in the context of the strategy and vision for the cross-border area.

Develop and implement cross-border policy instruments

Cross-border policy instruments can be established to support innovation across administrative borders. These range from limited voluntary exchanges of experience towards genuine joint instruments involving joint commitment of funds. It is important to check their effectiveness and assess the mutual benefit gained from such initiatives and programmes. Private financing (or co-financing) of initiatives and policies is a vital condition for their effectiveness.

A variety of instruments can support cross-border innovation:

- Joint study programs and exchange of students and teachers in Higher Education establishments;
- Joint talent attraction initiatives;
- Cross-border public research funding programmes;
- Cross-border cooperative research funding programmes;
- Cross-border innovation vouchers;
- Joint technology transfer infrastructure;
- Joint competence centres;

- Cross-border technology parks or incubators;
- Cross-border soft support to innovative start-ups;
- Cross-border venture capital schemes;
- Cross-border clusters or poles promotion;
- Joint branding of cross-border area as knowledge region.

A quote

“An investment on one side of the border is better than no investment at all” - Quote from the mayors of Lulea (Sweden) and Oulu (Finland): the two regions form the Bothnian Arc functional region, which is an attempt to overcome the drawbacks of peripherality by developing a high-tech hub in the North.

References

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Article n° 8 Emerging sectors and industries as important element of regional innovation policy

The idea of emerging sectors and industries is based on the need of long-term changes of the European industrial base including service industries. Europe has to identify and exploit new growth areas and business opportunities in order to restore the economic growth and address the societal challenges. The process of unlocking the growth potential requires relevant policy alignment where the innovation and cluster policies are the key policy instruments to support this.

Written by Pavla Bruskova

The concept

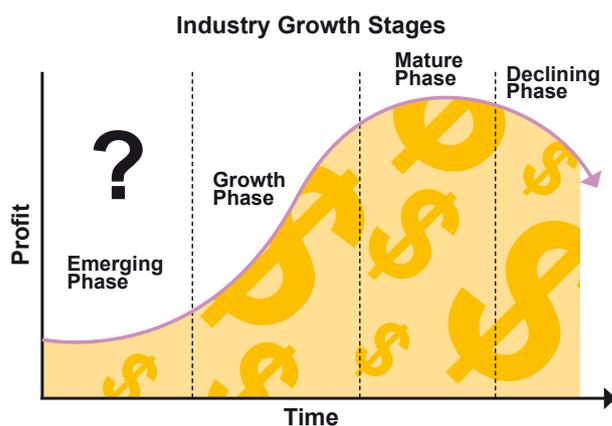
Emerging industries and services are broadly understood as entirely new industrial sectors driven by applications of new technologies or other radical innovations or existing economic activities that undergo renewal and transformation, evolving and upgrading and/or merging into new industries.

New industries and services emerge not only as a result of new technologies and entrepreneurial savvy, but also as a result of the renewal, transformation or intersection of existing economic activities. The evolution of economic activities occurs to take advantage of new opportunities (e.g. technological advances) and address new needs (related to e.g. climate change, energy and

public welfare). Emerging industries can thus be grouped into three different types:

1. Existing knowledge applied in new ways to existing needs;
2. Existing knowledge applied to new needs; and
3. New knowledge applied to existing or new needs.

These industries are not captured by statistics, they may be conducted by firms operating in different traditional industries but they are unified by benefiting from the global demand developing around the needs related to the above challenges. They are emerging because in many cases they have not yet significantly performed; they are only being formed / early in the industry lifecycle (see Investopedia¹).



Source: Investopedia

According to the Investopedia definition, emerging industry is a group of companies in a line of business formed around a new product or idea that is in the early stages of development. An emerging industry typically consists of just a few companies and is often centered around a new technology. Barriers to entry in emerging industries can be low because of limited competition, but it may be difficult to secure financing to grow the company. Also, marketing expenses are high, because the product or service for sale is often unproven and companies in an emerging industry must convince both investors and consumers that the product or service they are selling is valuable. Investing in an emerging industry is considered a high-risk strategy, but it can also bring high rewards.

Emerging industries are characterised by a high growth potential rather than by actual high growth: even if they may be growing faster than the overall economy, most of their growth potential has yet to materialise and their growth rates are usually still lower than those of other industries that have already entered their high growth phase. They feature by the following:

- They are usually formed on the basis of a new product, service or idea and come into being when consumer needs change or when new socio-economic conditions emerge. They are most often driven by KETs ², new business models, such as innovative service concepts, and by societal challenges that industry must address as a matter of survival (climate, society changes, etc);
- They tend to be research and knowledge intensive industries, as their emergence and development usually results from applied creativity and disruptive innovation;
- They typically nurture entrepreneurship and an innovative spirit, entrepreneurs being the essential actors linking the wealth creation, economic growth and jobs;
- They trigger and enable structural change in the market, giving rise to new suppliers, customer bases, business models, products and services;
- They are characterised by a state of disequilibria, as their emergence often results from a disruptive idea that impacts value chains, social acceptance and market demand, and triggers, at an aggregate level, a re-allocation of resources from pre-existing activities and companies to new ones;
- They have a high propensity to cluster, as companies in emerging industries tend to agglomerate and do so geographically.

The following six emerging industries were identified:

- Eco-industries - cleaner technologies, products and services (pollution control, collection and treatment of waste and sewage, renewable energy, recycling/recycled materials, sustainable water management, and eco-construction);
- Cultural and Creative industries - creation, production and/or distribution of creative goods and services (printing, publishing, advertising, architecture, art, crafts, design, fashion, film, music, performing arts, R&D, software, toys and games, TV and radio, and video games);
- Mobility industries - products and services which aim to optimise the mobility of goods and people by combining or connecting different means and modes of transport, by optimising the effectiveness and resource-efficiency or reducing the cost or environmental impact of mobility (use of new materials, new energy sources and grids);
- Mobile services industries - provision of telecommunication, information, and entertainment services, including voice, internet, SMS, text, and other data services.
- Experience industries - innovative products and services to provide customers with “experiences” that stimulate emotions and senses, move, entertain and surprise, thrill, enthuse and involve (sectors of tourism, culture, or leisure)
- New health industries - innovative products and services in the fields of medical technology, medical and surgical equipment and devices, health information technology, health infrastructure and services, clinical trials, preventative healthcare and general well-being.

How to implement it?

The emerging industries mapping is the basic methodology for RIS to identify the hot-spots and hubs of emerging industries for the targeted policy support within a region, however:

1. A little or no homogenous statistical data are available about emerging industries on regional and national levels;
2. The instances of emerging alliances or isolated activities are unlikely to be in volumes (when compared to regional economic structures) that we can recognize as critical mass;
3. The level of how the trends/challenges penetrate

traditional industries and become integral to strategies of firms and knowledge institutions in different regions can vary significantly.

The desk research should focus on identifying key firms, knowledge institutions and intermediary organisations (including clusters) that play a role in regional competitiveness.

The interview-based qualitative research will generate unique knowledge about the key regional actors and the type of emerging sectors or industries to be included in the regional innovation support strategies.

The analytical work will code and analyze the results of the researches and generate recommendations for policy changes to help the regions, their firms and knowledge institutions achieve better alignment with global demand trends. Whenever possible and realistic the analysis should utilize the cluster infrastructure as delivery mechanism for the redesigned policy. Clusters in how they have been operating in Europe have a considerable potential for performance improvement and new tools to achieve this are being explored³.

What can be expected?

- The mobilisation of policy makers for the conscious and proactive growth support measures once the emerging industries research outputs are incorporated in the RIS.
- Implementing policies that will help support the regional development and optimise economic benefits in terms of competitiveness, growth and wealth creation, as well as societal benefits.
- Future returns on intervention investments, wealth generation and retention functions of regions and countries are high once the focus of interventionist policies is on this phase of industry formation as it happens right before a significant expected growth phase (the way to maturity).
- Better cluster-specific conditions to facilitate the emergence of new industries through clusters in the context of the smart specialisation strategy; strengthening local and international cluster cooperation to create new competitive advantages in particular for addressing emerging industries.

A quote

“Unlike in the case of traditional industries, the rationale for policy intervention in emerging sectors goes beyond market and system failure arguments and is rather based on technology and market opportunities and challenges.

Policy makers use other policy approaches, in addition to cluster policies, to stimulate new growth areas and align other policy instruments ... direct grants, technical support through dedicated services and projects, public procurement of pre-

commercial solutions and facilitating access to private investors.” - from the TACTICS publication.

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¹ <http://www.investopedia.com/terms/e/emergingindustry.asp>

² KETs - Key enabling technologies include advanced materials, nanotechnology, micro- and nano-electronics including semiconductors, biotechnology and photonics.

³ www.clustrat.eu.

Article n° 9 Frugal innovation

As a consequence of the financial crisis, western enterprises will have to change the way they innovate as less funding sources will be available and consumers will have less purchase power. At the same time innovators of emerging countries have more than ever opportunities to address the needs of massive population getting out of poverty.

Written by Christian Saublens

The concept

Frugal innovation - also known as reverse innovation or Jugaad - is the ability of enterprises to put onto the market solution/products/services/opportunities arising from adversity circumstances. This can be the results of scarce resources, thinking in a flexible manner, targeting simplicity...

Both western multinationals (General Electric, Siemens, Danone, Renault, Nokia) and enterprises of emerging countries (Tata, Haier, Airtel India) or local start-ups of those countries (Microventures, Safaricom, Selco) are developing successful initiatives. Enterprises developing frugal innovation focus on simplicity, from the design to the after sale system of their products/services. They also interact with their consumers.

For more examples of frugal innovation, go to www.jugaadinnovation.com

How to implement it?

To develop a new approach to innovation by providing market intelligence, demonstration facilities, networking opportunities with partners from emerging countries, feasibility studies, coaching, ... In some cases the support should

be funding to allow redesigning of the products/services or even R&D+I activities, in order to develop totally new products/services/solutions.

What can be expected?

- New type of entrepreneurs/innovators
- New market opportunities through product or geographical diversification
- Niche markets
- Response to social and societal needs

A quote

"Renault's Logan car was a bottom-up approach to rethink the costs of a car. Driven by three simple guidelines: modern, reliable and affordable. The company accomplished dramatic savings without compromising their core principles." - Carlos Gohm, Renault's CEO

References

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Article n° 10 Economic development for cultural and creative industries

Cultural and creative industries (CCIs) have a great potential to create growth and jobs in Europe. In many cities and regions CCIs have a significant impact on smart, sustainable and inclusive growth. In the EU cultural and creative sectors account for 3.3 % of GDP and employ 6.7 million people (3 % of total employment). Because of a high rate of self-employed people in cultural and creative industries the number of workers is even higher. Due to these facts the strengthening and support of CCIs form a central part of smart specialisation strategies on local, regional and national levels, also in rural areas.

Written by Dr Daniel Kipp

The concept

The 'Green Paper - Unlocking the potential of cultural and creative industries' from the Commission uses a broad definition for cultural and creative industries:¹

'Cultural industries' are those industries producing and distributing goods or services which at the time they are developed are considered to have a specific attribute, use or purpose which embodies or conveys cultural expressions, irrespective of the commercial value they may have. Besides the traditional arts sectors (performing arts, visual arts, cultural heritage – including the public sector), they include film, DVD and video, television and radio, video games, new media, music, books and press. [...]

'Creative industries' are those industries which use culture as an input and have a cultural dimension, although their outputs are mainly functional. They include architecture and design, which integrate creative elements into wider processes, as well as subsectors such as graphic design, fashion design or advertising.

Many other industries are closely connected to CCIs, e. g. tourism and new (information) technologies. CCIs can act as an innovation catalyst for these other sectors due to various interdependencies.

The Commission has acknowledged the meaning of CCIs for the creation of growth and jobs. On the regional and local level several public authorities have developed a wide range of measures to support these industries.

How to implement it?

The Commission identifies the following key drivers to support the development of CCIs and make the most out of the opportunities derived from these industries:²

- Offer good basic conditions for CCIs (increasing the capacity to experiment, innovate and succeed as entrepreneurs; and providing easier access to funding and the right mix of skills);
- Help CCIs to develop in their local and regional

environment as a launch pad for a stronger global presence, including through increased exchange and mobility;

- Use spill-over effects of CCIs on a wide range of economic and social contexts.

In order to provide optimal starting conditions for companies from CCIs supporting measures must focus on various levels. The Commission specifies significant starting points to provide a suitable legal framework (e. g. modernization of the state aid rules), exchange of good practices and 'peer learning' and plans to provide funding instruments under the new Multiannual Financial Framework 2014-2020 of the EU.³

A major limiting factor is the financing of CCIs, which is also confirmed by a study on behalf of the Commission published in October 2013. Due to this fact a new Financial Guarantee Facility scheme under the new Creative Europe programme is envisaged. This guarantee, which will operate from 2016 and specifically target SMEs, will share the risk on loans offered to them by banks. Creative Europe will set aside more than €120 million to fund the guarantee, which is expected to yield more than €750 million in affordable loans.⁴

A regional experience

In the following the focus lies on supporting measures for CCIs on local and regional level. During the last years the city of Oldenburg in Weser-Ems region (Germany) has developed and implemented several measures to support CCIs in the city and is the leading example in this regard in the Weser-Ems region. The participation of the city of Oldenburg in the INTERREG IV B project 'Creative City Challenge' (2009-2012) formed an important starting point in this regard. Twelve project partners from ten cities covering six EU Member States were involved in this project.⁵ Subsequently to the participation in this project, the following measures were implemented successfully in Oldenburg:⁶

- Network 'cre8 oldenburg': A network for all CCIs in Oldenburg was established by the

business development department of the city of Oldenburg together with various companies and stakeholders from the creative industry. In the last years, the network developed very dynamically and it builds the organisational framework for collaboration between companies from the CCIs in Oldenburg.

- Events and networking: In regard to networking activities several events are organized regularly. These include, inter alia, larger 'open space' events, 'bar camps' taking place annually on various topics, the organization of regular meetings, regulars' tables for specific target groups (e. g. web designers) and festivals.
- 3X3' – cooperation between artists/ entrepreneurs from creative industry and established companies: In the 3X3 project, three artists and three employees of a company supported by a coach develop creative solutions to an actual operational problem of the company. The tasks can, for example, originate from the areas of corporate strategy, product innovation, organizational development, human resources, marketing, communication or management questions.⁷
- Website www.cre8oldenburg.de: To promote CCIs in Oldenburg and make the Oldenburg creative industries more transparent and visible, an online information platform was established. Approx. 180 members have registered and can present themselves here. Through a marketplace function of the platform, they can exchange offers and requests.
- Coaching for start-ups in CCIs: Within the pilot-project 'Ideenlotsen', self-employment is facilitated through the coaching of companies and start-ups from CCIs. This project was finished already.
- Technical plus creative approach: The FabLab Oldenburg (fabrication laboratory) opens its doors with offers for entrepreneurs, start-ups, pupils and students and teachers to get to know and to learn working with high tech machines, e.g. 3D printer, laser cutter and CNC-mortizer.
- Urban and socio-cultural development of the train station area in Oldenburg to a creative location: The support of CCIs in Oldenburg was also accompanied by urban developments in the city. Within the process, the City of Oldenburg started to transform the train station area into a creative location. Various activities have been initiated for this purpose (participation processes, workshops, exhibitions, excursions, etc.) and include the temporary use of vacant buildings by artists and cultural workers according to the principle of 'co-working space'.

The measures mentioned above show the great variety of activities in the city of Oldenburg. It becomes apparent that these are predominantly 'soft measures'. In Oldenburg, they result in a very open dynamic climate where creative entrepreneurs take the initiative to implement further projects.

What can be expected?

Investments in CCIs can have a significant impact on smart, sustainable and inclusive growth, e. g.:⁸

- CCIs are vital for the emergence of new economic activities and the creation of new jobs,
- CCIs have the potential to increase the quality of life in urban and rural areas,
- CCIs can contribute for the social integration of marginalised groups,
- CCIs as catalysts for structural change and diversification of economies,
- CCIs as location factor for attracting enterprises into cities and regions,
- CCIs as magnet for tourism, to generate a creative buzz, to attract talents and to contribute to a positive image of cities and regions.

A quote

"Europe's cultural and creative sectors are not only essential for cultural diversity; they also contribute a great deal to social and economic development in our Member States and regions. At the local and regional level, strategic investments in these sectors have often delivered spectacular results, as exemplified by many European Capitals of Culture. They also produce important spill-over effects, as well as enhancing a dynamic image of an attractive and creative Europe which is open to cultures and talents from across the globe."
- Androulla Vassiliou, European Commissioner for Education, Culture, Multilingualism and Youth.

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- [5] S3 Platform 2012: Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3).

¹ COM(2010) 183, p.6.

² COM(2010) 183, p.7-16.

³ COM(2012) 537, p.3.

⁴ COM IP/14/4.

⁵ see: www.creative-city-challenge.net.

⁶ for further information see: www.cre8oldenburg.de.

⁷ for further information see: www.3mal3.net.

⁸ S3 Platform: Guide to Research and Innovation Strategies for Smart Specialisation (RIS 3), p.88-91.

Article n° 11 First time innovator

According to different surveys, only 50 % of SMEs are engaged in some type of innovation. This means that there is a need to increase the number of SMEs engaged in this process.

Written by Christian Saublens

The concept

Provide support to SMEs to identify their potential of innovation and to engage in an innovation process. This supposes to overcome internal barriers (management, market intelligence, access to finance and skills...) and also to assess the capacity and necessity to develop partnerships with knowledge, technology or solution providers.

How to implement it?

Build a comprehensive support service scheme to help entrepreneurs in becoming self-confident in their ability to engage in innovation projects. Such a scheme could, for instance, include services such as innovation business plan assessment, brainstorming workshops to identify sleeping innovation projects, vouchers to acquire innovation management capacity, mentors to implement innovative projects, ...

What can be expected?

An increased number of entrepreneurs engaged in innovation activities.

A quote

Through a distinguished method track down companies which are not yet familiar with the innovation process. - Syntens, a Dutch consulting company

References

Syntens and the Competitiveness and Innovation Framework Programme, January 2011

Article n° 12 RIS3 focus on results

Written by Hans-Christian Jäger

The concept

With implementation of the Europe 2020 Strategy the European Commission and all Member States are aiming at delivering smart growth in the area of innovation as one out of 5 goals. [1] To monitor and advance national implementation of the Europe 2020 strategy, Member States were invited to set their own targets and to spell out detailed actions as part of their national reform programmes. These programmes are reviewed annually at EU level as part of the European Semester of economic policy coordination. [2]

The stronger focus on results put the emphasis on the real impact of the strategy programmes rather than focus on their input. Therefore, intended results have already to be fixed ex-ante for each programme as inherent part of the programme design. Every result indicator reflects an objective of the overall programme or of a single related measure (what should be achieved) and measures the achievements as quantitative or qualitative information. The target of the result indicator is the planned value, the baseline is the value before

intervention of the programme/measure has started.

Monitoring deals with data gathering for the defined indicators in order to verify whether the resources as spend correctly on the policy instruments (input) and on the delivery of the planned outputs as well as whether the actual result indicators are evolving in the intended direction.

Evaluation is assessing the impact = contribution of the intervention to the result indicators. This requires the understanding why and how the impact on the result is being achieved. Success factors as well as barriers can be identified with this approach. [3], [4]

How to implement it?

With a level of 2.06% for combined public and private investment in R&D in 2012, and limited progress over time, the 3% headline target for 2020 is unlikely to be met for the European Union. Investment in R&D is forecast to increase to 2.2% by 2020. If Member States meet their national

targets, this share could amount to 2.6%. [2] What are the root causes for this huge gap between the envisaged 3% R&D target figure and reality of R&D and innovation activities in the European Union? One reason is for sure the financial and economic crisis of recent years. Furthermore the R&D headline indicator is too limiting and not sufficient meaningful for the wide-ranging bandwidth of innovation. Therefore the European Commission has proposed in September 2013 a new indicator for innovation composed of 4 components. [5] In fact, the proper selection of meaningful indicators for the defined objectives is a very important success factor for an effective monitoring and evaluation of results.

Further barriers for focus on results have been revealed by several European projects with active participation of the author in the recent years. [6] Here are some main findings:

- Even though the European Commission is fostering the awareness of the responsible programme authorities for the importance of the results of their programmes the “result orientation” is often less pronounced than the “input orientation” because the focus on input was usually dominating over the last decades and the result orientation requires more effort in monitoring and evaluation.
- Sometimes the responsibility for the management of regional innovation policy instruments, the budget responsibility and/or the monitoring/evaluation responsibility is split among several institutions which can and do lead to delays in information exchange or even to information gaps in case of weak cooperation among these organisations or different opinions.
- Companies are often not used to contribute to monitoring/evaluation activities by providing information about the results of the funded projects. Often there is no obligation for the beneficiary to participate in such activities and to give response. However, even in case of an obligation, it turns out that companies are poorly participating or providing low quality data. Those regional administrations with better relationship to their regional entrepreneurs seem to receive better quantitative and qualitative data from beneficiaries.

Thus, it is of utmost importance to improve the monitoring/evaluation culture among the responsible politicians and managers of regional innovation policy instruments. The best and most pragmatic way is by “doing and learning” and by convincing with facts. Often the proposed monitoring/evaluation methodologies are too complex and sophisticated with the consequence that the responsible authorities and intermediate organisation are not able to apply them even if they want to. This should also be taken into consideration for the European Commission’s activities on State Aid Modernisation.

What can be expected?

- More effective and efficient innovation policy instruments with increased knowledge about success factors based on the monitoring/evaluation of results;
- Higher competitiveness of the beneficiaries of regional innovation policy;
- Higher satisfaction of the beneficiaries with regional innovation policy and related state aid schemes;
- Improved relationships among regional authorities responsible for innovation policy and beneficiaries of the regional innovation policy.

A quote

José Manuel Barroso, President of the European Commission:

“Europe 2020 is the EU’s growth strategy for the coming decade. In a changing world, we want the EU to become a smart, sustainable and inclusive economy. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion. Concretely, the Union has set five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy - to be reached by 2020. Each Member State has adopted its own national targets in each of these areas. Concrete actions at EU and national levels underpin the strategy.” [1]

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- [4] Anna Burylo, Evaluation Unit, DG for Regional Policy, European Commission. European Territorial Cooperation Strategic Approach 2013+.
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Article n° 13 Knowledge transfer in RIS3

Written by Dr. Daniel Kipp

The concept

Knowledge transfer is a term used in economics. It refers to the “dissemination of technical or technological knowledge from creation towards the use in the production process. Knowledge transfer means the institutionally-planned, time-limited, private or state-supported process of diffusion or spread of technology to economic utilization by third parties. A transmission takes place generally by a legal act (e.g. license agreement). Knowledge transfer can take place among universities, research institutions, inventors and companies within an international company, between companies or between industrialized and developing countries.” [1]

The underlying rationale behind the Smart Specialisation Strategies (S³) concept is that by concentrating knowledge resources and linking

them to a limited number of priorities economic activities, countries and regions can become - and remain - competitive in the global economy. This type of specialisation allows regions to take advantage of scale, scope and spillovers in knowledge production and use, which are important drivers of productivity [2].

An efficient knowledge transfer is vital in order to ensure successful implementation of a RIS-3-strategy in a region and a proper operation of a regional innovation system.

How to implement it?

In a regional innovation system knowledge transfer is provided by a variety of intermediaries. The following figure shows examples of the different intermediaries in the German innovation system (Figure 1).

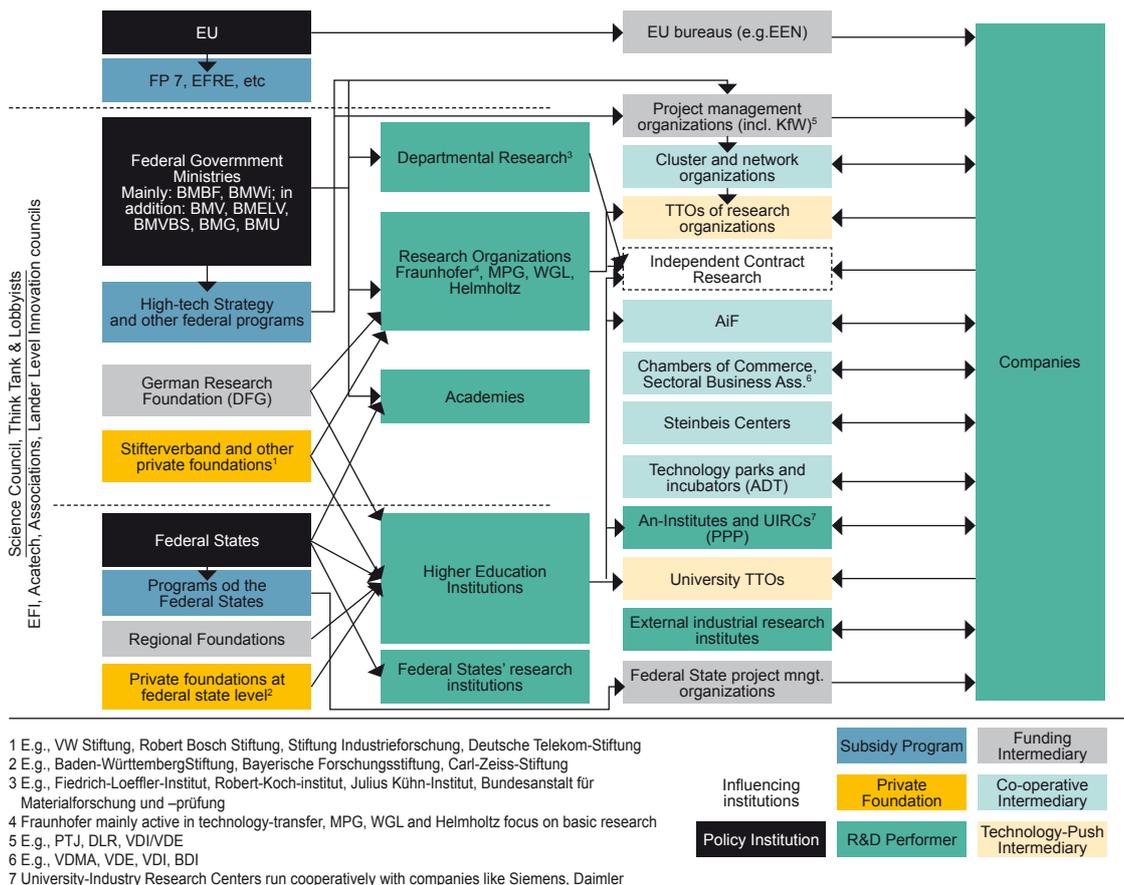


Figure 1. Knowledge Transfer System in Germany (Koschatzky, Knut; Kroll, Henning; Schricke, Esther; Brandt, Tasso 2011) [3]

Depending on the type of intermediary organization, the transfer approach can also be different. Technology contact points at universities or research institutions usually follow a supply- and diffusion-based approach, according to which the existing “knowledge” of the institution is optimally disseminated. In contrast are more demand- and needs-based transfer approaches, which are mainly practiced by business-oriented intermediaries (chambers of commerce, economic development agencies, technology parks, incubators, universities, research centres, TTOs, etc.). These are usually specific issues of companies for which external knowledge is sought.

The development of knowledge transfer is a key field of action of an innovation-oriented regional development. Support for knowledge transfer is in many EU Member States and regions an important funding area of the EU structural funding 2014-2020. A well-functioning knowledge transfer depends on a number of success factors (matching of portfolios between research institutions and companies, commercial orientation of research institutions, absorption capacity of firms, trust, proximity...). However, several studies show that knowledge transfer is often not yet working well. For this reason, S³ processes also increasingly deal with knowledge transfer.

A regional experience

As part of the S³ process in Weser-Ems, the aim is to develop the knowledge transfer system of the region. Therefore, the approach of “knowledge networking” was chosen. The implementation of knowledge networking in Weser-Ems takes place through the so-called “Strategy Councils”. These are think tank groups of regional experts from important sectors in the local economy of the Weser-Ems region [4].

What can be expected?

For the success of a RIS-3 process an efficient knowledge transfer is of central importance. S³ approaches have to remain inherently dynamic. Otherwise there is a serious danger that the S³ approach could be misunderstood as a one-time exercise aimed at mechanistically developing priority lists and fixed monitoring systems – which until the end of the support period relieves policy makers from reconsidering their objectives, as Baier / Kroll / Zenker mention in their study about place-based regional development strategies in Germany and Austria [5]. In this context sustaining the process and filling it with life is a much more ambitious quest than merely forcing regions to submit strategies of a defined nature. A strategy document will not ensure a viable and lasting change in policy [6].

A quote

“The ultimate aim is to foster and develop all over Europe the kind of world-class excellence in science and innovation that today is confined to only a few EU regions. That is a necessity if we are to transform Europe into an Innovation Union and create jobs where they are most needed.”

Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science [7]

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Article n° 14 Research Infrastructures in the context of the RIS process

As the economic, technological and social challenges of creating national and regional competitiveness have become increasingly difficult to address in a valuable way, growth-friendly factors like research infrastructure need to be exploited in their full capacity and capabilities.

Research infrastructure (RI), along with the human capital concentrated around it, is recognised as a prerequisite for excellence in science, an enabler for industrial application of scientific results and a way to address the weaknesses in science and innovation policy coordination and networking at the European and region level.

Written by Teodora Georgieva

The concept

Research infrastructure is of prime importance for bringing into practice of the objectives of EU policy in the field of science, technology and innovation. RI projects have a large proportion of EU funds on the development of scientific and innovation potential. Given its importance, RI is made a priority in various EU funding instruments (mostly through framework programmes), policy documents (ESPRIT, Lisbon Strategy, ERIC, Europe 2020, etc.) and strategic roadmaps (OECD provided a Report on roadmapping of large research infrastructures where 20 roadmap exercises are mentioned). The common aim of these European initiatives is to boost construction and operation of world-class RIs, optimise the exploitation of existing research assets at a pan-European level, balance the research-innovation objectives in a short- and long-term, and augment the socio-economic impact as a result of RI projects governance.

The overwhelming majority of the later ERA related documents describe research infrastructure in a way corresponding with the definition given to the need of the Community Framework Programme for research and technological development, namely “facilities, resources or services that are needed by the research community to conduct research in all scientific and technological fields, including: major equipment or set of instruments used for research purposes, knowledge-based resources, enabling ICT-based infrastructures and any other entity of a unique nature that is used for scientific research along with associated human resources”.

How to implement it?

Within the European database 625 unique Research Infrastructures are registered. Most of them (almost 76%) are low-scale infrastructures (273 of them are built with an initial investment fewer than 20 million of euro, and 123 are built with an initial investment in a range between 20 and 50 million of euro). The large-scale infrastructures

(with an initial investment in a range between 250 and 500 million of euro) account for just over 4%. Approximately 74% of RIs are single-sited. Providers of only virtual services are 3% of facilities, but a great number of single-sited and distributed RIs ensure virtual access to a part of their products/services at a contractual base.

The largest group of RIs is in the field of Environment, Marine and Earth Sciences (24%), followed by Material Sciences, Chemistry and Nanotechnologies (15%) and Life Sciences (14%). Within the different scientific domains the greatest internal dispersion in terms of scale exists in the field of Socio-economic Sciences where 97% of RIs are built with an initial investment fewer than 50 million of euro. There is a lack of large-scale RIs related to this scientific field. The most balanced in terms of scale is the group of RIs in the field of Energy.

The understanding of the nature of the complexity associated with RIs projects is an important precondition for their effective management. The high level of complexity embedded in all research infrastructure projects (not only large-scale ones) derives from sources which are difficult to be included in the standard project management framework because of their creative nature (i.e. impossible to foresee in terms of the expected results), variability in regard to the set and number of stakeholders engaged at the construction and post-construction phase when the research infrastructure is under use (science communities from different countries and with different culture), and multi-functionality which creates real obstacles associated to the process of monitoring, measuring and controlling the outcomes.

RIs projects have primarily a non-for-profit orientation. This is due to the profile of the stakeholders involved (researchers, research institutions, universities, intermediaries, etc.), the activities implemented by using RIs (scientific research, ideas generation, technology development; technical expertise, etc.), and the objectives pursued (concerning sustainable development in its main dimensions: societal,

economic and environmental, in a long-term prospective).

Moreover, the financial resources invested in research infrastructures are part of the EU budget accumulated by member states' shares and do not originate from private sources. Consequently, they are used in a way allowing the contemporary challenges at EU and regional level to be addressed and/or a wider access to the effects gained to be ensured.

An extremely high level of networking and virtuality is associated with RIs projects. It is a result of the fact the science community, which is the main stakeholder in the projects, comprise researchers, research centres and universities located worldwide and using primarily remote access to research facilities. Information and communication technologies and the dynamic trends for their development are, of course, the preconditions which make this linkage possible.

Networking is essential for generating and transferring ideas, knowledge and technologies and creates an environment suitable for embodying them into innovative processes and products. Also, networking justifies the creation of large-scale costly infrastructure which none of the stakeholders can afford and use independently in an effective way.

What can be expected?

- Sectoral value chains
- Innovation hubs
- Regional/sectoral networks
- Innovation clusters

A quote

Research infrastructure is of crucial importance for achieving scientific breakthroughs, technology advancement and knowledge transfer and as such it is a key milestone in the European research agenda and innovation policy. That is why RI is put at the heart of the "knowledge triangle" as a facilitator of the network between research, education and innovation.

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Article n° 15 Financial engineering

It's a combination of various financial instruments aiming at allowing enterprises access to external funding sources. They can be clustered in 4 major groups: grants, loans, equity and guarantees. Most countries/regions are also offering tax holidays.

Written by Christian Saublens

The concept

The concept covers a wide range of tools. Hereafter is a review/definition of the most common ones:

- Business angels (informal venture capital): private individuals who invest part of their estate in start-ups in the form of venture capital and also contribute their personal managerial expertise.
- Business Angels Networks (BANs): standing regional platforms that promote the matching of business angels with potential investees.
- Buyouts: existing investors' shares in a business are bought by the latter's own management team (MBO – Management Buy Out) or by another management team supported by a venture capital fund.
- Corporate venturing: venture capital invested by existing firms for the purpose of funding innovative businesses set up by their own staff or active in industries considered of strategic importance.
- Crowdfunding: a process whereby a large number of individuals – generally web users – fund a project via a personal contribution in the form of equity or a loan.
- Development or expansion capital: financing provided for the growth and expansion of a company, which may or may not break even or trade profitably. Capital may be used to: finance increased production capacity; market or product development; provide additional working capital.
- Early stage (or start-up) finance: equity invested in businesses that are past research and development but need additional funding to market their products and services.
- Equity: ownership interest in a company, represented by the shares issued to investors.
- Expansion: growth, bridging or restructuring capital.
- Factoring: a technique whereby SMEs sell invoices to specialised firms.
- Financial package: a combination of different funding sources.
- Grants: subsidies paid—without an obligation to refund—by public authorities to companies investing in a region for the purpose of facilitating their establishment or expansion.
- Growth accelerator: an advisory and matching platform where tech start-ups and investors meet to allow businesses to access financial resources, new markets and specialist expertise.
- Investment readiness: set of advice given to entrepreneurs in order to better prepare them to meet with potential investors.
- Leasing: hire-purchase of capital goods.
- Loans and debt: the main sources of funding for SMEs offered by banks. Today some peer-to-peer crowdfunding platforms are active in this field.
- Mezzanine: combination of equity and loans. Applicable interest rates are often comparatively high.
- Microcredit: small loans given to an entrepreneur, sometimes an unemployed person, to start a business. The EU Progress Initiative allows up to EUR25,000 per project.
- Proof of concept: finance provided to a researcher's team to support the validation of their business ideas. Often, the financial instrument takes the form of a grants and subordinated loans.
- Quasi-equity investment instruments: instruments whose return for the holder (investor/lender) is predominantly based on the profits or losses of the underlying target company, are unsecured in the event of default and/or can be convertible into ordinary equity.
- Replacement capital (also called secondary purchase): Purchase of existing shares in a company from another private equity investment organisation or from another shareholder or shareholders - an investor buys another's stake.
- Risk capital: Equity and quasi-equity financing to companies during their early-growth stages (seed, start-up and expansion phases) in the hope of a return on investment (ROI) that is both large and speedy, on a par with the level of risk taken.. It includes: (1) informal investment by business angels; (2) venture capital; (3) alternative stock markets specialised in SMEs and high-growth companies.
- Seed capital: Financing provided to study, assess and develop an initial concept. It precedes the start-up phase. Seed capital is required to fund a business project before the product or service is marketed. Seed capital is often pivotal in high-tech projects to allow businesspersons to conduct market and technology surveys as well as research and development on prototypes that will become companies' core business.
- Start-up capital: Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may already exist, but have not sold their product or service commercially and are not yet generating a profit.
- Venture capital: Investment in unquoted companies by investment funds (venture capital funds) that, acting as principals, manage

individual, institutional or in-house money. It includes early-stage and expansion financing, but does not include replacement finance and buy-outs.

How to implement it?

Public authorities can earmark budget to provide direct funding to SMEs in case of grants or to provide means to interesting intermediary or private organizations to implement the tools (equity, guarantees, loans...). Think in terms of value chains in order to ensure that investors can exit or recover their money from another type of investors and are able to reinvest in other projects. Hereafter is a mapping of such a value chain..

What can be expected?

A comprehensive regional value chain.

A quote

“Entrepreneurs and public stakeholders have to be aware that each funding tool has a specific role to play during the enterprise life cycle.” - Rudy AERNOUDT, Principal economist European Commission.

References

EURADA – All Money is not the Same.

Article n° 16 Innovation management in companies

‘Innovation management’ has become a popular term in recent years. It does however stir up divided opinion amongst commentators due to its implicit assumption that innovation can (and should) be a process that can be managed within a company. To some, this goes against everything that innovation should be in terms of creativity; yet to others, it is a necessity that makes innovation work effectively.

Written by Meirion Thomas

The concept

The concept of innovation management in companies is accompanied by a number of misconceptions. Champions for entrepreneurship argue that a company needs to be creative or have creative individuals within it before it can ‘do’ innovation and that the concept of structuring an innovation process (i.e. managing it) is an oxymoron. This viewpoint however fundamentally confuses the approaches and tools that facilitate the innovation process on one hand, with the process itself on the other.

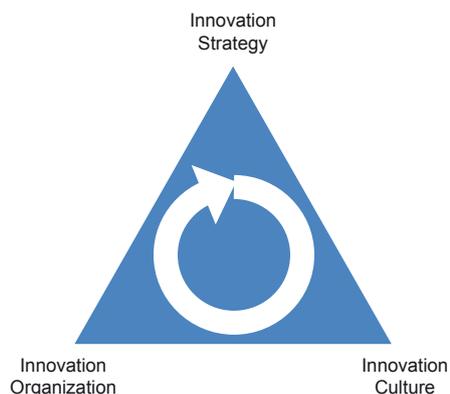
Stemming from this, the trend has been for companies to spend a great deal of time and resource on expensive creativity tools and exercises that generate hundreds of ideas only to be swamped with too many ideas for them to know what to do with. In reality, unless a process for managing, prioritising, maturing and selecting the best ideas is in place, then the process of innovation can be haphazard, unpredictable and ultimately unsatisfactory for companies.

So, whilst creativity is a crucial element at the front end of innovation, it is equally important if not more so, to ensure that the organisational process and innovation culture elements are in place to ensure that ideas are well managed and innovation

thrives. Finally, ensuring that innovation is actively embedded in the strategy of a company will allow the innovation process to be driven and managed in line with the company’s vision and objectives.

How to implement it?

In terms of implementing an innovation management approach, three core elements need to be taken into consideration by companies. These are: strategy, organisational process and innovation culture. Like the legs of a tripod, all three are interrelated and require the other to work effectively and efficiently to maximise impact in a company’s innovation process.



Source: CM International, 2013

Beginning at the top of the triangle, it is vital for a company implementing an innovation management approach to explicitly embed innovation in the company strategy. Ideas are most often generated by those working at their day-to-day jobs e.g. the salesperson's conversation with a customer that throws up an idea for a new way of approaching a problem; or, the lab technician in the R&D department who tries something new that unlocks the door to a whole new product/process or service line. When these ideas arise they need to be effectively managed, nurtured and allowed the space to develop into something more tangible. Too often ideas are killed by a lack of support (or awareness) from company managers too focused on the day-to-day process of running a company than the future strategic position and vision.

In a company with innovation embedded in its strategy, the top management (whether that's a management board in a large company or the managing director in an SME) sponsor for ideas arising and encourage the capturing of ideas when they arise. The company may identify an innovation champion to oversee and drive this process at a strategic level within the company (this person should be of sufficient seniority to report directly to the top level of management). Ensuring that innovation is driven and sponsored from the top-down allows ideas that might otherwise be drowned in the daily tasks to be drawn out and given space to flourish.

Underpinning strategy, it is important for a company to develop an organisational process that facilitates innovation. Without a process, idea originators do not know where they can go to capture their idea and turn it from a tacit conversation into something that will be looked at systematically. The generation and capturing of ideas requires processes to facilitate their maturation and to turn them into viable projects just like any other business process. In implementing an innovation management approach, companies need have a defined process in place that will allow ideas to be generated and captured, to be prioritised and subsequently matured on a consistent basis. This could be through the use of proprietary software that is available or through a simple Excel workbook.

When a salesperson brings a customer need or idea back to the office they need to know who to share it with and what the process will be for capturing it. The innovative idea can then be prioritised and developed by the idea originator and others to the stage where it can be launched into the company's new product development process. Or, alternatively, it can be 'killed' having been investigated without too much resource being spent on it. Developing a structured, organisational process allows the strategic management to view the innovation process from a high level. It will allow them to monitor progress

against the strategy and ensure that the company is moving in the right direction vis-à-vis the overall vision for innovation.

Finally, bringing both the strategy and organisation together, companies need to develop an innovation culture that will sustain the innovation process and take it from being a one-off exercise to being a way of life for the company and employees.

Building a culture of innovation is often the result of seeing the first two elements of an innovation management approach in action. It can take a while to develop a culture, but for example by sharing positive and real life 'good news' stories of innovation results employees can begin to believe that their idea could also result in a similar outcome (Other areas to consider could be bonuses for innovative ideas, annual prizes with financial or in-kind incentives for most innovative idea etc...). Ensuring that each individual team member has innovation embedded in their daily job description and is consistently thinking about how they could do things differently, engage with the process and improve their area of the company will allow the development of ideas in diverse areas of a business. Finally, it is important that no idea is seen as a 'bad' idea or simply discarded because 'it will not work' in the opinion of one individual in the company. It is important to engender a culture that looks at each idea on its merit, prioritising it and maturing it to allow it to develop.

Without a managed innovation approach embracing strategy, culture and process, even the greatest inventor in the world, with the best game-changing idea is in your company, but with nowhere to develop it, will see the idea die. Innovation space has to be structured into a company and actively managed for it to stand the greatest chance of success. It can then be driven by the strategy, facilitated by the innovation process and embedded by the company's culture to allow innovation to flow freely in the organisational life day-to-day.

What can be expected?

- Development of a pipeline of ideas for new products, process and services
- Structured approach to innovation and managing innovation in companies
- Development of an innovation culture in companies
- Better choice of prioritised ideas
- Consistent development of innovative products, processes and services from companies

A quote

"Innovation isn't just about ideas; it's about getting the right ones and realizing these ideas in practice." - Gijs van Wulfen, Founder – Forth Innovation

"Organizations that successfully promote ideas have

found that the performance of their idea systems is directly related to important aspects of their cultures -- such as trust, respect, morale, involvement and teamwork. They discovered that when employees see that their thinking is valued, attitudes change, and the corporate culture improves. This has a profound effect on performance and the quality of the lives of everyone in the organization." - Alan Robinson and Dean Schroeder, Authors of 'Ideas Are Free'

References

Looking at the following websites would be good places to start for the most up to date and relevant thinking from leading authors and speakers on innovation:

- [1] InnovationManagement.se
(<http://www.innovationmanagement.se>)
[2] Innovation Excellence
(<http://www.innovationexcellence.com/>)

Article n° 17 Clusters in RIS3

Michael Porter introduced in the early 1990s the concept of cluster as a geographic concentration of firms and organizations working in related activities.

Written by *Guillermo Aleixandre*

The concept and its origin

Michael Porter introduced in the early 1990s the concept of cluster as a geographic concentration of firms and organizations working in related activities. A cluster can comprise a wide range of participants that goes from SMEs and large firms, playing distinct roles (specialized suppliers, services providers, customers, manufacturers of complementary products and other related firms), to governmental bodies or other institutions (universities, research centers, trade associations, standards agencies,...)¹. All these participants are linked through stable relations in one or several layers of the supply chain, in some cases competing and in other co-operating.

The globalization and the spread of ICT technologies do not make clusters and their geographical proximity approach less important, but impose them the need of rethinking their position in a worldwide value chain, and, Why not to aspire to become a world-class cluster?

Why clusters are interesting?

The researchers' and policymakers' interest in clusters is based on their capacity to generate positive externalities that enhance the level of competitiveness of their participants. Mainly, positive externalities that means benefits without any cost for the cluster participants. Besides, these externalities can indirectly affect the territory where the cluster is located.

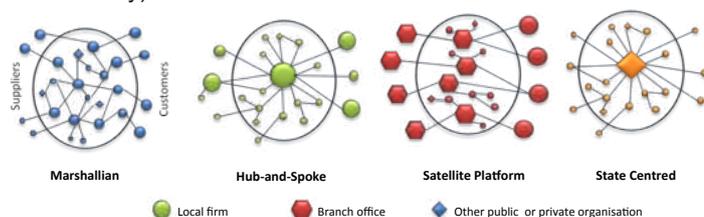
These *benefits* come from different factors: numerous and skilled labour force, a greater variety of specialized intermediate goods and services, tacit knowledge spillovers due to inter-firm interactions, a higher social capital (i.e. trust) that facilitate the transactions, an increasing supply of complementary products, a reduced

cost of transport, a reputation of excellence of the whole entity, the opportunity for inter-firm projects. There are, however, some potential risks such as congestion costs, if the cluster grows excessively, or vulnerability, if the cluster becomes too inward looking or rigid².

A wide range of experiences

The different kind of participants and their relations allow identifying various types of clusters what, in hence, means diverse internal logic³:

- *Network industrial districts* (Marshallian cluster) made up of locally-owned, SMEs concentrated on crafted based, high technology, or producer services industries. (e.g. Tech City in east London or Emilia-Romagna region).
- *Hub-and-spoke clusters* characterized by one or few dominant firms surrounded by smaller suppliers and other related activities (e.g. the aircraft cluster supported by Boeing in Seattle).
- *Satellite clusters* that consist of a congregation of branch facilities of externally-base multi-plant firms (e.g. the Research Triangle Park in North Carolina that concentrates several R&D centers of high-tech multinationals).
- *Institutional or state centered cluster* located in a region where the local business structure is dominated by a public or non-profit entity (university, research centre, military base...) (e.g. Oxford Biotech Cluster around the Oxford University)



Adapted from Markusen, *Economic Geography*, Vol. 72-3 (1996) 293-313; and from He and Fallah, *Technological Forecasting & Social Change* 78 (2011) 945-952.

Besides, clusters have to be considered as evolving realities with a multiple stage lifecycle: creation, expansion/growth and consolidation/maturity. The latter phase leads to two potential scenarios: The renaissance of the cluster, if its participants are able to tackle the changing environment (new technologies, emerging competitors, shifting demand...); or a lock-in situation if cluster actors are not able to avoid stagnation.

The cluster policy

The recognition of the positive impact of clusters on regional economies and the identification of market and systemic failures that hinder their activity had justified the implementation of public measures to ease the cluster creation and to speed up its consolidation and up-dating (the different stages of a cluster development require individually tailored actions).

Policies that support clusters come from three different policy trends and frequently link multiples objectives⁴:

- *Regional policies* trying to build competitive regions, including lagging regions.
- *S&T and innovation policies* trying to foster public-private collaborative research and to improve the research commercialization.
- *Industrial and enterprise policies* trying to support common needs of firms and to increase the technology absorption of firms, especially SMEs.

Cluster initiatives

In order to make the most of the dynamism of clusters, their participants can join in an organised effort, i.e. in a cluster initiative. These initiatives have become a keystone to ensure the growth and competitiveness of clusters and pursue to organise and guide the actions of its member to take full advantage of their local resources and relationships⁵. The analysis and the management of cluster initiatives are an emerging and fruitful field of work. The analysis has allowed improving the set of indicators to measure the performance of cluster initiatives and, also, to carry out benchmarking processes between initiatives. Based on the previous information and, in many cases, through mutual learning activities, it has been possible to establish guidelines for the development and management of cluster initiatives⁶ and to pursue standards for excellent cluster management. Besides, this pool of knowledge and relationships paves the way for collaborative initiatives among clusters (cross-border projects, inter-cluster projects, cross-sector projects).

Clusters in RIS³

Clusters and clusters initiatives are in the heart of the Regional Innovation Strategy for Smart Specialisation (RIS³). Existing cluster initiatives

can be an outstanding stakeholder in the different phases of a RIS³ (definition, implementation, monitoring and evaluation) and, also, existing or new clusters can be a suitable instrument to implement RIS³, as they are able to mobilise key regional resources⁷. Examples of how clusters can be embedded in RIS³ are the following:

- The identification of regional specialisation on through cluster mapping analysis.
- The identification of relative regional position through cluster benchmarking.
- The gathering of quantitative and qualitative data of clusters allows monitoring the regional performance. Besides, cluster participants can be a valuable source of information in foresight processes or in the identification of key enabling technologies.
- Cluster initiatives can be a good tool to align the efforts of different actors of the regional innovation system towards a shared vision of the regional future.
- Cluster initiatives are a good way to channel public support to regional players, being able to reach regional SMEs and to put in contact different players of the regional innovation system. The cluster companies with a better relative position in the global value chain can guide other companies, especially SMEs.
- The trans-national cooperation of clusters can foster internationalisation of regional activity.
- Cluster initiatives facilitate connectivity and hybridisation between actors from different institutional spheres: University, Industry and Government, that enhance creativity and diversification processes. Also, inter-cluster activities can facilitate diversification of regional specialisation.
- Some of the cluster actors can lead the development of key enabling technologies at the regional level and, also, promote these technologies among other participants.

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- [1] The European Cluster Observatory: <http://www.clusterobservatory.eu/index.html>
 [2] The Global Cluster Observatory: <http://www.clusterobservatory.org/>
 [3] The U.S. Cluster Mapping Project: <http://clustermapping.us>

¹ OECD, Clusters, innovation and entrepreneurship, OECD, Paris, 2009.

² OECD, Regions and innovation policy, OECD, Paris, 2001.

³ A. Markusen, Sticky places in slippery places: A typology of industrial districts, *Economic geography*, 72 (3) (1996) 293-313.

⁴ OECD, Competitive regional clusters. National policy approaches, OECD, Paris, 2007.

⁵ O. Solvell, G. Lindqvist, C. Ketels, The cluster initiative greenbook, Ivory tower AB, Stockholm, 2003.

⁶ CLOE project: Cluster Management Guide – Guidelines for the Development and Management of Cluster Initiatives. http://www.clusterforum.org/en/cluster_management_guide.html

⁷ D. Foray, J. Goddard, J. Goenaga Beldarrain, M. Landabaso, P. McCann, K. Morgan, C. Nauwelaers, R. Ortega-Arguiles, Guide to research and innovation strategies for smart specialisation (RIS³), European Commission, Brussels, 2012.

Article n° 18 Commercialization of research results

Written by Christian Saublens

The concept

Introducing a result of a research project into a new product/service/process/solution. This is a critical issue to maximize the return on public investment in research activities.

How to implement it?

Public authorities have 2 means to foster the commercialization of research results; either the selection process of projects requires from the very beginning information regarding market opportunities and feedback of potential users, or public authorities develop a comprehensive package of support services to facilitate the commercialization process as soon as project results are available.

For these 2 options, the following guidance should be taken into consideration by public authorities or funding agencies:

A. requirements in the application forms for R&D+I support:

- identification of key applications of the foreseen results and market intelligence evidence
- description of the measures needed to support the uptake (prototype, proof of concept, standardization, ...) of the results
- description of the economic impact: advantages for existing clients, new markets, quality upgrade, internationalization
- analysis of the IPR: patent, licence, trademark, ...
- description of the involvement of other partners in the value chain and (if needed) final users
- description of the needed resources to address the exploitation challenges and the innovation management capabilities in the enterprises (human, funding, partners, ...).

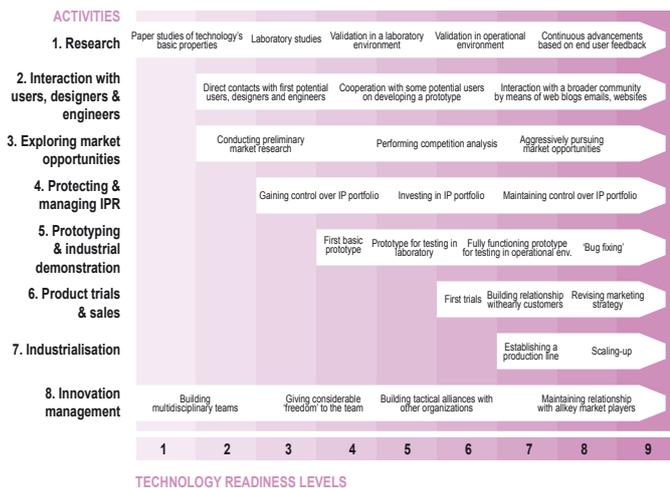
The graph below illustrates how to establish links between commercialization thinking and activities and the technology readiness levels (TRLs).

TRLs are a scale from 1 to 9 allowing the measurement of the maturity of a technology, lower TRLs corresponding to basic research and highest ones to a technology (nearly) ready to be introduced on the market:

1. Basic principles observed and reported.
2. Technology concept formulated.
3. Analytical and experimental critical function proof of concept.
4. Component and/or breadboard validation in a laboratory environment.
5. Component and/or breadboard validation in a relevant environment.
6. System/subsystem model or prototype

demonstration in a relevant environment.

7. System prototype demonstration in an operational environment.
8. Actual system completed and operationally qualified through test and demonstration.
9. Actual system, proven through successful practical use. [1]



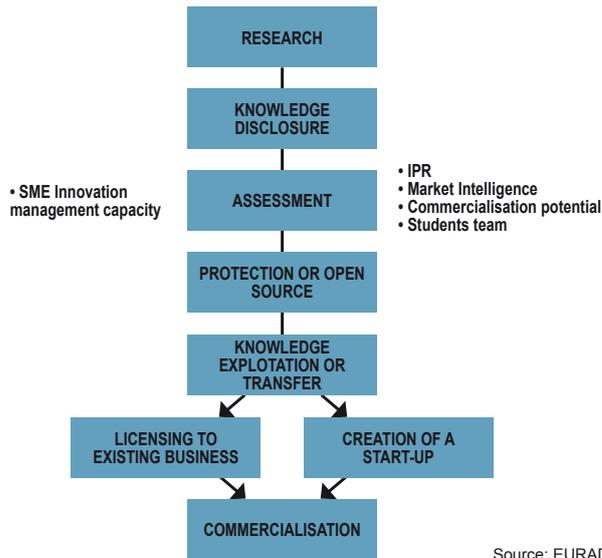
Source: European Commission, DG for Research and Innovation

B. by developing a comprehensive set of support services to enhance the commercialization of research results, either by the knowledge holders or by regional stakeholders.

Such an integrated scheme needs to include support services notably enabling:

- technological watching with commercial applications in mind;
- proactive spotting of technology with commercial potential;
- researcher awareness raising as to both the market value of the outcomes of their research and cooperation with clients, investors or regional businesses;
- validation of the technological maturity and commercial competitiveness of selected ideas;
- IP protection;
- selection of the most suitable commercial strategy: licensing, patent sales, spin-outs;
- brokerage tools;
- negotiation of the transfer of knowledge or technology;
- development of a business and financial plan plus an incubation contract if need be;
- support to develop a prototype;
- support to secure proof-of-concept funding or a grant to back the development of a start-up;
- possible support in the search for investors (business angels, seed or venture capital funds);
- support in the search for a first client.

A path from knowledge to market



What can be expected?

- Better use of public investments in R&D+I
- Increase competitiveness

A quote

“Patents are not the guarantor of the commercial and financial success of investments made in R&D” - Les Echos, 27-28 December 2013.

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- [3] Regional policy for smart growth of SMEs (chapter 5)

Article n° 19 Absorption by SMEs of external knowledge in regional innovation policy - delivery mechanism

Written by Christian Saublens

The concept

Means of supporting quicker take up by regional stakeholders of knowledge created regionally or in another region.

How to implement it?

The absorption of knowledge in a region can be enhanced by supporting contacts and transfer between knowledge holders and potential users of such knowledge. Two approaches should be looked at, one for boosting intra-regional relations and one for enhancing transregional exchanges. Both approaches need to consider 4 dimensions of such a process (see graph below), i.e. the support to people, to a community of potential users, to enterprises and to technology transfer organizations.

PEOPLE BASED ACTIVITIES		
Mobility Participation in networks Participation in conferences Coaching / Mentoring / Training Joint publications		
COMMUNITY BASED ACTIVITIES	TECHNOLOGY TRANSFER ACTIVITIES	ENTERPRISE BASED ACTIVITIES
Exhibitions / Fairs Conferences / Workshops Technology showcases Clusters Internationalization	Purchase of patents Licensing Spin out attraction Brokerage events Demonstration centres	Joint research Joint ventures Co-development Prototyping and testing Staff mobility Consultancy services Soft landing packages Feasibility studies

Source: EURADA

It's worth remembering that SMEs are pushed to innovate under the pressure of their competitors or suppliers. Often small enterprises innovate by imitation. This of course requires capacity to

identify competitors' new behaviour.

Regional Managing Authorities should make a more intensive use of draft article 60(2) of the Structural Fund Common Provisions Regulation regarding regional cooperation, which allows to dedicate up to 15 % of the Operational Programme to foster such types of projects.

What can be expected?

- Better impact of new knowledge. It can be breakthrough knowledge or knowledge new to the region;
- Accelerate the take up of innovation by regional stakeholders, especially for the use of KETs or for innovation at the frontier of sectors;
- Modernization of enterprises operating in traditional sectors;
- Development of niche sectors;
- Avoiding investment in reinventing the wheel or duplicating efforts to create new/similar knowledge;
- Stimulating a culture of first innovation takers in the region.

A quote

"Absorptive capacity at the firm level is the firm's capacity to access the value of external knowledge and technology, and to make the necessary investments and organizational changes to absorb and apply this in its productive activities" - World Bank Knowledge Economy Forum, Ancona (IT) 17 -19 June 2008

References

Regional Policy for Smart Growth of SMEs.

Authors' biographies

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Guillermo Aleixandre Mendizábal holds a Ph.D. in Economics and has a 5 year Business Administration Degree and a 3 year Computing Science degree. His current position is Lecturer in the Department of Applied Economics of the University of Valladolid (Spain). His main research fields are: Evaluation of social impact of R&D and innovation projects; regional R&D and innovation policies. This research has been possible through his participation in: 4 European competitive projects (VAN, COGNAC, NORRIS and KNOWBRIDGE), 8 national or regional competitive projects and several contracts with private organisations. As a result he is author of 4 books, 6 book chapters and 9 articles. Besides, he has participated in international scientific conferences (as ERSA, IASP or Research Management) and several national scientific conferences.

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Director of Institut du Tourisme, Groupe Sup de Co La Rochelle. Previously, **Nicola Bellini** was Professor of Economics and Management at the Scuola Superiore Sant'Anna in Pisa (Italy); Advisor for economic policy of the Regione Emilia Romagna (1990-1991); Research Fellow, Nomisma - Economic Research Institute (1982-1990). From 2009 to 2011 he was the Director of the Regional Institute for Economic Planning of Tuscany – IRPET. He is author and editor of books and articles on industrial policy, local and regional development, business support services and place branding.

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President of the National Cluster Association, Czech Republic. With a rich background in industry restructuring and regional development, **Pavla Bruskova** has been involved in the cluster concept development in the Czech Republic since its beginning in 2002. Based on the pilot cluster study carried out in the Moravian-Silesian Region she launched the first Czech cluster organisation in the engineering sector in 2003; took part in the preparation of the National Cluster Strategy 2005-2008; carried out cluster mapping and facilitation of several cluster organisations incl. the first cluster organisation in the service sector (KLACR – Moravian-Silesian Tourism Cluster, 2008) and creative industries (Zlín Audiovisual Cluster, 2013). As the CEO of the Regional Development Agency in Ostrava she managed the preparation and implementation of the Regional Innovation Strategy in the Moravian-Silesian Region in 2009-2010. Since 2010 she has been the President of the National Cluster Association and since 2011 the member of a research team at the Centre for Applied Economic Research, Faculty of Management and Economics at the Tomas Bata University in Zlín. She takes part in a number of European cluster and innovation projects, currently the OP CENTRAL “CluStrat”.

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Dr. Teodora Georgieva has over 15 year experience in developing and implementing strategic and programme documents at national, regional and business levels in the field of innovation, technology transfer and life-long learning. Relevant experience includes: National Science Scoreboard of Bulgaria; Innovation Promotion Law; Megaprojects in the field of Research Infrastructure; ERAWATCH Baseload Inventory; Annual Innovation.BG reports; Regional Innovation Strategy for the South-West region of Bulgaria; Annual Reports on the Bulgarian National Innovation Policy. She is a member of the Expert Council on Innovation at ARC Fund – an independent advisory group to the national innovation policy and development of the innovation potential. Dr. Georgieva holds a PhD in the field of innovation management. Currently she is a Professor in Innovation, Project and Strategic Management and a vice rector at the International Business School in Botevgrad, Bulgaria. She is IRCA / IATCA Certified Expert and Lead Auditor of QMS.

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Since almost 20 years **Hans-Christian Jäger** is working as IDEUM for public authorities and intermediate organisations in the field of regional innovation systems and entrepreneurship as well as management of related interregional projects including transfer and improvement of policy instruments. Hans-Christian has particular interest in monitoring and impact measurement of regional innovation policies and its related instruments which is strongly interlinked with Regional Innovation Strategies for Smart Specialisation. In addition and in cooperation with other business consultancy companies like conmotion Hans-Christian is consulting the private sector in the field of lean management, process re-engineering and KAIZEN since almost 25 years. These complementary activities allow an integrated consulting approach bearing in mind both private sector and public sector as beneficiaries.

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Dr. Daniel Kipp studied economic geography at the University of Osnabruck and wrote his PhD concerning regional innovation support strategies for small and medium-sized enterprises. For more than ten years he is working as a consultant for MCON Dieter Meyer Consulting GmbH in Oldenburg / Germany. His activities thematically mainly focus on the consulting of public institutions concerning the implementation of economic development processes, improvement of policy instruments and funding opportunities. Furthermore, another thematic area of Daniel Kipp's work is the support of SMEs in innovation processes. His research interests lie in particular in the effectiveness of regional innovation systems and in the design of new financial instruments.

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Claire Nauwelaers is an independent Policy Analyst and Governmental Adviser, specialised in research and innovation policy, working in an international environment. She has 30 years of experience in this field and a wide network of contacts with experts, academics and policy-makers. Until 2011 she was working on innovation as a policy analyst in the Regional Development Policy Division at OECD. Previously, she was Research Director at UNU-MERIT, the University of Maastricht and United Nations University, in charge of the research team: "Governance of Science, Technology and Innovation". She is currently one of the leading experts in Europe on Smart Specialisation Strategies. She is member of Scientific Steering Committees of several Research Networks, part of policy review teams, and is regularly invited as expert in High-Level Expert groups for the European Commission or Member States. She has published numerous books and articles on policy aspects of research, technology and innovation.

Mr. Christian Saublens

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Christian Saublens has more than 30 years of working experience in European trade organizations. Since 1992 he is the Executive Manager of EURADA, the European Association of Development Agencies, a network of 145 organisations. Christian has been involved in the organization of numerous conferences and meetings dealing with all matters related to regional development. He wrote several papers and working documents on business support schemes for SMEs. He played an important role for the dissemination in European regions of concepts such as benchmarking, business angels, investment readiness, proof of concept, clusters, open innovation, financial engineering, crowdfunding ... Several times Christian has been appointed as an expert by the European Commission and the Committee of the Regions.

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Meirion Thomas has over 30 years' experience in economic development and SMEs where his expertise covers a range of interests including innovation, knowledge transfer, social enterprise, venture capital, and sustainable development. After holding senior positions in the Welsh Development Agency and Cardiff University, Meirion also established and became a director and partner in CM International Group, a strategic innovation and management consultancy with offices in Paris, Lille and Cardiff. Since 1990 Meirion has led a wide range of innovation and economic development assignments and projects across Europe, North America and Southern Africa and in recent years he has also acted as a Director of Finance Wales plc and Chairman of the Cardiff-based specialist advisory group, the Cultural Enterprise Service Ltd.

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Elisabeth Zaparucha is senior consultant at Technopolis Group, where she conducts evaluations and impact assessments.

The main areas she works for are research and innovation systems at the regional, national and European level, higher education and human resources in R&D but also thematic issues such as energy, environment and agriculture

Elisabeth has a very good nationwide knowledge of innovation and research policies and policy mixes.

She is involved in ERDF programming and has a very good understanding of regional innovation systems. She has worked for various regions and is involved in the ex ante evaluation of the 2014-2020 OP. With regards European Territorial Co-operation, Elisabeth conducted in 2012 a mission for the elaboration of a French contribution to the ERDF INTERREG programme SUDOE 2014-2020 and participated to the mid-term evaluation of the Amazonia OP (2013) as well as the drafting of the new Amazonia OP (2014-2020). Finally, Elisabeth has a good knowledge of cluster policies since she evaluated both the French and Walloon competitiveness clusters lately.

Acronyms and abbreviations

ERDF	European Regional Development Fund
FP7	EU's Seventh Framework Programme for Research
ICT	Information and Communication Technologies
IPR	Intellectual Property Rights
KETs	Key Enabling Technologies
NIS	National Innovation Strategy
NTBF	New Technology Based Firm
OECD	Organization for Economic Co-operation and Development
R&D	Research and Development
R&D+I	Research and Development + Innovation
RIS	Regional Innovation Strategy
RIS3	Regional Innovation Strategies for Smart Specialisation
RTD	Research and Technological Development
S3	Strategies for Smart Specialisation
SME	Small and Medium Enterprises
STI	Science, Technology and Innovation
SWOT	Analysis of Strengths, Weaknesses, Opportunities and Threats
TRL	Technology Readiness Levels

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- (HU) INNOVA Észak-Alföld Regional Development and Innovation Agency
- (ES) Basque Government
- (FR) Nord France Innovation Développement
- (FR) ARII-PACA, Agence Regionale pour l'Innovation et l'Internationalisation des entreprises (ex Méditerranée Technologies)
- (AT) Lower Austrian Government
- (DE) Association of Counties and Cities in the Weser-Ems
- (SK) Banská Bystrica Self-Governing Region
- (ES) Castilla y León Regional Government. The Castilla y León Universities and Higher Education Foundation
- (BG) Applied Research and Communications Fund
- (BG) Municipality of Gabrovo

