MERIPA Toolbox

A booklet for regional innovation policy makers

This print version is the 1st edition of the MERIPA Toolbox, compiled by WP 7. Any updates to this edition will be published on the MERIPA website at www.meripa.org

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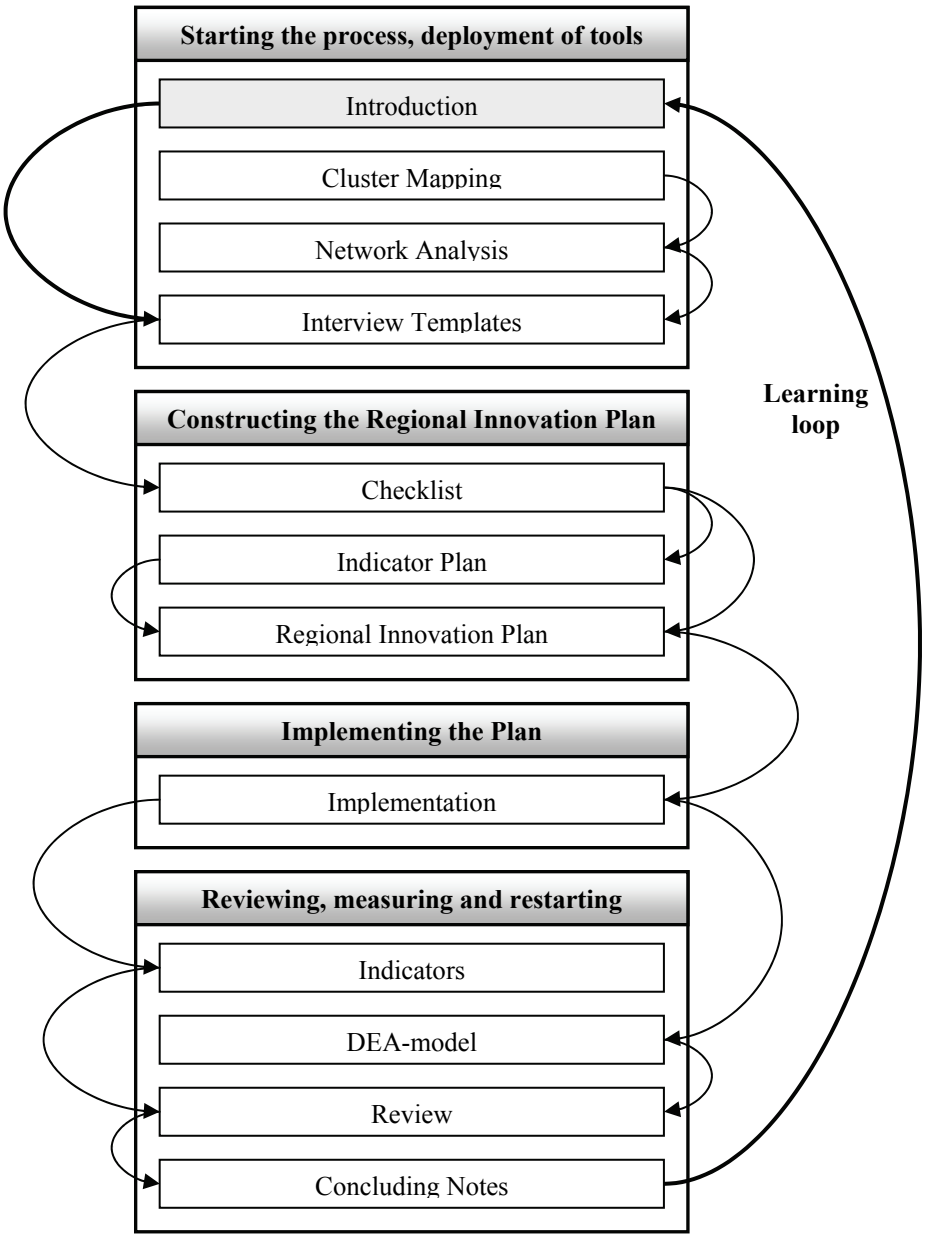
Phase I

Start-up

Introduction

Welcome to the MERIPA Toolbox for regional innovation policymaking. This Toolbox is designed to specifically address the needs of the regional policymakers and provide operational instructions to ensure successful policy work. Additionally, the Toolbox may well serve the needs of scholars or anyone else interested in regional innovation policy. Enjoy!



This booklet is structured in accordance with the four main phases of the policy-making process: Start-up, Design, Implementation and Review. Each phase contains a number of chapters, each of which deals with a specific tool or set of instructions for a distinct part of the process. A figure representing the structure of the booklet is provided at the beginning of each chapter, which illustrates three things:

a) where you are in the policy process,
b) which parts feed into the tool as inputs and
c) which tools or phases the output of the chapter should lead to.

We have designed this booklet to help you understand innovation policy as a continuing process with a deeply embedded aspect of reflective learning. At the end of each phase, a box labelled "Learning by doing…" will prompt and remind you of this. Since it is a tool crafted to facilitate continuous learning and feedback, it has been integrated into the whole policy process. Each phase is complemented by a series of questions for reflection.

The booklet is structured in a modular fashion, allowing users to pick the tools according to their individual needs. The modularity of the structure also allows for the possibility of adding to the toolbox by complementing it with new tools, from further MERIPA developments or elsewhere, and fitting them into the existing structure.

What is "Innovation"..?

The definition of reference for innovation in the MERIPA-project is chosen to follow broad Schumpeterian lines:

"An innovation can reform or revolutionize the pattern of production by exploiting an invention or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening a new source of supply of materials or a new outlet for products by reorganizing an industry." (Schumpeter, 1912, quoted in Maskell & Malmberg, 1999)

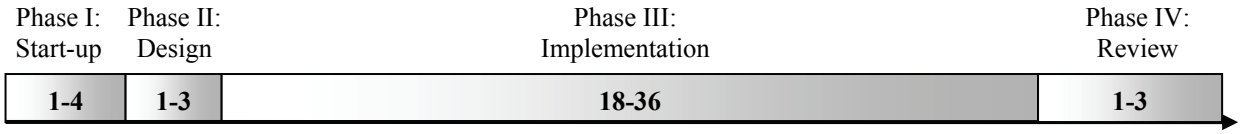
This means that "finding new combinations" (Schumpeter 1939), or in modern terms, innovating can lead to:

- new products
- new means of production
- new sources of supply
- the exploitation of new markets, and
- new ways to organize business.

Those are all innovations!

You can go through the whole process from start to finish with the help of the tools presented, or if you prefer you can simply customize your own process. You can use the tool in any of the following ways, depending on your starting point and specific needs:

- Beginners and newcomers to the innovation policy process should go through the whole booklet from start to finish
- Experienced policymakers can use the tools in the start-up section and create an indicator plan and review their work through the use of the indicator tool
- For crafting a policy from scratch with minimum setup just use the interview template, the checklist, the regional innovation plan and implementation

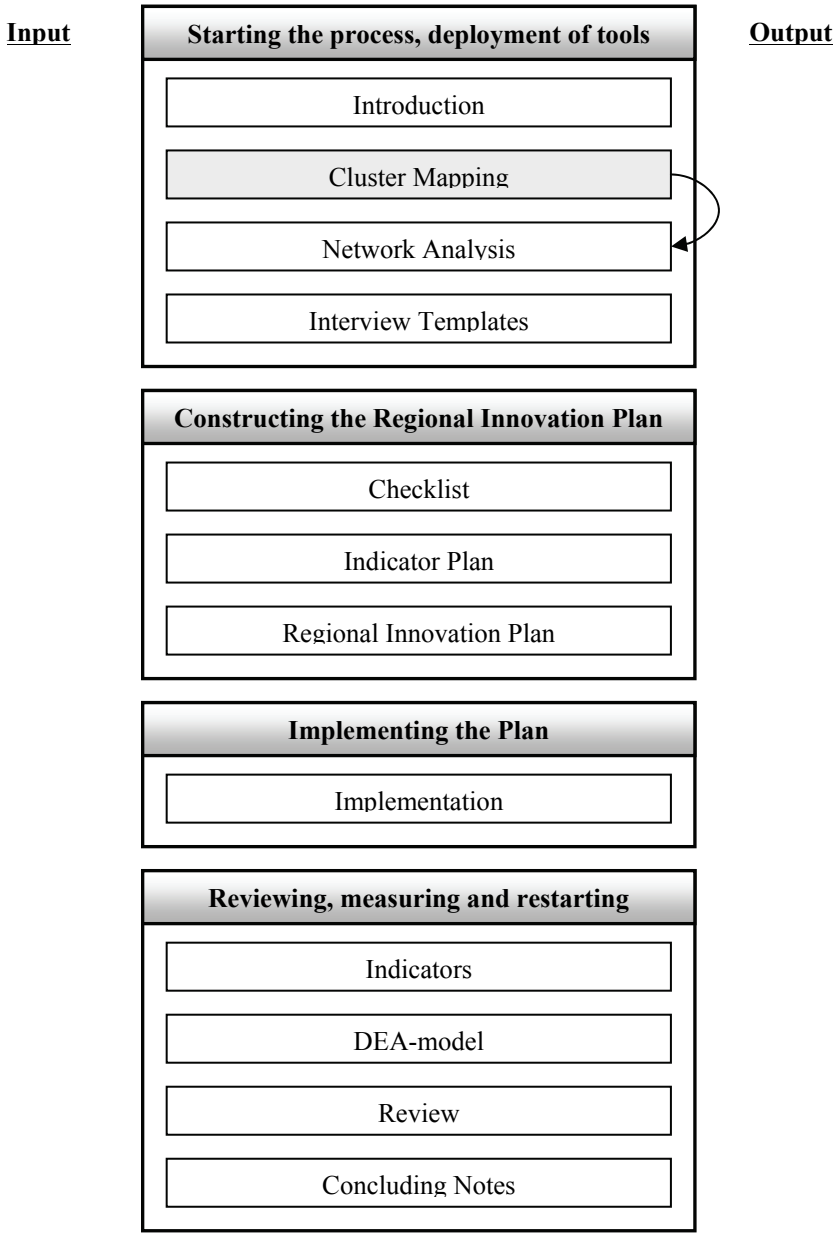


The MERIPA policy process: Estimated duration of each phase in months

Cluster Mapping

What is the purpose of this tool?

The purpose of the Cluster Mapping Tool is to identify clusters in a specific region based on Michael Porter's clusters. The Cluster Mapping Tool has been developed to assess both the performance and impact of innovation policies.



What issues may be addressed by use of the tool?

- Identifies the industry clusters that the region is specialized in when compared to other regions in the home country
- Constitutes the basis of further policy development in the cluster area
- Turns the focus on aspiring clusters which could benefit from policy incentives

Summary

Many regions talk about clusters without having a common understanding of how they should function. The MERIPA Cluster Mapping Tool enables you to analyse your region by using employment data to identify industrial clusters. The Cluster index is based upon Porter's identified US Clusters. Politicians can use the cluster index to make political choices whether that means supporting existing clusters, upcoming clusters or clusters important for regional employment.

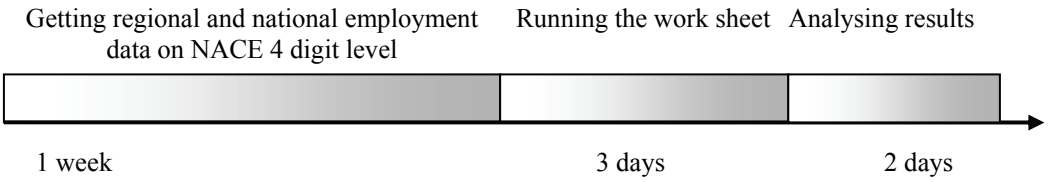
What are "Clusters"..?

Cluster is a popular concept with several definitions in literature. In MERIPA, the most popular and operational definition provided by Michael Porter (1998) is adopted:

"A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of a cluster can be a single city or state to a country or even a network of neighbouring countries."

Clusters are concentrations of highly specialised skills, knowledge, institutions, rivals, related businesses and sophisticated customers in a particular region or nation. Proximity in geographic, cultural and institutional terms allows special access, special relationships, better information, powerful incentives and other advantages in productivity and productivity growth that are difficult to tap from a distance. As a result, in a cluster, the whole is greater than the sum of the parts.

Timeline of the tool



What should be the outcome of this exercise?

- A cluster specialization index to identify the most specialized clusters in the region

Cluster Mapping

The concept of clusters is increasingly important in discussions about regional innovation for the simple reason that fostering clusters has proved to be a valuable means of stimulating economic success and competitiveness. Successful innovation planning depends on having accurate and useful information about the clusters in your region, and cluster mapping is one step along the way to finding it.

In this section, you will find definitions of clusters and cluster maps, the benefits and limitations of cluster mapping and a step-by-step guide to generating a map of your region.

What is Cluster Mapping?

The literature on clusters and cluster mapping contains various definitions of what constitutes a cluster. For our purposes, in this toolbox, a cluster may be defined as an interdependent group of companies and organizations within a defined geographical area.

Cluster mapping is the process of finding out which industries have the greatest concentrations of economic activity. Using this tool, you will be able to determine which industries in your region have the greatest share of employment when compared with the national average.

What is the value of mapping clusters?

In order to develop an innovation plan with the greatest chance of success, you need to have as accurate a view of your region as possible at the start of the planning process. Both common sense and political desires may lead people to believe they know which clusters are or should be the most important to the regional economy. If your region has particular industrial traditions, it is tempting to believe that this must be the most specialized cluster in the area. However, this belief is not always borne out by the analysis, and beginning with an inaccurate view of the region is fatal to the success of regional innovation planning activities. Cluster mapping allows you to see your region with your eyes wide open.

A cluster map will:

- provide an overview of the region that is not determined by political interests or decisions

What are the limitations of cluster mapping?

Since cluster mapping is a method that relies on statistical information, the outcome of the exercise depends on choices about how we define clusters, which clusters we account for on the map and how we set the minimum values for the mapping exercise. Choices are necessary for you to obtain results that are comparable and usable, but they also serve as limitations.

More importantly, cluster mapping is not intended as a stand-alone task. Although cluster mapping may tell you some things that you did not know about your region, you should not

assume that this is the only 'truth' about your region's strengths, weaknesses and capacities. The cluster map is only one type of picture of the region, and we strongly recommend that you use it alongside the other pictures you get from the network analysis, interviews and compound indices (if you have access to the required data).

A cluster map will not:

- include information on how active clusters are
- be useful in isolation from other kinds of analyses

Mapping the clusters in your region

Essentially, the process of cluster mapping consists of taking raw statistics on employment and turning these into a carefully fleshed out picture of economic activity in your region. The method for achieving that transformation consists of carrying out calculations using the formula provided and sorting the industries selected into predetermined cluster categories.

You need to perform four linked tasks:

1. Obtain the relevant data on employment
2. Calculate a simple specialization index
3. Eliminate unhelpful or insignificant data
4. Translate information into Porter's clusters

Employment Data

In theory, there are several ways in which you might measure the concentration of economic activities in your region, but our tool relies on employment statistics. We have chosen employment statistics not only because they should be relatively easy to obtain, but also because they are emerging as the standard yardstick for mapping clusters.

Your first task then is to obtain NACE employment statistics for both your country and your region. (NACE is the acronym used in the European Union for various statistical classifications of economic activities and has been in use since 1970.)

Please note that the reliability of the method described here depends on using NACE statistics specifically. It also relies on the use of consistent geographical units of analysis, in this case NUTS 3 level regions.

Calculating a simple specialization index

Once you have collected the data, your next task is to calculate the specialization index value for each industry. Calculating the index value is what allows you to compare the intensity of various types of economic activity in your region with the national averages. If your region and the national average have the same employment percentage share for a particular industry, then your region has no specialization in that sector. If on the other hand, your region has a 7%

employment share in a particular industry, and the national average is 3.5%, then your region has a specialization index of 2.

Each time you want to determine the specialization for the selected industry, all you need are four figures:

$e_{i,r}$: employment in industry I in the region
E_r: total employment in the region r
$e_{i,n}$: employment in industry I in the nation
E_n: total employment in the nation

The specialization index value is then calculated using the formula below:

$$\frac{\frac{e_{i,r}}{E_r}}{\frac{e_{i,n}}{E_n}}$$

Once you have calculated the values for each industry, arrange the values as a list in descending order, from the highest value to the lowest.

We recommend that you do not include any industry with an index value of less than 1.3 on your list. This is the normal minimum value in cluster mapping exercises. You need to set a minimum value because you want to be sure that you have actually found strong industries and not simply statistical variance.

Eliminating unhelpful and irrelevant data

Now that you have a list of industries organized according to specialization index, you need to check that what you have found will be relevant for further analysis. For example, you need to be sure that a cluster does not consist of just one firm or that the specialization is so high that its relative impact on the regional economy is insignificant.

This means, once again, setting minimum values for both the number of firms in any given cluster and the employment percentage of the firms in the region. We have set the minimum value of 5 for the number of firms in an industry, and .002 of total employment. You can exclude any clusters that do not fulfil these criteria from your list.

Translate the employment-specialization data into Porter's clusters

At this point, you have a list of industries in your region and their specialization index values, but this is still only a rough sketch of your region. Traditional industry statistics do not yield a picture of clusters that benefit from their proximity to each others. You can have a very efficient

cluster composed of the small parts of various industries that will not emerge through the process of calculating a simple specialization index.

Through his work on the American economy, Michael Porter has developed an alternative method of cluster mapping that is more useful from the regional perspective. Below you will see his list of 41 cluster categories that allow us to examine industries that operate in geographical proximity to one another and are presumed to share skills, knowledge and infrastructure.

P1	Business services	P21	Heavy machinery
P2	Financial services	P23	Textiles
P3	Hospitality and tourism	P24	Forrest products
P4	Education and knowledge creation	P25	Furnitures
P5	Distribution services	P26	Medical devices
P6	Heavy construction services	P27	Oil and gas products and services
P7	Transportation and logistics	P28	Aerospace vehicles and defence + aerospace engines
P8	Metal manufacturing	P29	Lighting and electrical equipment
P9	Processed food	P30	Prefabricated enclosures
P10	Automotive	P31	Power generation and transmission
P11	Entertainment	P32	Agricultural products
P12	Publishing and printing	P33	Biopharmaceuticals
P13	Plastics	P34	Construction materials
P14	Information technology	P35	Leather products
P15	Analytical instruments	P36	Jewellery and precious metals
P16	Building fixtures, equipment and services	P37	Sporting, recreational and children's good
P17	Production technology	P39	Fishing and fishing products
P18	Apparel	P40	Tobacco
P19	Chemical products	P41	Footwear
P20	Communication equipment		

Once again, before you can begin translating your data into Porter's clusters, you need to exclude data that is not relevant for your analysis. In this case, that means excluding companies that are:

1. Local firms – private and public producers of goods and services that are not traded across the boundaries of the region. Some examples of these are retail shops, restaurants, medical services, hairdressers, and primary and secondary schools.

2. Companies dependent on natural resources – companies whose location depends on the presence of particular natural resources. Some examples of these are mining operations, agriculture, forestry and paper manufacturers.

3. Public administration – organizations whose location is dependent on political decisions and whose impact on regional industries is minimal. Some examples of these include public law services and public defence units.

After you have eliminated these kinds of clusters from your list you can match the clusters you have with the cluster categories provided by Porter.

The translation to Porter clusters can be performed online with an easy-to-use web tool at the MERIPA webpage. If the online tool is not in operation, the experts at Aalborg University are able to process data for you. In that case, you should contact Professor Lars Gelsing and send your dataset by email to lg@business.aau.dk.

Once you have your final list, highlight the three clusters with the highest specialization index for further study.

This tool is based on cluster mapping methods developed by Michael Porter. If you would like to read and understand more about the theoretical background of his theory and our adaptation of his ideas consult the MERIPA website at www.meripa.org

Cluster Mapping - Conclusions

Summing up what has been done

- Regional and national employment data has been gathered to form a concrete basis for cluster identification
- Specialization indexes have been calculated, thus mapping the specialized trades of the region based solely on real employment data
- Using threshold values to eliminate insignificant results, the actual cluster candidates have been discovered

What has been achieved?

- A number of potential clusters in the region have been brought to light
- A distinction has been made between the clusters that are thought to be important or present in the region (wishful thinking –clusters) and those that actually exist and can have a real impact on the regional economy
- Awareness of potential policy hotspot -industries has been raised
- Knowledge of the regional business landscape has been sharpened

Important to notice

- This tool is not based on Porter's original model – just an imitation of the model. This version of the model could be further revised.
- The cluster mapping only analyses the "traded" clusters that are the most important to the region with respect to innovation and welfare. Several local and natural resource-based clusters are not included in the analysis
- Clusters are not limited by administrative borders of a region, but the model does not account for this.

Moving on – What comes next?

- Network analysis: It is time to sort the wheat from the chaff. Now that you are able to spot your potential clusters, network analysis makes it possible to distinguish the truly active clusters from the latent ones, helping you focus on where your attention is needed!

Further reading and references

Andersen, Torsten and Markus Bjerre and Emily Wise Hansson (2006): "The Cluster Benchmarking Project".

Enright, M. J. (1998): "The globalization of Competetion and the Localilzation of Competitive Advantage: Policies towards Regional Clustering"

Gelsing, Lars and Mette Justesen:" Methodology for Innovation Policies ImpactAssessment", WP 3 D.3.1, April 2006.

Gelsing, Lars and Lisbeth Tved Linde (2007): “Mid term Report on Datacollection and integration”

IRE Network, “Journal of the Innovative Regions in Europe No. 12 – May 2007”

Ketels, Christian and Örjan Sölvell (2007): “Innovation Clusters in the 10 new member states of the European Union”.

Lindquist, Malmberg og Sölvell (2003): ”Svenska Klusterkartor – En statistisk inventering af cluster i Sverige, 2002”

Madsen, Poul T. (1996): ”Den samarbejdende virksomhed” (DISKO report nr. 6)

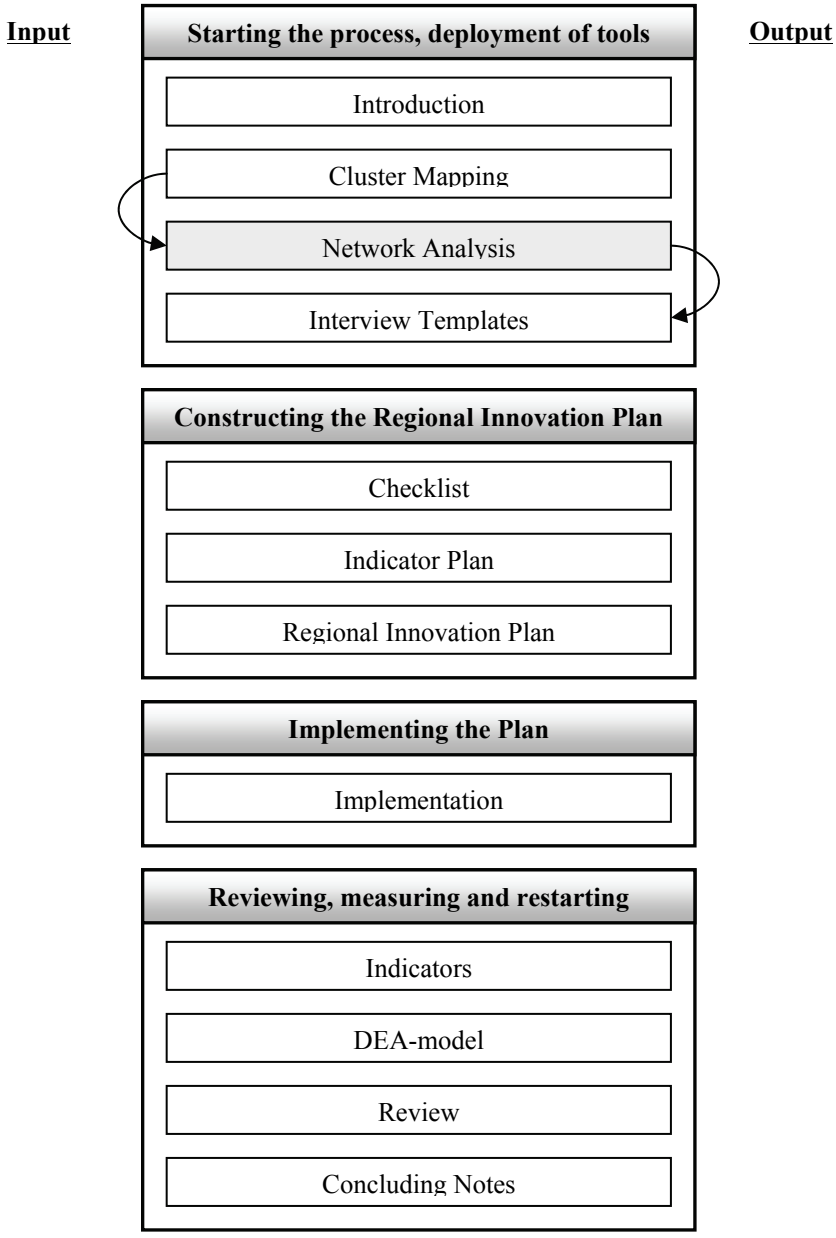
OECD Observer (May, 2007): ”Policy Brief”

Porter, M. (2003):”The Economic Performance of Regions” in Regional Studies, Vol. 37, No. 6&7

Network Analysis

What is the purpose of this tool?

The purpose of the network analysis is to see whether the clusters discovered through use of the Cluster Mapping Tool are working or not. Clusters cannot benefit the region if their cluster potential goes unnoticed, unsupported or undeveloped!



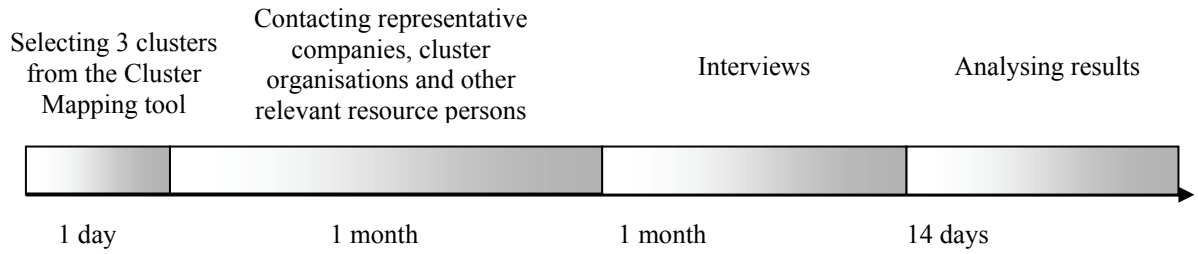
What issues may be addressed by use of the tool?

- Identifies the real content of the cluster with regard to the value chain in the business sector
- Compares clusters with M. Enright's typology of clusters:
    - Working clusters
    - Latent clusters
    - Potential clusters
    - Wishful thinking clusters
- Provides insight into the cluster dynamic, which enables politicians to make more specifically targeted policies or adjust the existing policies

Summary

Many regions talk about clusters and claim they have several clusters in the region such as ICT or Forest Industry. The MERIPA Network Analysis Tool uses qualitative methods in order to understand the dynamics of the cluster. Are the companies that constitute the cluster actually collaborating or not? Through this exercise, we can also identify possible aspects of the Triple Helix in the Region.

Timeline of the tool



What should be the outcome of this exercise?

- Input about the clusters of the region – are they working or not?
- More qualitative input regarding the clusters – it is rare that regional companies are asked for their opinions on the cluster or their collaboration with other companies in the region.
- The possibility of targeting policies more specifically to the needs of the cluster in order to strengthen or enhance it.

Network Analysis

At this point in the process, you have produced a cluster map, but it does not provide you with any information about how effectively the clusters are exploiting their potential. As mentioned above, clusters are defined as interdependent firms, but the degree to which this interdependence is actually realized can vary. A network analysis will help you identify how well the clusters are functioning, which in turn will serve as the basis for determining what particular innovation support each cluster requires. In this section, you will find further definitions of clusters and a guide to determining the activity of selected clusters.

More about clusters

We can distinguish between four different types of clusters.

1. **Working clusters**: Those that already have a critical mass of local knowledge, expertise, personnel and resources
2. **Latent cluster**: Those that have a sufficient critical mass of firms in related industries to benefit from the cluster, but have not yet developed the level of communication and information exchange to benefit from their proximity to each other.
3. Potential clusters: Those that have some of the elements necessary for the development of successful clusters but are often lacking inputs, services, information flows or awareness of existing clusters.
4. Wishful thinking clusters: Those that lack the critical mass of firms or conditions for the organic development of a cluster and instead exist by virtue of government support and commitment.

(This classification of clusters is taken from Enright.)

In the context of network analysis, however, you only need to be concerned about whether the clusters you have mapped are working or latent. The point of the network analysis is not to produce a comprehensive account of all clusters, but a sense of how much interaction or not there is in selected clusters.

Carrying out network analysis

Measuring interactions

We can reasonably assume that more dense patterns of interaction between firms correlate with increased overall performance of the cluster. Network analysis consists of the difficult task of determining the degree and quality of these interactions.

What constitutes dense interaction?

- frequent, close and stable interactions between actors

- a high degree of trust and openness between cluster members
- low levels of misunderstandings
- may be expressed as exchange of information, personnel and/or resources

We have chosen to measure the degree of interaction in clusters through a CATI questionnaire.

Who should you talk to?

It would be excellent if we could analyse the complex web of interactions between several kinds of actors, but in practice we have to keep things simple so that the results can be turned into useful information for policy planning purposes. We recommend that you interview the economic actors only, specifically the CEOs of each of the firms in the selected clusters. By asking these actors about their interactions with other actors in the region such as researchers and administrators, you will be able to get a sense of the full network without having to interview everyone in the network.

You may want to conduct more in-depth interviews with certain firms in the cluster. Use your own judgement about who can provide you with even more useful and multi-faceted information.

Issues covered in the questionnaire

The questionnaire is designed to elicit information about interactions by focusing on the topic of general product development. By focusing on general trends you can avoid simply measuring formal agreements with other firms or the company's own pet project that receives its best resources. Instead, you should be able to draw out a more general sense of collaboration and cooperation with other firms.

Naturally, it is important to determine not only how well firms interact with other firms in their cluster, but also with other regional actors. As already mentioned, it is rather difficult to canvass the whole network so the questionnaire allows the economic actors to reflect on their collaboration with a broad range of other local actors including customers, suppliers, other related companies, consultants, universities and public authorities.

In order to determine the quality as well as the quantity of interactions, respondents are asked to describe the intensity of their collaboration with other partners on a five point scale (where 5 is 'very close interaction', and 1 is 'no interaction').

Since the location and proximity of firms is an important consideration for regional clusters, the questionnaire also includes questions that address regional, national and international collaborations. To get you up to speed on your analysis, here is a list of sample questions you can adapt:

Personal Interviews with private companies:

1) What is the situation within the "(XXX) – industry" today
2) Are you aware of the term "cluster" and do you think you have a cluster within XXX in your region?
3) Are you member of a cluster initiative in the region and what is your experience with it? Are you member of other business clubs, etc.?

Commodity exchange

4) Can you describe your interaction with your suppliers (materials, equipment and design) – how big a share of your total procurement comes from the cluster / region?
5) Can you describe your interaction with your customers – how big a share of your total sale is going to the cluster / region and how much outside the region

Knowledge exchange

6) Can you describe your informal knowledge and experience exchange with other companies or other institutions within the cluster / region? Do you have a "frequent, close and stable interaction with the other actors in the cluster?
7) Is there a high degree of exchange of personnel between the companies?
8) Do you make use of public business services and laboratories in the region – could you please give some examples of this?
9) Do you collaborate (formal/informal) with the knowledge centres (universities, polytechnics and colleges) in the region - could you please give some examples? What is your experience with collaboration?
10) Are you politically active within the regional development agenda in the region?
11) (If no working cluster is identified) – is there a potential for a working cluster in the region and what should be done to strengthen its development? (If there is a working cluster) – how can the cluster be further developed and how should it be done?
12) Could you point out key people in the regions who have been particularly active in the development of the cluster – they could be business representatives, politicians, private people, professionals within the specific field, representatives from knowledge centres, etc.

Personal interview with cluster initiative:

1) How did the cluster initiative start – who were the main actors? And on what basis (cluster analysis etc.) was it started?
2) How is the cluster organized, and what is its strategy?
3) What kind of activities are in the cluster? How would you describe interaction within the cluster ("frequent, close and stable" or not)
4) How many and what kind of members do you have?

5) Are there any evaluations of the initiative – what are the results?
6) How is the initiative financed?
7) Are the public authorities (municipality – region etc.) involved in the initiative?
8) What is the future of the initiative?
9) Could you point out some key people in the region who have been particularly active in the development of the cluster – they could be business representatives, politicians, private people, professionals within the specific field, representatives from knowledge centres, etc.

Personal interview with key persons (1-2 persons):

1) How did the cluster start? What was the process; bottom up (company driven) or top down (regional policy driven)?
2) Can you describe the cluster – is it working and using its full potential, or is it latent (with a critical mass but no interaction)?
3) To what degree is there regional ownership of the cluster – is it recognized as a cluster and do all partners in the regional arena (business life, politicians, authorities, knowledge centres etc.) feel ownership of the cluster and support it / take part in it, or are there only a few kinds of regional actors taking part in the cluster?
4) Do you think the cluster acts as a "magnet" for other companies to place their company in the region?
5) How can other clusters grow either from a latent cluster to a working cluster or as a quite new cluster?
6) What does it mean for the cluster that the region is supporting it with through regional politics, etc?
7) What is the future of the cluster?

Network Analysis - Conclusions

Summing up what has been done

- Company representatives, cluster initiative / special interest groups and other key persons of the identified potential clusters have been targeted for qualitative interviews
- Diverse actors from these groups have provided their input in face-to-face interviews to draw out a holistic view of the dynamics of your regional clusters
- Awareness, as well as initial commitment, towards the policy process may have been instilled in the business community

What has been achieved?

- The actual strength and mechanisms of collaboration in the potential clusters of your region have been unveiled
- The basis for much more accurate policy measure deployment has been laid
- Possibly some of the following have been discovered:
    - Working clusters that have previously been overlooked in policymaking
    - Industrial companies that only need the push provided by regional policy to flourish and become an active cluster
    - Hot spots for generating employment and economic growth

Important to notice

- Small and medium sized companies often do not have any knowledge about "clusters" and they do not see themselves as part of a cluster. Try asking them questions about networking, value chains, etc in order to understand their view of the cluster!
- Even if the term "cluster" is not used, it's very likely that the informants have a clear picture of the collaboration, or lack thereof, going on in the cluster. The important thing is not to use the concept itself, but to see the way in which clusters are working in your region.
- The tool will not give you results about what to do, but it will provide you with a qualified background upon which to base your political decisions. It may shine a light on ideas that businesses in your region have about the existing policies or produce ideas on areas for future policy attention.

Moving on – What comes next?

- Interview Templates: After recognizing the influential clusters and key persons in your region, it is time to take full advantage of their unique insight into the innovation landscape of your region and lay the foundation for the design phase via the use of special interview templates.

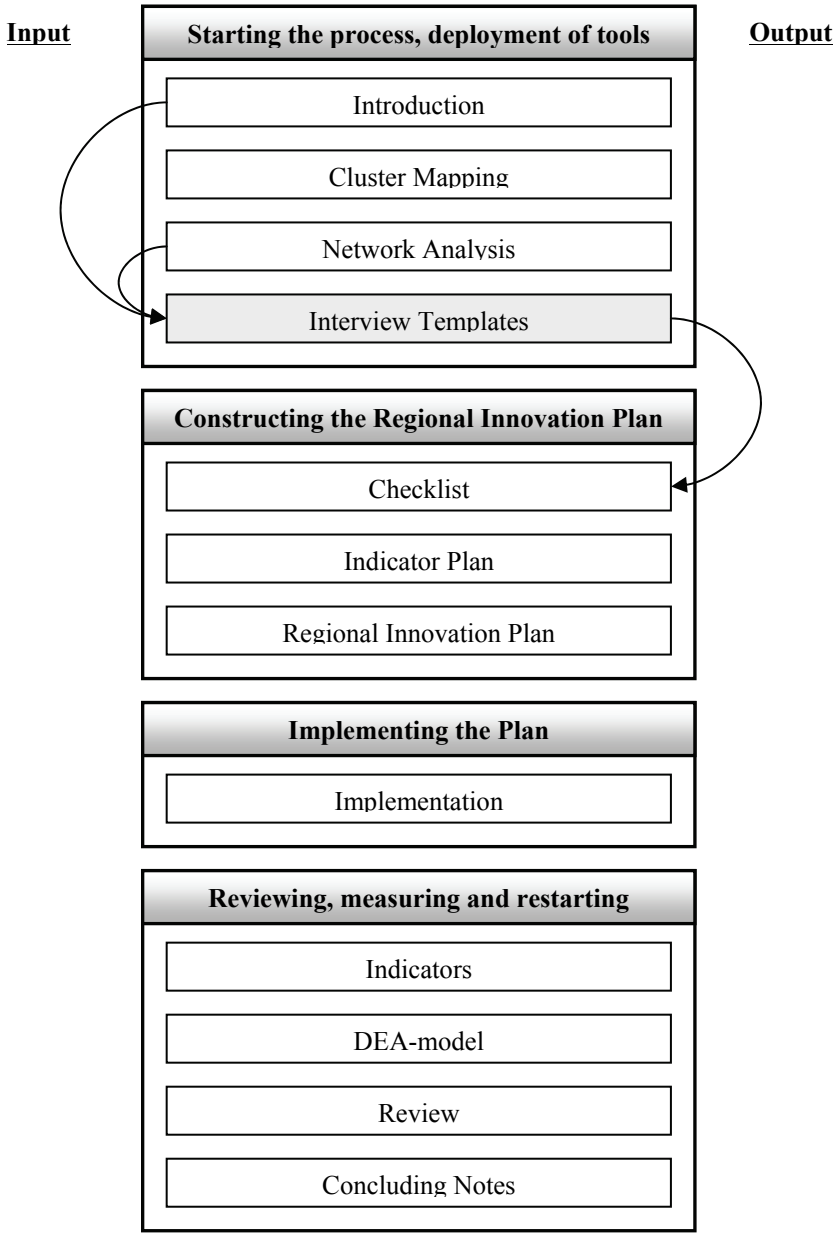
Further reading and references

See references at the end of the previous chapter, "Cluster Mapping".

Interview Templates

What is the purpose of this tool?

The primary objective of the Interview Template tool is to gather region-specific information and lay the foundation for the roadmap that will constitute the basis for your innovation policy.



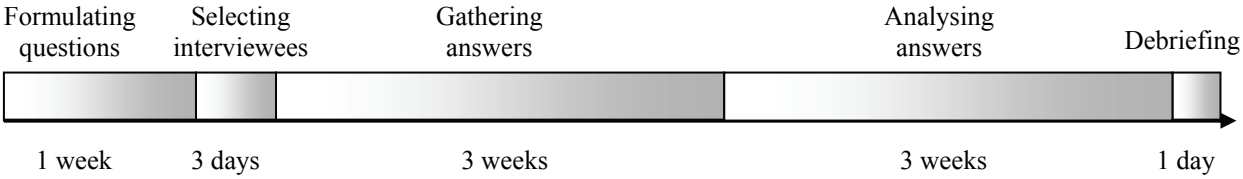
What issues may be addressed by use of the tool?

- Your policy work is too reactive and late in adapting to changes in the region
- You do not have an innovation policy and don't know what issues it should address
- Your innovation policy is too general in nature
- Your policy does not serve the regional needs
- Commitment to the policy process is thin

Summary

To understand the needs of the regional innovation system in actionable detail, it is necessary to interview the key actors. The Interview Template provides 15 example questions, which can be altered to better fit your needs and level of understanding. Interviews are held to gather information (and instigate commitment to the policy process) from all the parties that make up the innovation system. Analysis of the answers provides concrete help in goal setting, policy measure selection, understanding the situation now and staying a step ahead by collectively anticipating future events.

Timeline of the tool



What should be the outcome of this exercise?

- You should have the best possible picture of the "innovation landscape" in the region, both now and in the future
- Be able to provide input on what goals the policy should pursue in order to be successful
- Gather views on the measures that are suitable for reaching the goals
- Be able to anticipate events that can have an effect on the implementation of the policy

What is a "Regional Innovation System"..?

A central finding in the innovation literature is that a firm does not innovate in isolation, but depends on extensive interaction with its surroundings. Innovation is seen as an interactive process of knowledge creation, adaptation and diffusion, where innovation is shaped by institutional routines and social conventions. This gives rise to the regional innovation system.

Philip Cooke (2002) points out that despite globalisation and increased foreign ownership, most European businesses are strongly regional and national in key business relationships, meaning the relationships which they rely on to innovate! A good part of firms in any region are highly dependent on local and regional inputs, and those firms are "embedded" in the regional economic system. They make use of their region's innovation infrastructure (universities, governance etc.) and in turn, strengthen the region by stimulating the economy and creating a spillover effect of positive results that benefit the whole region.

Interview Template

The primary objective of the interview process is to lay the foundation for an adequate roadmap, which the regional innovation policy can address and reflect. Key issues to be addressed are:

- getting the best possible picture of the "innovation landscape" in the region, both now and in the future,
- providing input on what goals the policy should pursue in order to be successful,
- gathering views on the measures that are suitable for reaching the goals and
- anticipating events that can have an effect on the implementation of the policy.

The interview should be presented to a variety of actors, preferably including several members from all different parties involved in the policy process (e.g. politicians, academics, enterprises). The inclusion of different viewpoints can prove critical to uncovering the real problem spots in the innovation system and can also provide fertile ground for innovative policy work. The interview results are then used to formulate a free-form roadmap that states the region's current status as an innovation system, the goals of the new regional innovation policy and how to pursue these objectives, including alternative adjustments for possible course-changing future events.

More specifically and at a minimum, the following goals should be pursued when commencing the interviews:

- Find the problem spots of the current innovation system that slow down regional innovation system development and inhibit the growth of innovation capacity development
- Assess the level of awareness of Regional Innovation Policy / Strategy
- "Chart the terrain" of innovation, meaning provide a qualitative description and analysis of the entire regional innovation system and how the actors see it
- Regional competences (originating from the identified clusters)
- Views on where the innovation system is likely to be headed = charting possible future developments
- Discover weak signals about future events that may have an effect on the policy, if those future events resolve (be sure to allow the interviewee to identify the weak signals; formulating these questions may be demanding)
- Find out how committed the actors are to actively supporting the policy
- List the primary innovation-related needs of the region now and in the future

Regions are encouraged to formulate questions that best suit their needs and go beyond the basic objectives described here, according to their previous experience (or lack of) and their region-

specific points of interest in the policy work. However, to accompany the goals stipulated above, some example questions are provided.

1. How do you see the region as an innovation environment?
    a. Describe briefly whether, and how, the regional setting supports innovation activities.
    b. Do you experience the regional decision-making and/or the actors present in the region (e.g. companies, public institutions, universities) as a supportive force to innovation efforts? Why/why not?
2. Where in the region do you see the most innovation potential (name one or more industries / companies / institutions) and why?
3. In which areas of business and / or technology do you consider your region to be most competitive? How would you rate the region's competitiveness (in regional / national / European / global settings)?
4. What is lacking in your innovation environment (e.g. public funding to support R&D, competent workforce, collaboration between actors, etc.)? Which of these deficiencies do you consider to be the most inhibiting to innovation capability development?
5. What do you consider to be the primary innovation-related needs:
    a. for your current situation and how well are they served? (Question mainly for businesses)
    b. in your business 5 to 10 years from now? (Question mainly for businesses)
    c. that the region needs to focus on to strengthen its innovation capability? (Question for all participants)
6. In your opinion, what industries can the region build its competitiveness on? How should they be promoted?
7. What should be the primary goals (e.g. promoting technology transfer, raising awareness of innovation supporting activities in the region, etc.) of the region in designing an innovation policy? Please provide at least two distinct objectives and a short reasoning behind your selection.
8. What measures do you see as effective for driving the region towards the goals you provided in the question above?
9. Can you foresee some future event or events that are likely to have an impact on the region's economy and / or its innovative capability?
    a. Briefly, please describe these possible events, both positive and negative (e.g. the sudden rise of a new high-tech industry, increasing / decreasing interest in the region due to external events, etc.) and assess their probability?
    b. What, if anything, should be done to prepare for these events?
10. How do you see the region 10 years from now?

a. Provide a concise explanation of what you consider to be the economic situation then; how has the economy developed, what industries have become stronger or weaker?

b. Has the role of innovation in the region changed? Do you believe that the regional innovation policy work has had a significant effect?

11. How important do you consider regional innovation policy work to be, on a scale from 1 to 5 (1= not important, 5= very important)?
12. To what extent are you willing to participate in the policy work? (None / answering questionnaires / taking part in workshops / actively committing to designing the policy / free answer). Why have you chosen this level of contribution?
13. What do you expect the regional innovation policy work to offer you?

To accommodate cases where a pre-existing innovation-related development scheme is present, the following questions may be added.

14. Are you familiar with your region's innovation strategy / policy? Please, explain briefly what your region is currently doing to facilitate innovation, and what are the most important parts of the strategy or set of actions, from your perspective.
15. Do you feel that the existing innovation policy or strategy pursues falsely appointed goals? If so, explain in what sense your existing policy may be misguided.

In addition to the sample questions above, regions should boldly develop questions addressing issues that are felt to require further clarification. Questions may also be altered according to regional preference, but open questions with no ready alternatives are strongly recommended to bring forth the tacit knowledge of the regional innovation system. Summaries (anonymized) of the interview answers can also be presented to the interviewees afterwards.

Interview Template - Conclusions

Summing up what has been done

- A custom questionnaire that optimally complements the previous knowledge of the policy process participants has been drafted
- Key actors to interview have been selected based on the previously completed network analysis and Triple Helix – concept
- Tacit knowledge and experience of the regional innovation system has been collected
- Gathered results have been refined to provide an extensive understanding of the prevailing situation and upcoming events, effectively providing a roadmap to guide policy design

What has been achieved?

- Weak signals about future developments of the regional innovation system have been intercepted
- A basis for understanding the needs and underlying issues in the regional innovation environment has been established
- Awareness and commitment to the innovation policy process has been heightened
- Prerequisites for incremental policy work have been achieved

Important to notice

- Involving all the necessary parties may prove difficult. Business people are often busy and uninterested in the promise of long-term regional benefits. Think about ways to motivate them to take part nevertheless.
- When selecting people to interview, choose those that have a genuine interest in the policy and/or those you would like to commit to the process.
- People cannot give you objective truths, only subjective views. Critical analysis is needed!
- Don't fall for substituting quality with quantity when it comes to picking your interviewees: identifying the key actors is the key to success here!

Learning By Doing

The introductory questions will allow for a better positioning of the economic development of the region in question and to clarify some of the concepts that are used later in the questionnaire.

1. Please, give a short description of the economic development in your region since the 1970s.
2. Generally speaking, why do you think it is important to develop an innovation strategy in your region?
3. How do you define "Strategy"? / What meaning do you put in to the word "strategy"?

Moving on – What comes next?

- Checklist: A chance to pause and consider not only whether you have all the ingredients to start working on your regional innovation policy, but also the time to think back and reflect on how the process has been developing so far.

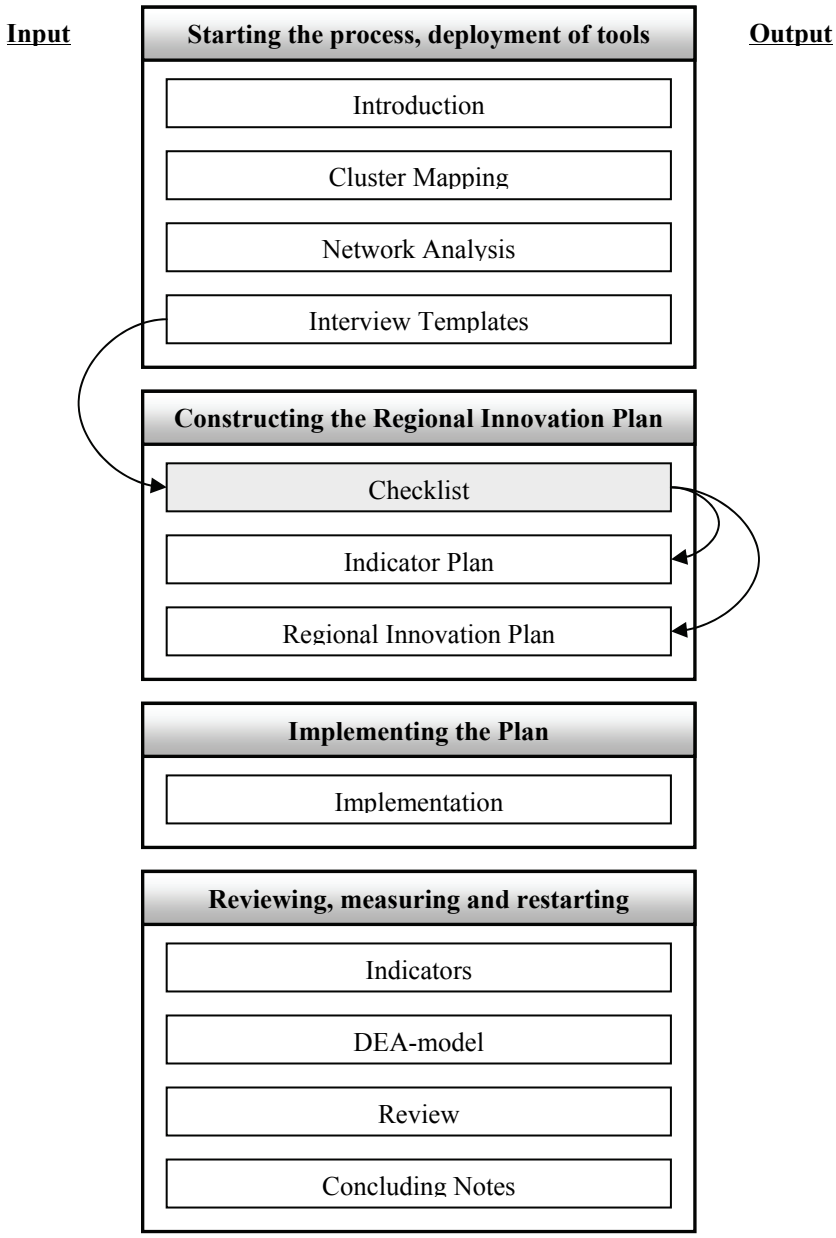
Phase II

Design

Checklist

What is the purpose of this tool?

The Checklist is a simple tool to verify that you have a solid basis from which to proceed to the design phase of the policy process.



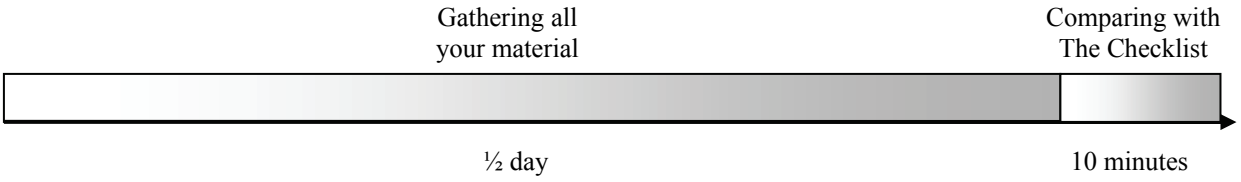
What issues may be addressed by use of the tool?

- You are new to the policy process or to using the MERIPA Toolbox and uncertain whether you are ready to start designing your policy
- You have doubts whether you have deployed the tools in the Start-up section successfully
- You want to be sure that you are well-prepared for the design and wish to communicate that to other parties in the process

Summary

The Checklist is your chance to pause and confirm you have all you need to go ahead and start designing your regional innovation policy. It lists the most central tasks that need to be accomplished before setting out on the design phase. Presented in one concise package, it includes checkboxes so that you can mark up what has been done and see what remains to be achieved in one quick glance. To make proper use of The Checklist as a tool, careful thought and critical reflection is presumed. In addition to simply checking if everything is done, consider whether all tasks were completed successfully and whether the results were fully understood.

Timeline of the tool



What should be the outcome of this exercise?

- Verification that you have all you need to start working on the design phase
- Ability and confidence to communicate your readiness for working with the policy
- An overview of what sources feed into the policy design process

Before proceeding to the concrete design phase of the policy process, you should make sure that you have completed all the necessary preparations. The Checklist presented here is a concise memo to remind you of that. Use of The Checklist is simple, just go through it point by point and mark what you have done so far in the empty checkboxes adjacent to each point. We cannot emphasize too strongly that you need to reflect critically on each point: ask yourself continuously whether you have completed the tasks to the best of your ability.

The quality of inputs you pour into the design of the policy will surely have a decisive role in determining whether your policy will be able to instigate a positive effect on the regional innovation system's development or whether it will remain a forgotten document with good intentions, but little impact. The Checklist should be discussed among all stakeholders. This will be beneficial to furthering commitment among stakeholders, as you display that you value their input on the preliminary work and ask for their approval.

The Checklist

- ☐ Key actors from political, scientific and business communities have committed to taking part in the design phase and subsequent implementation of the policy
- ☐ The concepts of Innovation, Regional Innovation System and Clusters, among others, are understood clearly by all stakeholders
- ☐ The interviews according to the Interview Templates tool have been completed, offering insight on…
  - ☐ The goals your policy should pursue
  - ☐ The current state of the regional innovation landscape, along with perceived strengths and weaknesses
  - ☐ Upcoming events or scenarios that may prove to be either opportunities or threats to innovation development in your region
- ☐ You understand the innovation-related needs of your region
- ☐ Cluster Mapping has provided you information on which industries are exceptionally vital in your region, providing opportunities for innovative clustering
- ☐ Network Analysis has sharpened your outlook of the regional industries, distinguishing between active clusters and potential, latent ones
- ☐ Resources in the meaning of adequate personnel and funds have been secured to carry through the whole process
- ☐ You have gathered and reviewed all the other relevant policies already in effect that overlap with the Regional Innovation Policy (Science, Education, Business Development, Regional Development, National Innovation Policy, etc.)
- ☐ Heightened awareness and interest regarding the innovation policy work have been awakened in the region to some extent

Checklist - Conclusions

Summing up what has been done

- The Checklist has confirmed whether everything has been done in preparation for moving to the actual designing phase
- Policymakers have had a chance to review all the information they have gathered thus far and reflect on what can be learned from the start-up phase

What has been achieved?

- Once successfully completed, The Checklist has been filled, and prerequisites for moving to the next phase of the process have been achieved
- The Checklist may have formed into a powerful tool for summarizing and communicating work accomplished so far

Important to notice

- The Checklist itself is a quick tool, but the questions it addresses are very meaningful. Do you feel you are ready to proceed? Have you established sufficient understanding about what you are setting out to do?
- Reflection on the results of the Checklist is of the essence! Instead of just rushing through this phase, take a moment to critically review all the information that you will eventually build your policy on. Good preparation, after all, is often a key to success. Ask yourself: What have I learned about my region's innovation system so far?

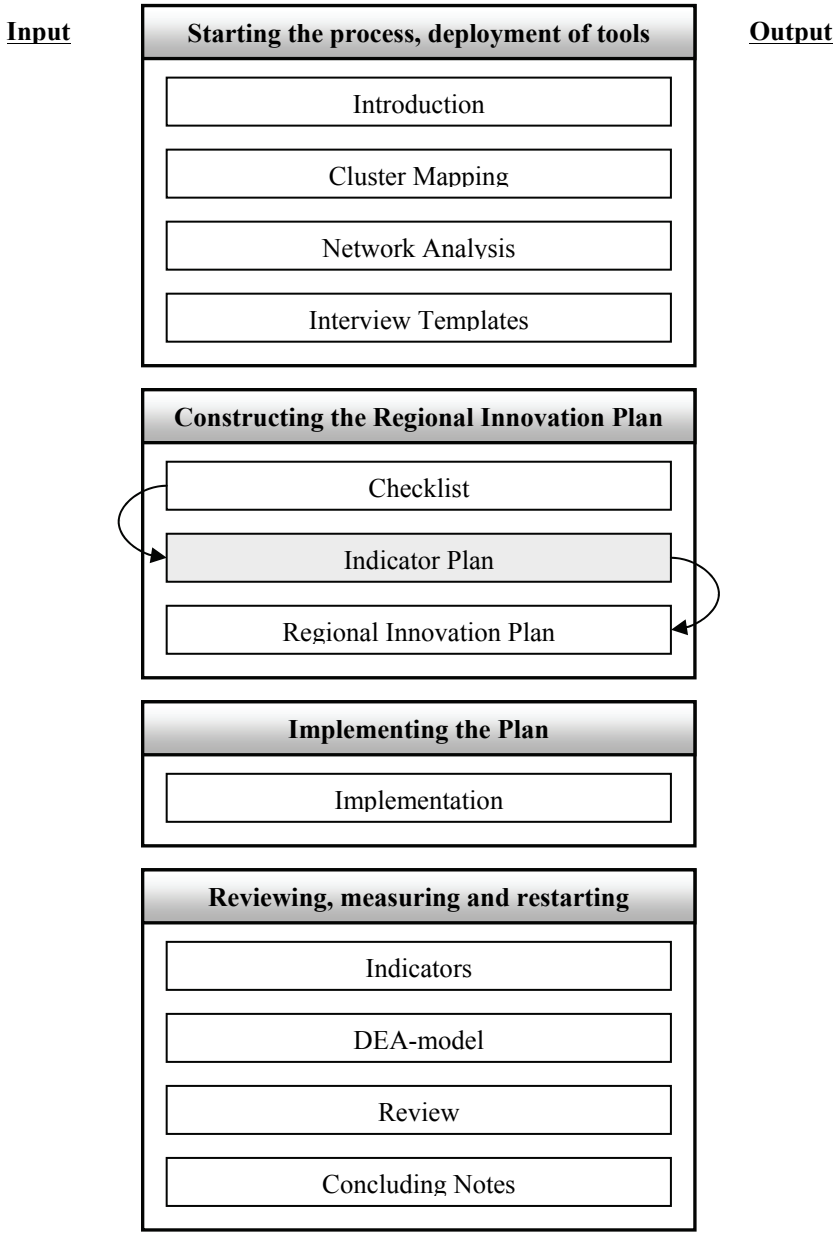
Moving on – What comes next?

- Indicator Plan: Stepping aside to think about evaluation when you haven't even designed the policy to evaluate may appear counter-intuitive, but it is definitely worth the effort. The Indicator Plan in conjunction with the policy offers the prerequisites for a fact-based, convincing review that will bear fruit in the long run.
- Regional Innovation Plan: Now that all the bases have been covered for proceeding, finally it has come time to make your own innovation policy! For more on the subject of constructing a functional, regionally customized policy, rush to the next chapter: Regional Innovation Plan.

Indicator Plan

What is the purpose of this tool?

The Indicator Plan aims to engage policymakers in a process of continuous evaluation and integrate evaluation and assessment deep into the policy design. A plan for collecting necessary data for policy evaluation at a later phase is embedded into the design.



What issues may be addressed by use of the tool?

- You want to evaluate the impact of your innovation policy and are unfamiliar with the indicators you could use or the data you need to use them
- You want to evaluate the impact of your innovation policy but you have no access to statistical data for use with indices
- You want to ensure that you have included suitable methods of evaluating the impact of your policy into the design process

Summary

The indicator plan tool is designed to introduce you to five composite measures of innovation performance developed by MERIPA. The general description of these indices includes what they measure and short lists of basic data you will need to gather in order to measure your region's performance. If you do not have access to the relevant data the tool offers a plan of action that you can include in your policy design process to gather the data for use at a later stage of the process.

What should be the outcome of this exercise?

- You should understand the various ways in which you can measure the innovation performance of your region
- You should know exactly what data you need to obtain to use the indices
- You should be able to make a plan to gather the relevant data for using the indicators

Indicator Plan

What are indicators?

It is clear that if you want to have a sense of whether your innovation activities are having the desired and expected effect on your region, you need to have some sense of if and how conditions change from one point in time to another and to what extent those changes may be attributed to your efforts. Indicators provide information with which it is possible to see trends over time and interconnections between different factors in complex socio-economic setting. They do not provide exact information but rather offer approximations that can be used in assessing socio-economic development, in our case the regional innovation and the success of policy measures designed to support and enable it.

The MERIPA Project Toolbox includes 5 composite indices:

Indicator	Determines
Regional Summary Innovation Index (RSII)	General innovation performance
Regional Innovation Capacity Index (RICI)	Innovation capacity of a region
Regional Innovation Incubation Index (RIII)	Ability to incubate innovative business
Regional Helices for Innovation Index (RHII)	Function of Triple Helix collaboration
Regional Excellence in Innovation Index (REII)	How many areas of excellence in innovation

Why use several composite indicators?

The 5 composite measures presented in the Toolbox (see Indicators) will allow you to distinguish four kinds of impact that a public policy can have on regional innovation performance.

First, the RSII considers basic dimensions of innovation and relates regional performances to both national and European averages. This type of index can account for the possible effects of public policies on the relative predisposition of the region towards innovation. Hence, changes in this measure testify to a *general*, positive or negative, impact of public interventions on innovation in a relative sense.

Similarly, the RICI refers to four fundamental capacities that a regional innovation system should have. As above, this measure can assess the general, positive or negative, impact of public policies of different nature on innovation. Nevertheless, it conceives such a general impact from an absolute standpoint. Taken together, the RSII and the RICI can give a quite clear account of *overall effects* of public policies for innovation.

In order to gain insight into more specific impacts, you have to use the remaining three indices. They are focused on three particular aspects of the innovation process:

- the RIII measures the capacity of a region to *incubate innovation*, that is to cultivate innovation seeds provided by the scientific and technological worlds
- the RHII considers the main *channels of innovation* and how these works relative to other regional innovation systems
- the REII is focused on the existence of "*cases of excellence*" in innovation, accordingly to the common view that to innovate means to get first to a new idea.

Consistently, important variations in the values of these last three indices indicate, respectively, that public policies have had a specific impact on the regional:

- absolute capacity to cultivate innovation;
- relative solidity of the channels of innovation;
- ability to foster excellence in innovation.

Data required for the composite indicators

To benefit from the indicator analysis, you need to gather the necessary statistical data. Below you will find a basic list of data required to use each composite indicator.

A wider number of indicators than those discussed here would naturally provide a higher degree of precision and effectiveness. However, the rationale behind the choice of those listed below is to provide a path that can easily be followed in practice in most regions. The list below, then, includes only those indicators which are commonly available, at least for those regions at NUTS 2 level in the European Statistic System Classification.

Regional Summary Innovation Index (RSII)

- human resources in science and technology (% of population)
- participation in life-long learning (% of 25-64 years age class)
- employment in medium and high-tech manufacturing (% of the workforce)
- employment in high-tech services (% of the workforce);
- public R&D expenditure (% of GDP)
- business expenditure in R&D (% of GDP)
- EPO patent applications (per million population).

Regional Innovation Capacity Index (RICI)

- Percentage of employees working in enterprises who have used the Internet to get information and digital goods or services (% of total employment)
- private financing for R&D regional total (% of GDP)
- Public financing for R&D regional total (%of GDP)

- Percentage of population with tertiary education (% of 25-64 years age class)
- EPO Patent Applications (per million population)
- Percentage of Small and Medium Enterprises SMEs innovating in-house

Regional Incubation Innovation Index (RIII)

- Share of high-tech, ICT, bio-tech, nano-tech venture capital investment;
- Percentage of S&E graduates (% of 20-29 years age class);
- Total Employment in high and medium high technology manufacturing and knowledge-intensive high-technology services (NACE Rev. 1.1 codes 24, 29 to 35, 64, 72 and 73);
- European Patent Office (EPO) high-tech patent applications (per million population);
- Percentage of Small and Medium Enterprises SMEs innovating in-house.

Regional Helices for Innovation Index (RHII)

- public funding for University R&D (% of GDP);
- business funding for University R%D (% of GDP);
- R&D expenditure by source of financing as a % of total (% of GDP);
- percentage of SMEs involved in innovation cooperation or networks;
- number of innovative clusters and innovation networks.

Regional Excellence in Innovation Index (REII)

- exports of high-tech products (% of GDP);
- sales of new-to-market products (% of the total);
- number of scientific publications;
- number of EPO high-tech patent applications;
- percentage of SMEs innovating in-house.

What to do if relevant data is unavailable or missing

A carefully considered plan will allow you to gather the data you need along the way, and ensure that your plan is part of a continuously renewed process of learning about your region's innovation capacities. It may be, as it seems to be in a number of cases with European regions, that the indicator data required for the five composite indicators introduced above is not available. In many countries and/or regions the National Statistics Agency (or its equivalent) does not collect data that is necessary for the Regional Innovation Policy Assessment. We therefore suggest that regions take the initiative and begin collecting the necessary data to enable them to monitor their progress.

In order to gather the information necessary to use the indicators you need to:

1. Assess which indicators the region currently uses to assess innovation and innovation policy;

2. Identify the regions against which the analysis has to be performed, that is, those regions whose innovation performance have to be evaluated and compared;

3. Assess the availability of necessary indicators for all regions involved in the analysis, by accessing the National Bureau of Statistics and the European Statistic Official sources first, then searching for available surveys produced by reliable organisations that demonstrate the characteristics of availability, comparability, quality, accessibility of the statistical information as well as the necessary territorial homogeneity;

4. Compile the list of commonly available indicators and ensure they cover all the dimensions needed;

5. Design a process by means of which at due times and with specific periodicity necessary data are collected from available identified sources;

6. Set a suitable budget to start a survey to collect data regarding specific indicators in case they are not available from other sources, taking into account the absolute need for comparability with similar indicators in other regions (i.e.: defining for each indicators a specific set or rules regarding the definition, the modality of survey/collection, etc).

Indicator Plan - Conclusions

Summing up what has been done

- Relevant data has been collected for use with the composite measures of innovation performance
- A plan to collect data that is currently missing or unavailable has been designed and included in the innovation policy plan

What has been achieved?

- You have the basis for carrying out evaluations of the impact of the regional innovation policy at a later stage

Important to notice

- Statistical methods of evaluation are only as reliable as the statistics you gather for use with them. The lists of data included in the tool are only those indicators which are commonly available for those regions at NUTS 2 level in the European Statistic System Classification.
- Use of the composite indicators will not provide exact information about your region! They will offer valuable approximations that can be used in assessing the development of regional innovation and the success of policy measures designed to support and enable it.
- In many countries the National Statistics Agency (or its equivalent) does not collect data that is necessary for the Regional Innovation Policy Assessment. Take the initiative and begin collecting the necessary data to enable them to monitor their progress!

Moving on – What comes next?

- Regional Innovation Plan: Once the indicator plan is finished, it completes the innovation policy by supplying it with a tangible, integrated evaluation scheme, enabling efficient learning and measuring of the policy.

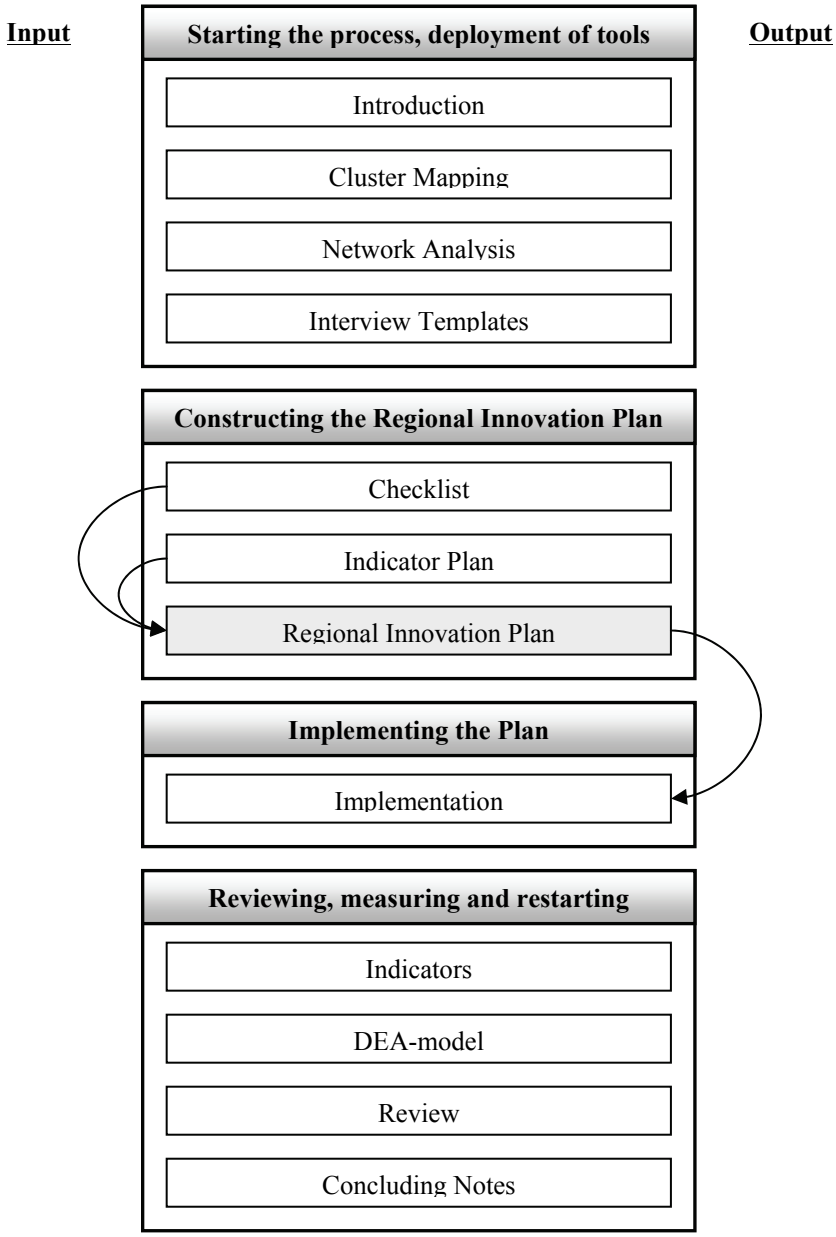
Further reading and references

See references listed under the Indicators section of the toolbox.

Regional Innovation Plan

What is the purpose of this tool?

The purpose of this tool is to help you create a detailed and realistic strategy for innovation activities that is tailored to the specific needs and conditions in your region.



What issues may be addressed by use of the tool?

- If you are new to the policy process, this tool will provide you with guidelines to help you design your strategy
- If you already have some experience with the policy process, you will gain insight into a RIS/RITTS approach to innovation policy
- If you already have an innovation policy based on a RIS/RITTS approach you can move forward to the next phase

Summary

This tool will help you to turn the detailed information you have about your region into a workable strategy for innovation activities. It shows you how to turn your information about the region into a list of priorities, and then to write up your priorities as a set of achievable actions. In order to make the best use of the tool you need to be prepared to spend adequate time consulting and discussing analyses of information on the data, building consensus and ensuring a match between the priorities you choose and the needs expressed by various regional actors.

What should be the outcome of this exercise?

- You should have a written regional innovation strategy that has the support of relevant regional actors
- You should be confident that you have reasonable and achievable goals for improving innovation performance in your region
- You should be able to proceed to the implementation phase of the policy process

Developing the Regional Innovation Plan

After you have invested the time and effort of gathering information about your region through the interviews, network mapping and cluster analyses, your challenge will be to turn that information into a realistic, tailor-made plan that enables and produces actions. How can you go about this?

The process of using your data on the region to draft an innovation plan breaks down into three main tasks: summary-interpretation of results, selection of priorities and drafting of the plan. This chain of tasks is based on the idea that in order to plan strategically, first you need to establish what you are working with, second you need to decide which of the regional problems and opportunities are priorities and finally you need to create a structure for the changes you want to achieve.

In this section, you will find information to help you navigate this process, including guidelines on:

- The composition and function of the groups that will carry out the tasks
- Definitions of the tasks and description of methods to help you carry them out
- Checklists for the three main tasks to help you assess whether you have done what you need to do to proceed to the next stage of the process

Working Together

Building Consensus

The groundwork for all the subsequent tasks we describe here is building and maintaining consensus among the relevant regional actors. Consensus is commonly understood as the happy situation in which everyone agrees on what should happen, but in the course of the regional innovation planning process complete agreement may never be totally achieved and, most importantly, it is not necessary. A better definition of consensus is the decision you can reach as a group when most members of the team agree on a clear option and the few who do not agree with that option know they have had an opportunity to influence that choice. Any final decision you make as a group must be supported by the whole group, even if it is not the first choice of all members.

In other words, consensus exists within a group when each member:

- has the opportunity to voice their opinions
- a sense that their views are fully heard and respected
- actively supports the group's decision as the best possible choice, even though it would not be his or her first choice

Reaching decisions on a consensus-basis is demanding and requires that you:

- allow sufficient time to explore all relevant information and opinions
- provide strong facilitative leadership for discussions at every stage in the process
- ensure members are willing to contribute their views and discuss their reasons
- build the commitment and effort to develop an atmosphere of honesty and openness in the group
- are willing to allow potential controversies and conflicts to surface and work towards resolving them

Consensus is not something that is reached once and can be assumed from that point onward; it is something that requires active nurturing throughout the whole process of summarising, prioritising and planning. It is crucial not to try and smooth over differences too quickly in order to hurry the process along through artificial compromises. Several times during the process people may not agree with decisions, but by carrying out the tasks together and discussing different ideas you can use the process to build levels of trust and commitment that will improve the success of your plan.

Public Consultation

It may be crucial in your region to allow for a period of public discussion in order to achieve an even broader consensus on innovation priorities and plans. The most common and effective ways of initiating public discussion include:

- presentation of priorities and plans via a website
- oral presentations by those involved in planning at seminars and major conferences
- workshops with regional community leaders
- distribution of a concise document accompanied by a call for written responses to the document

Forming Steering Committees and Other Panels for Innovation Planning

Since you should already have involved relevant regional actors in the regional analyses, you should have the necessary contacts to form the groups that will perform the tasks of summarising, prioritising and drafting. Before you begin work, decide on what kinds of groups will best suit your needs at each stage of the process.

Steering Committee
The duties of the Steering Committee are, as their name implies, to define and lead the process for everyone else involved. It is therefore vital that the Steering Committee is composed of a representative sample of the various regional actors in order to work effectively and efficiently. This does not mean, however, that you should try to include everyone at every stage of the process. You can and should exercise judgement about keeping a good balance of actors in the Steering Committee. In particular, limit certain actors' participation in planning to the stage in the process when they can contribute most effectively. You are responsible for managing the right combination of actors at each stage of the process.

You should consider involving the participation of:

- Business representatives
- Intermediaries
- Social partners
- Regional and/or National government
- Training institutions
- Knowledge suppliers
- Financial Institutions
- Industry representatives

Whatever balance of actors you choose, you must be sure that the representatives on the Committee have the authority to commit their organization to the decisions reached by the Committee or you will not be able to reach any meaningful consensus on which to proceed.

For various reasons, you may find it difficult to choose a group that is manageable in size. In this case, you can consider creating a Regional Council on Innovation that includes all members you think you need to include, but meets less frequently than the Steering Committee. You still need to form a Steering Committee, but this will be a subset of members of the Regional Council on Innovation with responsibility for the work of developing the plan.

As you choose individuals and/or organizations to work with ask yourself:

- What will s/he be able to add to this exercise?
- Is s/he able to speak on behalf of her/his organization?
- Will s/he be able to diffuse information effectively inside his/her own organization?
- Is s/he willing to preserve the integrity of the planning process by not discussing the Committee's work with his/her organization before it is necessary?

One final consideration to note: in order to maximise the interest and enthusiasm of committee members, it is important not to establish or involve the committee too early in the process. It may be the case that business representatives in particular will lose interest and commitment to the planning task if you do not have a specific action for them to work on. Experience suggests that you need to have a work programme ready to be able to bring in the private sector.

Strategy Panels or Sector Working Groups

It is both practical and productive to distribute some of the summarizing, prioritizing or drafting tasks to panels that are especially convened for the purpose of discussing particular issues. You may even want to use the expertise of the Strategy Panels to verify the results of the analyses of a particular sector. In this way, informed participants who know and understand specific sectoral concerns can drive the development of innovation planning for sector-specific issues. Used in conjunction with the Steering Committee, these types of panels will give you the best scope to tailor your plan to your region.

There are a few ways in which you can form these panels:

- Members of the Steering Committee may be invited to organize and chair discussions from their own field of expertise or type of institution.
- Regional actors may be invited to organize themselves into groups based on sectoral interests, institutional interests or other useful, common thematics.
- Consultants may be given the task of finding participants and organizing a series of panel discussions.

International Panels
At certain stages of the process, you may find it useful to use a panel of international experts, consultants or some combination of the two. A suitable panel would include up to 8 members from different backgrounds and perspectives. Panels composed of experts from outside the region or the nation can provide broader and more imaginative perspectives on a situation which they understand thoroughly but will not be responsible for developing personally. They can thus be used to verify results, interpret results and assess strategies. You can also use them to help you find information from other regions that have problems comparable to yours, as well as best practices for resolving those problems.

International panels can be especially useful for introducing controversial or provocative perspectives into your discussions, since it is often easier to accept inconvenient or unpleasant truths from the mouths of external consultants. Having a clear, unvarnished view of the situation puts you in the best position to generate a plan that will have a positive impact, and in some instances using international panels may be the best method for you to acquire that view.

It is not recommended that you rely on international panels to provide the primary interpretation of your analyses or to draw up priorities. These are things that must be defined and driven by your regional stakeholders. Once you have established your needs, however, you may want to consult experts so that you avoid common problems and do not have to reinvent the wheel of innovation planning all by yourself.

Remember that managing the experts is a time-consuming task. You cannot and should not assume that the experts will manage themselves in a way that suits your needs, communicate effectively and regularly with each other (there may even be physical or resource barriers to this) or understand exactly what you want them to do. The Steering Committee needs to manage and guide the experts so that their work leads to better, more specific innovation planning for the region.

Summary of Groups: Composition and Function

Formation	Members	Process Stage	Best Used to	Should Not
Steering Committee	Representatives of all relevant regional actors	All stages of the process	Provide guidance Build consensus Disseminate information about priorities and plan Have responsibility for final decisions	Make unilateral decisions
Sector Panels	Representatives of significant sectors	To review and verify analyses To define sector priorities	Provide specific information based on their needs and knowledge Drive definitions of sector-specific priorities	Be given primary responsibility for tasks that clearly fall outside their area of expertise
International Panels	Researchers from various backgrounds Consultants	To review and verify analyses, priorities and plan	Provide (potentially controversial) reviews of results, analyses and strategies Describe alternative scenarios	Drive definitions of priorities or plan

Organizing Group Planning Work

There are a variety of ways that you can organize the discussions and decision-making session that will form the basis of each of the three main tasks. Which of these methods you choose depends entirely on the resources, participants and time you have available to carry out the tasks. As emphasized above, consensus-based decision making is a lengthy process, but you can organize this in different ways. You may want to attempt certain tasks intensively over 2-3 consecutive days or regular, shorter meetings over a set period of weeks. Some of the most appropriate techniques include brainstorming, work-shopping and scenario-building. Feel free to use whatever technique you are most knowledgeable and skilled in.

Tasks: From Analyses to Summary

Once you have formed your working groups, your first task is to assemble the data you have gathered through preliminary analyses into information you can use. The object of this exercise is to allow you to develop a clear view of the region that all relevant stakeholders can understand and agree on. With a clear picture of the region in hand that all stakeholders can accept, you will be able to pinpoint the priority issues for your plan. A clear picture of the region will also allow you to check whether there are any significant gaps in the analyses that need further research.

The three keywords for this task are **summarize**, **interpret** and **understand**.

You need to summarize the results of your analyses in such a way that all participants in the process have a clear sense of what the analyses revealed. Summarizing is by no means an easy task, and it should not be limited to simply collecting summaries of each separate analysis into one document and hoping that everyone involved will understand the larger picture they paint. You must do the work of creating a summary.

In practice, the task of summarizing the results will involve interpreting the results. In this case, interpretation means quite literally building a common language for describing and defining the region out of the various different languages of the analyses, cluster maps and interviews.

The end result of this task should be that you have a comprehensive summary of all the analyses you carried out that everyone in the region can understand and agree is a true picture of your region. The summary may include:

- the main drivers and barriers to innovation in your region
- the main dynamic trends which actors need to understand, prepare for, take advantage of and develop strategies to manage
- any gaps or duplications in the supply of innovation support within the region
- the current state of relevant regional and national funding programmes that can support innovation activities

Checklist:

- Do you have a comprehensive summary of the results of the analyses?
- Has the summary been carried out by people who are informed, knowledgeable and experienced?
- Have you obtained a clear picture of your region?
- Is there anything you need to research further in order to proceed?
- Has the summary been accepted by all key stakeholders for the purposes of planning?
- Does your summary allow you to select relevant priorities that will allow you to develop a realistic innovation policy?

(Checklist adapted from Innovating Regions in Europe, IRE Secretariat February 2007, p.16)

From Summary to Priorities

The priorities you select for action from the summary of results will be the foundation of your regional innovation plan, so your next task is to select these priorities. The process of summarizing and interpreting the results of your analyses of your region should naturally suggest some priorities, but do not be discouraged if it is not immediately obvious how and which of several issues should be tackled first. You can use the general indications to begin discussions about what your strategic priorities should be.

As you discuss and debate which priorities you might want to focus on, consider the following general points:

- **selected priorities must harmonize with existing policies and priorities**
- **relevant stakeholders and actors must be able to support the chosen priorities**
- your priorities must be stated in a form that may be understood by target groups
- priorities must be specific to the region
- priorities must be clearly supported by and derived from the analyses

You will also want to make sure that your priorities

- are realistic
- are limited in number
- can be turned into specific actions

It is vital that any priorities you set match with the first two points marked in bold print. Priorities that are significantly at odds with existing innovation programmes and do not have the full support of stakeholders have significantly less chance of success.

Using Scenario Development for Selecting Priorities

Scenario development has proved to be a useful method at this stage of the planning process. As you try to select priorities, you can consider 2-3 alternative economic trends and influences on crucial sectors in the regions. For example, you might compare a scenario in which you emphasize the continuing support of existing regional sectors against a scenario in which you emphasize developing sectors that are still small but have strong potential for future growth. As you look at both scenarios think about how likely, desirable and sustainable the effects of each case would be on the long-term development of the region.
For each scenario you generate try to select the priorities and related actions you would need to achieve the desired result. Are they feasible? Do you have the resources to achieve these actions? Are there significant risks involved? Once you have looked carefully at two or three options, you should have a much clearer sense of which priority will lead to tangible and realistic results.

The benefit of scenario development is that it enables a clear and focused discussion of limited option. It may therefore be an especially useful tool when priorities are not self-evident. In order to preserve the advantage of this tool, it is best not to try and consider more than 2 or 3 scenarios at any one time.

As you try to focus your concerns, it is vital that you do not ignore the information you have gained from the regional analyses and start developing a wish-list of priorities. Be careful to keep regional actors involved in the process so that any priorities chosen are strongly connected to actual needs and conditions in the region.

Responses, Debate and Resistance

You should anticipate debate and disagreement about the selected priorities. In fact, it is essential to encourage as much discussion as possible in order to ensure that the priorities that are accepted for action are relevant to the majority of those involved. Resistance to chosen priorities may be a sign that something is missing from the preliminary analyses and needs further attention, or that a commonly shared view of the region is still missing and more communication about actual conditions in the region is necessary. In the unlikely even that you meet with no resistance, consider seriously whether this is an active or passive response!

Be prepared to set or modify priorities if it seems that there is no commitment, interest or enthusiasm for the priorities you have chosen.

Checklist:

- Do the chosen priorities reflect the true needs of the region and its stakeholders?
- Do your priorities harmonize with regional or national priorities already defined by other policies and programmes?
- Have you achieved a consensus on priorities from relevant regional actors and stakeholders?
- Will these priorities realistically lead to specific actions?

From Priorities to Plan

Once you have selected priorities and agreed upon your choices with relevant stakeholders, you can begin the task of turning the list of priorities into a detailed, strategic plan. Your plan will serve as the guide for all regional actors involved and should clearly indicate what actions are necessary to achieve your priorities.

As you begin this task, remember that the plan should always be a flexible instrument that works for you, rather than a millstone around your neck that you are forced to carry around. If you have done the preliminary work carefully and thoughtfully, you should find that you can make changes to your plan as you gain feedback without causing significant problems. Changes in the plan are always possible and may often be desirable.

Do be aware, however, that at whatever point in the process you make a change, you need to preserve the chain of analyses-summary-priorities-planning. In other words, a change in one part of the chain will almost certainly necessitate change in everything linked to it, and you must be prepared to follow the changes down the chain.

When you have reached this stage, the task of drawing up your plan consists largely of breaking down each priority into smaller and smaller tasks that can be placed on a timeline and designated

to specific actors to accomplish. The keywords for planning action and related tasks are **specific, manageable and assignable**. Your plan needs to address the following main questions in relation to each of your chosen priorities:

- What are you going to do (goal, objectives)
  - Define concrete actions, measures and projects that will achieve the priority
  - (Re)state the priority as a main action
  - Sub-divide the main action into 3-5 sub-actions that can be carried out by specific actors

- How are you going to do it (method)
  - Define the best way to achieve your actions
  - Identify target groups

- How are you going to organize it (process and responsibilities)
  - Describe the competence, credibility and responsibilities of specific actors to carry out designated tasks
  - Decide who is going to be responsible for reviewing and reporting progress
  - Create a time-frame for achieving all sub-actions and actions (be scrupulous about allowing time for the smallest tasks to be adequately performed)
  - Allot deadlines

- How you are going to fund it
  - Identify regional, national and European funding sources for planned actions

- How you are going to test the effectiveness of the plan
- How are you going to monitor the plan

Your chosen priorities will set the parameters for the answers you can give to these questions. You have chosen a destination you want to get to (a priority), and now you are mapping out your route to that destination. There are several ways to get there, depending on your resources, the infrastructure and the environment, but part of the problem has already been eliminated for you since you know where you want to go.

Testing Ideas

In order to maximise the success of your plan, you may want to test some of your key priorities and related actions through pilot projects. You can use a 'flagship' pilot project to serve as a highly visible demonstration of the plan at work and generate momentum, or you can simply investigate the feasibility of certain actions through more modest, less visible projects.

Evaluating the Process

It cannot be emphasized too often that you should always be reviewing the plan and your processes so that you can use lessons learned to improve the innovation plan as soon as you can. Remember to allot time to carry out these tasks into the schedule. You will find a detailed discussion of how to implement evaluation processes elsewhere in the toolbox.

Regional Innovation Plan - Conclusions

Summing up what has been done

- You have considered the results of the cluster mapping, network analysis and interview exercises and drawn up a list of priorities for innovation activities in your region
- All relevant regional actors are able to endorse the chosen priorities and many have had a part in choosing those priorities
- You have ensured that your chosen priorities harmonize with existing policies and priorities
- You have translated the priorities into actions that can be realized

What has been achieved?

- You have created a written document that outlines priorities and actions for regional innovation activities
- You are ready to take decisions about how the strategy can be implemented

Important to notice

- Consensus is crucial to the process! It is something that requires active nurturing throughout the whole process. Don't try and smooth over differences too quickly in order to hurry the process along through artificial compromises.
- It is vital that you do not ignore the information you have gained from the regional analyses and start developing a wish-list of priorities. Keep regional actors involved in the process so that any priorities chosen are strongly connected to actual needs and conditions in the region.
- Do not be discouraged if it is not immediately obvious how and which of several innovation issues should be tackled first. You can use the general indications to begin discussions about what should be your strategic priorities.

Learning By Doing

The questions posed within the "design process" step are focused on the key influences and actors behind the definition of goals and actions to be undertaken with the strategy. The role of the actors and the inspiration drawn from the pre-existing institutional and/or academic world can help to understand the character of the strategy, its goals and ambitions and define its place within the remaining programmes, policies and projects. The issue of partnerships is first approached at this stage.

4. Which role have existing methodological guidelines (from the EU, OECD, other public authorities)/ toolboxes /best practices played in designing the way you work with the regional innovation strategy?
5. How have popular concepts like cluster, triple helix, entrepreneurs, network, etc. influenced your regional innovation strategy?
6. How were the priorities of the strategy identified?
7. Which public and private actors are involved in the policy-development process with the regional innovation strategy in your region?
8. How is the co-operation between the different actors organised?
    a. How is it formalized?

Moving on – What comes next?

- Implementation: Expectations are high as the design process comes to a close. Next up is putting the plans to practise by implementing the strategy. Be advised though, implementation is frequently seen as the phase where strategies and policies fail to meet expectations. To avoid common pitfalls in implementation, see what the following chapter has to offer.

Further reading and references

Innovating Regions in Europe, RIS methodological guide Stage 2, IRE Secretariat February 2007

Innovating Regions in Europe, Partner Methodological Guide Stage 2 (CM International), October 2003

RITTS Self-Monitoring Guide (Second Edition), 1998

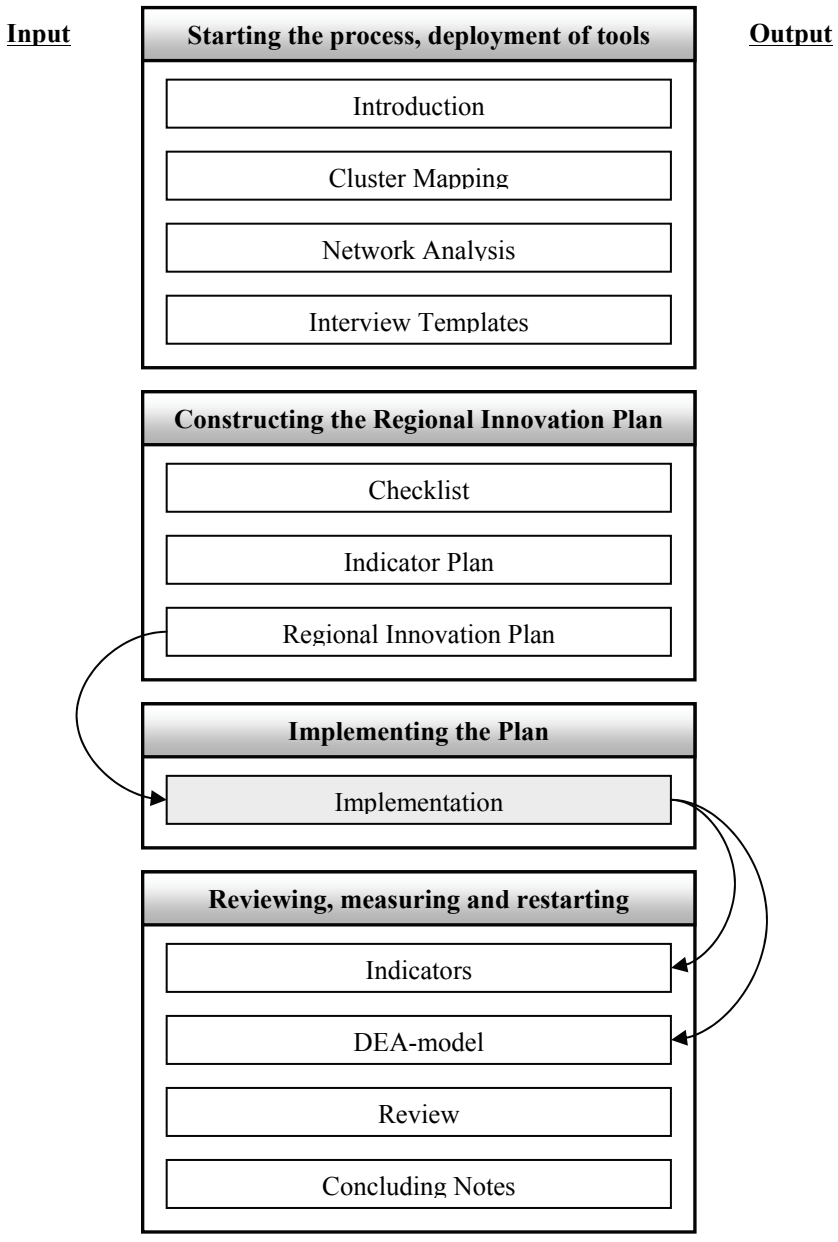
Phase III

Implementation

Implementation

What is the purpose of this tool?

Even though no two regional innovation schemes are the same, and all encounter a unique set of challenges, some general lessons can be passed on. This section provides the user with guidelines formulated from the experiences of the partner regions to support the implementation of the Regional Innovation Plan.



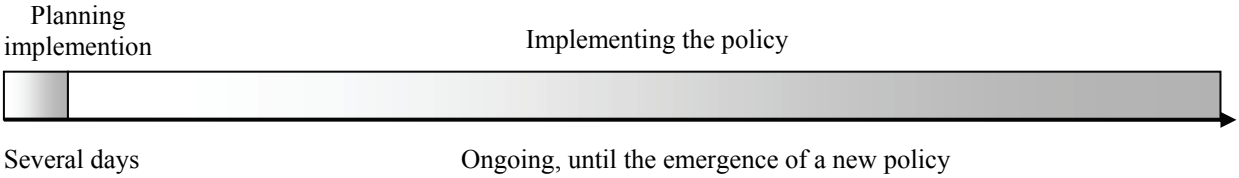
What issues may be addressed by use of the tool?

- You want to be informed about the most common difficulties of implementation so that you can prepare to deal with them
- You want to make sure that you have done all you can to ensure success in implementing your policy

Summary

Implementation of a policy is a unique process each time; no two occasions are the same. As such, no sure-fire instructions can be given. Guidelines for strategy and policy implementation are numerous, and the sense that implementation is the most difficult phase of the policy process reflects how regional differences complicate even the best-laid plans. In this section, numerous lessons learned from examining the policy processes in the partner regions are brought to light, illustrating some common issues that come up when implementing a regional innovation plan. These are accompanied by recommendations on how you can work to avoid some of those implementation difficulties.

Timeline of the tool



What should be the outcome of this exercise?

- Understanding about what kind of implementation issues may arise
- Ability to anticipate and avoid them

Guidelines for innovation policy implementation

The purpose of the present considerations is not to provide the public policy-makers with a manual of how to act. If there was one lesson learned, it is that the regions of Europe are extremely different, and the enlargement processes of 2004 and 2007 have only increased these differences. One of the main outcomes of the Meripa project, from our perspective, is that certain characteristics of the European regions make them incomparable. The Vilnius region, for example, was a perfect example of what happens when we try to analyze all regions using the same template.

The analysis of the five regions and their different regional strategies proved the uselessness of guidelines. Therefore, our belief is that guidelines are not the proper basis for what could be called a successful strategy. We deliberately choose the word strategy, rather than policy. Regions understand innovation in many different ways and formulate it in many different ways. Moreover, a policy is by definition a political product, mostly visionary and difficult to evaluate. Another lesson learned is that evaluation, a process often overlooked or neglected, is crucial. Therefore, strategy is a better choice; it includes the idea that evaluation and learning are achieved. At the core of the innovation process is the process of learning.

Guidelines and recommendations for a successful innovation policy are given by an extremely wide variety of professionals, scholars, institutions and literatures/reports. This poses the question: do we need more guidelines and recommendations? Furthermore, we can question the utility of all these guidelines and recommendations. We will place our recommendations in a context by linking them to the regions that generated them. We urge the readers to be inspired by these guidelines and to look at the context in which they are formulated, to better understand their purpose and better exploit its learning.

What can be extracted from the analysis of the five regions?

*** Both *Vilnius City Strategy* and *Blekinge Strategy* are political visions.**

Politically motivated visions present both advantages (greater flexibility) and disadvantages. Therefore, be aware of the intentions surrounding the document and exploit the advantages. The *Vilnius City Strategy* particularly can be characterised as a political vision. Political visions, depending on the situation, provide the possibility of a good base for implementation. Being general and vague in their objectives and guidelines, they allow for a great deal of projects and actions to be linked to the vision, thus making it difficult to distinguish between what was implemented due to the vision objectives or linked with it by chance.

*** Time management dictates the pertinence of the strategy and how the actors feel involved by it.**
There is the need to balance the time required for hearing as many relevant actors as possible and move forward to the strategy design and implementation, so that the plan does not lose its pertinence. Time also influences implementation in the sense that it allows for learning to take place, and for evaluation structures and traditions to mature.

*** The success of the strategy implementation is highly dependent on people with vision.**
Usually people external to the region can serve as inspiration, but success is determined by people with a comprehensive understanding of regional and global conditions and regional possibilitis; by people able to communicate the vision and who have the force to carry it out.

- **Formulate a vision to raise support!**

The role of the "individual locomotives" played a crucial role in the transformation of Blekinge and the success of a rather ambitious strategy. The regional history was ignored and a new present and future was created on new premises. History was re-written to serve goals set for the future.

- Hopkins, Hopkins & Mallette (2007) discuss the role of corporate culture as a tool for successful or unsuccessful strategy implementation. In their view, **a strategy is successfully implemented when there is a fit between corporate culture and the strategy,** and the reverse is also true. Generally, this fit is achieved when "employeess are an important part of the strategy implementation process." As has been already identified in our interviews, a visionary document can be successfully implemented (or at least has high chances of being successfully implemented) if it is a vision for the region, in accordance with the regional culture and more importantly, that the "employees", the actors for whom the vision is created, are fully involved from at an early stage of the design throughout the entire process.

However, at the programme level it is ultimately unavoidable that sectors and interests will feel excluded. At this stage the document will be more likely to be implemented if it can focus its efforts. One example from Blekinge region is the discussion that the mayor of Ronneby had with the representatives of the local industry about the creation of Soft Centre. When asked what advantages it would bring to the local industry, he answered "absolutely none but it will bring advantages to your children". Here, the strategy to create a high-tech and business centre was alienating the local industry pool.

- **Vision as the art of negotiation and programme as the art of exclusion**

*** The success of the implementation process is highly dependent on how the design process of the strategy was carried out**. Trust and Partnerships were mentioned as especially valuable. Some of the issues highlighted by people interviewed in the Meripa project deserve to be mentioned as they have wide applicability:

- Efforts of the public authorities to include a variety of other stakeholders, especially from within the region, are important to establish a shared vision and to ensure concretization of the objectives, especially in the implementation phase. However, regional work does not take place in a political utopia where you can work with the entire society.
  In a programme, the actors of the partnership necessarily define the focus and the character of the document. If you start by selecting the partners and then designing the programme, the outcome will be less creative, since the actors will be defending their own positions. For example, in North Jutland the discussions focused on already existing clusters, since in their process the partners were chosen first and the focus of the document was decided taken afterwards.

  ➢ **Secure partnerships!**

- Actors have to be involved from very early stages of the design process in order to assure their commitment and engagement further on in the process.

  ➢ **Mobilize from day 1!**

- Partnerships are essential to the success of the strategy, be it a vision or a programme. But this raises certain questions. How can the dynamics between different partners be managed? Is there a leader in the process? Should there be a leader?

  ➢ **The dilemma of ownership, partnership and leadership**

  The issue of democratic accountability is central. Faced with the need to prioritize and exclude to create a strategy, the public authorities are expected to justify their choices. An often used argument is that they have the public trust to act in the best interests of the territory and the society. This trust is justified by democratic values and choices.

  As such, the ownership of the vision, when placed in the hands of politicians, can overcome the issue of accountability. But it raises dilemmas about the role that each of the partners can have in the process. Within the partnership, who is the leader?
  The leadership of the process has to be clearly communicated, as it gives reference points to the partners and to the society in general. The dominant presence of an institution, a collective or a singular individual can be prejudicial to the partnership, when it alienates other actors. However, recognizing who are the drivers behind the strategy can help to keep the communication

among the different parts going. For example, in North Jutland, the regional level is assuming a position of leadership, by calling the other actors to unite around the goal of creating a development strategy. It is acting as a facilitator, creating the environment for discussions (and further on, actions) to happen. It has a leading position in the process.

* A **common problem** identified by a majority of regions **was the low interest and involvement of the business community in the programme**. The failure of the implementation process was also identified as a consequence of the absence of the business community.
The business community is a central element for a successful strategy. This is the challenge for policy makers. We note two ways of gaining the commitment and trust of as many relevant actors as possible, in order to have a positive impact on the implementation process: 1. they should be an active party during the entire process, and should participate in the implementation; 2. they should perform at an optimum level to make the implementation a success.

- **The business community is a central element for the implementation of a programme!**

* A **strategy can fail for numerous causes**. The *Blekinge Strategy* has not met with the success or impact expected of it. The main driving forces of the *Blekinge Strategy* were the guidelines from the national level, and it was difficult to transfer these to the regional needs and "sell" the strategy to the business community. The strategy was also a battle field for different and conflicting interests of the five municipalities. A very pessimistic attitude towards the strategy, from both the municipalities and the business community, was also a factor contributing to the failure of the strategy.

*A number of lessons are to be learned from the change in approach adopted by the regional organization of North Jutland. The regional reform imposed a state of urgency upon the regional organization; the very existence of the organization and its legitimacy were at stake.
Organizational changes were undertaken to assure the success of the strategy. The regional organization went down to the root of the problem. The change was based on the lessons learned from previous failed strategies. The commitment of the regional organization to a successful strategy convinced all parties to follow their approach. To exclude the political actors in the design process is not an easy decision to take, much less an easy decision to implement. Nevertheless, it was an important change in attitude from all parties. Although participation in the design process was on a voluntary basis, high participation and involvement of the business community and other relevant actors was noticed. Radical decisions, based on previous analysis and consultations with all the

- **Listen to outsiders!**

relevant parties, and hearing the different parties can be a step towards a successful strategy implementation.
Additionally, we must keep in mind that we are discussing innovation-related strategies. New ideas are the key and they are present not only in the minds of experienced policymakers.

* In North Jutland, the mismatch between the regional image of the internal actors and the image presented by the external consultants had been identified by the regional organization as a crisis situation and a difficulty that could not be overlooked anymore. The regional organization of North Jutland understood that in order to remain an important part of the future, regional development had to undertake a change in the way of acting. A sense of the urgent need for change was induced. Actors acted in accordance and the commitment of all partners to fully act for a successful strategy was easier to achieve.

- **Use the urgency of the momentum to make the strategy move forward!**

* The results of the evaluation are often personal reflections, and the feedback is not presented to those who should hear it. The experiences of a previous strategy can be used in subsequent strategies if the same people are carrying out the process.

- **Include evaluations all through the strategy process!**

Evaluation is considered valuable, but the strategy process seldom reaches this phase. It is the least resourceful and so far the benefits of evaluation are meagre compared with its potential. There should be incentives for informal evaluations occurring on an ex-ante or on-going basis. These evaluations do not have to be resource-intensive to ensure the transfer of information and experiences between the different actors involved. This will also allow for a quicker response time to issues and problems raised.

* Wide **dissemination of the strategy's results** could be an important factor for a successful feature strategy. This includes using teams with both newcomers and experienced people, to ensure that the innovative potential of the strategy is enhanced.

- **Learn the lessons!**

*A majority of regions (especially weaker regions and regions of the new member states) are strongly focused on attracting funding to the detriment of skill-building. The European Parliament's Regional Development Committee has warned against an over-emphasis on funding, which by itself "does not guarantee success, particularly where authorities lack the appropriate skills and experience and the essential matching funds to be able to make use of cohesion funds" (*Inforegio news*, no. 159/July-August 2007). Therefore, an important aspect to be considered is knowledge and skills building, as a base for a successful regional innovation policy implementation.

Implementation - Conclusions

Summing up what has been done

- Valuable lessons have been gleaned from partner regions' experiences
- Greater understanding and encouragement to help face the challenges of implementation have been gained

What has been achieved?

- You have increased readiness to implement the policy
- By understanding the lessons from partner regions, you have a heightened sense of upcoming challenges in implementation
- You can recognize the complex nature of implementation phase and thus manage it better

Important to notice

- Implementing an innovation policy or strategy has much in common with traditional business strategy implementation: Much needed support can be found in literature dealing with business strategy!
- There is no one right way to go about implementing your policy, in the end you are going to have to find your own way

Learning By Doing

There is only one question posed for "Implementation". This is intentional as the following questions will derive from the answers given to this first one.

9. Which actors are responsible for the transformation of the strategic ideas into an action plan?

Moving on – What comes next?

- Indicators: The policy has been implemented, and you are eager to see the fruits of your work. Remember that policy is a slow-working instrument. While it is working, you can remain active by gathering data to eventually measure your success with the Indicators tool.
- DEA-Model: Other regions have implemented their policies as well. For an objective ranking on the success of your region vs. other European benchmarks, look no further than the DEA-model, which will give you the scoop on how you are doing in comparison with others – and how you can learn to do even better.

Further reading and references

Hitt, Ireland and Hoskisson (2005). *Strategic Management: Competitiveness and Globalization. 6th edition.* South-Western, USA. 512 p. ISBN 0-324-27529-3.

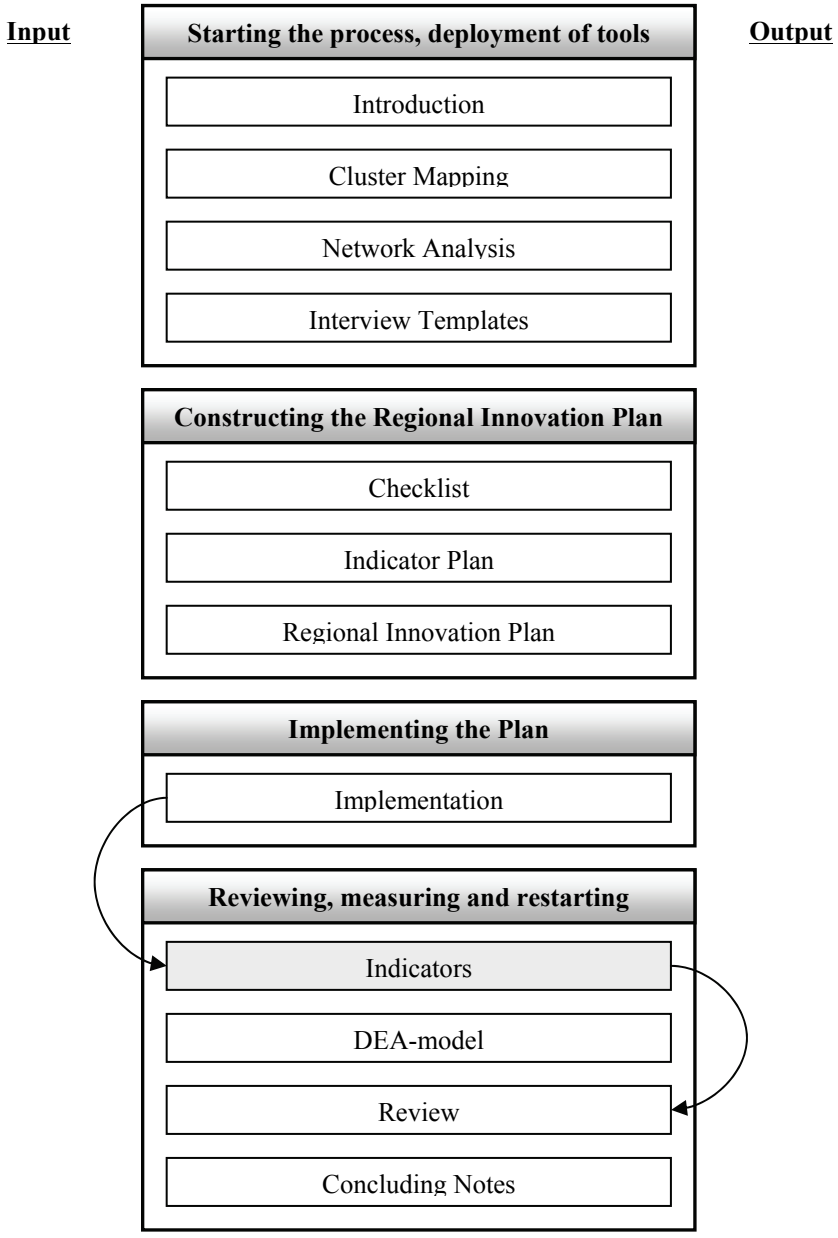
Phase IV

Review

Indicators

What is the purpose of this tool?

This tool includes 5 composite indices for measuring the performance of your regional innovation system. Use of the indicators gives you objective, solid evidence, based on which the subsequent review of your policy is both easier and more reliable.



What issues may be addressed by use of the tool?

- You need to validate the effects of your policy
- You need information about the effectiveness and impact of your policy
- You want to communicate the results of your policy efforts
- You want to measure your region's innovation performance for whatever purpose

Summary

The five composite measures presented here allow you to distinguish different kinds of impact that a public policy can have on regional innovation performance. First, the Regional Summary Innovation Index (RSII) considers basic dimensions of innovation and relates regional performances to both national and European averages, showing *general*, positive or negative, impact of public interventions on innovation. Regional Innovation Capability Index (RICI) combined with the RSII can give a clear account of *overall effects* of public policies. In addition, three other measures are presented to evaluate absolute capacity to cultivate innovation, relative solidity of the channels of innovation and ability to foster excellence in innovation.

What should be the outcome of this exercise?

- Quantified evaluation of your region's general innovation performance, capacity, incubation capability, channel functionality and excellence
- Understanding of the areas where your region is performing well and where there still is room for improvement
- Understanding of how to improve the innovation capacity of your region

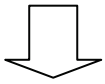
Indicators

Background to the MERIPA Indicators tool

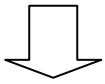
The Indicators Tool is the result of a thorough and careful development process. A review of the literature on the measurement of innovation has revealed that several classes of indicators and different kinds of measures are in common use, thus justifying the attempt, undertaken by the WP4, to build an *indicator pool* (with both quantitative and qualitative indicators) that refers to different dimensions of the concept of innovation. We believe an analysis of *pros and cons* of each alternative is an essential feature of any framework for assessing the impact of innovation policies. Finally, since innovation is *fuzzy* concept, which is reasonably path and context dependent, we also suggest how to calibrate the framework to regional differences, local specificities and contextual innovation capabilities. What we propose is an integration between the indicator approach to measurement and the large array of works on regional innovation systems.

WP4's Methodology

1 *Identification Step*: identification of bundles of benchmarking indicators on which **overlapping consensus**, among practitioners, scholars or statistical offices, exists;



2 Aggregation Step: in which possible aggregation procedures between indicators are discussed and analyzed.



3 Calibration step: aimed to adjust our benchmarking framework with respect to regional specificities and innovation capabilities;

In several related works, measures of innovation capacity were intended to value the *output* and *input* of the innovation process as well as *activities*, *arrangements* and *mechanisms* for producing commercial applications of new knowledge. Moreover, innovation capacity has been divided into *firm capacities* to innovate and *system capacities* to support and diffuse new knowledge and innovations.

The STRINNOP approach consistently underlines several steps through which knowledge can be transformed in successful market initiatives (e.g. knowledge creation, implementation of firms' innovation activities, regional clustering or networking for knowledge diffusion, internationalization and marketing) and proposes to identify process and output indicators to emphasize good practices and excellence cases. More precisely, in the STRINNOP approach a full integration of available indicators batteries (i.e. Eurostat, OECD, RITTS/RIS surveys, etc) is strongly recommended in order to get a platform of indicators and criteria through which governments can give shape to well-sound innovation strategies consistent with the RITTS/RIS experiences. Furthermore, since the late 1990s, ICT and high-tech sectors have gained considerable attention as preferential loci in which innovation takes place. Thus, several EU projects (like UNDERSTAND) or international agencies' surveys have tried to measure high and emergent technologies diffusion, adoption and production.

Description of the Indicators tool

Across all these works and surveys, several intertwined *dimensions of innovation capacity* can be recognized and used as natural criteria through which innovation policies impact can be read and valued. These dimensions are:

- *High and Emergent Technologies Diffusion*
- *Development of Innovation Finance and Markets*
- *Governmental Support to Innovative Activities*
- *Knowledge Creation*
- *Human Resources*
- *Development of ICT Infrastructures*
- *Diffusion of ICT and e-businesses*
- *Transmission and Application of New Knowledge*

Implementation Issues

a. to find reliable and comparable data for different administrative levels;

b. to simulate the benchmarking framework for NUTS-2 regions in order to assess its transferability;

c. to relate benchmarking indicators with precise political commitments at different government levels;

Finally, with these dimensions in mind, together with the whole pool of indicators and some calibration criteria, we consider several composite measures of innovation, some proposed in the literature, others brand new.

The five MERIPA indices through which the benchmarking of regional innovation policies can be executed are:

1. **The Regional Summary Innovation Index**: it considers basic dimensions of innovation and relates regional performances to the national and European averages. Thus, such an index can be seen as capable of accounting for the possible effects of public policies on the relative predisposition of the region towards innovation. Hence, changes in this measure testify a *general*, positive or negative, impact of public interventions on innovation in a relative sense.

2. **The Regional Innovation Capacity Index**: it refers to four fundamental capacities that a regional innovation system should have. As above, this measure can assess the general, positive or negative, impact of public policies of different natures on innovation. Nevertheless, it conceives such a general impact from an absolute standpoint. Taken together, the RSII and the RICI can give a quite clear account of overall effects of public policies for innovation.

3. **The Regional Incubation of Innovation Index**: this index measures the capacity of a region to incubate innovation, that is to cultivate innovation seeds provided by the scientific and technological worlds. By using this index we can value the absolute capacity to cultivate innovation.

4. **The Regional Helices of Innovation Index**: it considers the main channels of innovation and how these work relative to other regional innovation systems; it measures the relative solidity of the channels of innovation.

5. **The Regional Excellence in Innovation Index**: this is an output-oriented index focused on the existence of *"cases of excellence"* in innovation. Based on the common view that to innovate means to produce a new idea; it measures the ability to foster excellence in innovation.

Notes on Statistical Correlation

There are several socio-economic variables that may correlate with each other to a greater or lesser degree. When geographic proximity is the factor influencing the relation, it is defined as *spatial autocorrelation*. One effect of this is that values observed in areas which are close to each other tend to share similar trends, while values of the same variables which are measured in places far from each other have a tendency to show different behaviours, or at least tend to differ in their mean values. In this sense, correlation among values of the variable is expected to decrease in proportion to increasing distance.Since statistical correlation surely exists also between these indices, any final assessment of public policies' impact on innovation should be accompanied by a clear estimate of correlation coefficients. Assessments also need to pay careful attention to the direction of the causation that relates measures. For instance, is it a small increase in the RIII that causes a large change in the RSII or the opposite way around? On the last point, time series analysis, common factor analysis and Markovian transition matrices can be of great help.

You can refer to Deliverable 4.3 produced in the framework of the MERIPA Project by Work Package 4 both for more information regarding the problem of correlation (section 5.3), and for a prime about factor analysis (Appendix 2).

See also:

Kaiser, H.F. and Cerny, B.A. (1979), "Factor Analysis of the Image Correlation Matrix," *Educational and Psychological Measurement*, 39, pp. 711 -714.

Thurtstone L. L. (1947) "Multiple-Factor Analysis", University of Chicago Press, Chicago

Five measures of innovative performance

Below you will find descriptions of five composite indices of innovative performance built on different perspectives. Two of them have been recently suggested by Hollander (2006) and Radosevic (2004), the remaining three are new and were developed as a part of the MERIPA Project in the Work Package 4 led by Regione Emilia-Romagna, Italy. The five proposed measures are, as mentioned, composite indices resulting from aggregation procedures.

Regional Summary Innovation Index (RSII)

The 2006 version of the RRSII considers seven indicators of innovative performance of regions for which high-quality data is available:

- human resources in science and technology (% of population)
- participation in life-long learning (% of 25-64 years age class)
- employment in medium and high-tech manufacturing (% of the workforce)
- employment in high-tech services (% of the workforce);
- public R&D expenditure (% of GDP)
- business expenditure in R&D (% of GDP)
- EPO patent applications (per million population).

It is a composite regional innovation index inspired by a linear model of innovation and therefore measures innovation inputs and outputs.

How does the index work?

This index is inspired by the *"linear approach"* to innovation and widely used by European Union Institutions. Following the dictates of the linear approach, innovation emerges from a linear sequence that goes from innovative inputs, to innovative processes and innovative outputs. The index regional indicator values are determined in relation to the national and European average. Unfortunately, the panel of indicators used to get the measure, mainly oriented to innovative inputs, is quite inappropriate to represent the entire linear model.

As Hollander (2006) stresses, the aggregation procedure takes into account relative performances of regions at the European and national levels and gives more visibility to local leaders adjusting downward indicators for which a country performs well above the national (or European) mean and upward in the opposite case. Technically, indicators involved in the index are re-scaled on the unit interval used together with affine transformations (for some indicators a square-root one, for other a double-square-root is applied).

The RSII is actually a relative index obtained by a weighted average of two sub-indices: the Regional/National Summary Innovation Index (RNSII) and the Regional/European Summary Innovation Index (REUSI). The two latter indices are determined by a simple average between indicator values rescaled taking into account the best, the worst and the mean performance within a reference group of regions.

The steps for the index calculation are summarised below:

1. data collection (x_{ijk})
2. RNSII calculation: data (x_{ijk}) are divided by national mean value (this is needed to emphasise values which are above the average, thus giving more visibility to local leaders)
3. REUSII calculation: data (x_{ijk}) are divided by European mean value (in order to emphasise performance above the average)
4. max and min values calculation
5. normalisation

6. calculation of mean values of all normalised values to get RNSII and REUSII
7. combination of RNSII and REUSII values

The RNSII and REUSII indices are calculated starting from regional values (xijk) after their normalisation (yijk). In order to have normalised values it is needed to compare each value to the minimum and maximum observed values for the same indicators, among the regions involved in the exercise. This step allows for the following results:

- determining a normalised value ($0<(yijk)<1$);
- having values which are independent from the unity of measurement, thus allowing for the comparison among graduatories of different indicators. Since it is usual for different units to end up having different effects, indicators are aggregated in a composite index; by normalising it is therefore possible to take into account only the differences among observed values;
- the possibility of combining several normalised indicators against the average (plain or weighted).

In the case of the RNSII and REUSII indices, besides having being normalised, the observed value is first compared with the national and European average values. When only regions belonging to the same country are compared, this step has a relative value in that it does not allow us to observe possible influences among different countries. On the other hand, it is also relevant to compare values with the European average, in order to determine which regions perform at levels higher or lower than the European average.

Finally, the two composite indices are combined into the RSII by using a weighted average where the REUSII index, calculated against the European average, is given a weight 3 times that of the index calculated against the national average.

What do the results mean?

The RSII index contributes to the assessment of the impact of public policies on the basic dimensions of innovation, because it considers basic dimensions of innovation and relates regional performances with the national and European averages. It is capable of accounting for the possible effects of public policies on the relative predisposition of the region towards innovation. Hence, changes in this measure testify a *general*, positive or negative, impact of public interventions on innovation in a relative sense.

The RSII index is calculated as a composition of two indexes which are themselves composite; this allows us to highlight, among considered regions, those which are leading with respect to innovation in general. A simpler comparison at a national level could highlight a specific region, but if the context in which the region is framed is poorly innovative (in an absolute sense, that is, in comparison to the European average situation), the index will show a low value anyway. It is very important to understand that the RSII value is a relative meaning: it does not stand for an absolute value of the innovation performance, but could be altered when the regions taken into account in the comparison change. It is nevertheless consistent. If two regions are compared, but the context of reference is changed (for example, by increasing the number of other regions considered in the analysis), the most innovative one will still surpass the less innovative one.

What changes in such a case is the distance between the obtained results (showing the innovative performance of the different regions), because a more innovative framework of reference could smooth differences between the two previously mentioned regions, which have not, in the example, the characteristics of excellence with regard to the considered indicators.

2 Regional Innovation Capacity Index (RICI)

Radosevic (2004) proposes a composite index aimed at measuring the innovation capacity of regional innovation systems. These indicators, in absolute values, evaluate four distinct system capacities:

- knowledge-creation capacity
- diffusion capacity
- adsorptive capacity
- governance capacity.

The indicators taken into account by the composite index are:

- Percentage of employees working in enterprises who have used the Internet to get information and digital goods or services (% of total employment)
- private financing for R&D regional total (% of GDP)
- Public financing for R&D regional total (%of GDP)
- Percentage of population with tertiary education (% of 25-64 years age class)
- EPO Patent Applications (per million population)
- Percentage of Small and Medium Enterprises SMEs innovating in-house

How does the index work?

The RICI index refers to four fundamental capacities that a regional innovation system should have. As above, this measure can assess the general, positive or negative, impact of public policies of different nature on innovation. Nevertheless, it conceives such a general impact from an absolute standpoint. Taken together, the RSII and the RICI can give a quite clear account of overall effects of public policies for innovation;

The RICI index is calculated starting from the regional values (x_{ijk}) which have to be normalised (y_{ijk}); the normalisation process consists of comparing the value to the minimum observed value and to the maximum observed value (referring to the same indicator of course) from the considered regions. The consequences of such an operation are:

- a normalised value, which spans between 0 and 1, is obtained ($0<(y_{ijk})<1$);
- normalised values are independent from the unity of measurement, thus it is possible to compare ranking of different normalised indicators values (usually, when indicators are compared to build up a composite index, different indicators have different influence); by normalising, only the differences in observed values of the same indicator are taken into account;
- it is possible to combine more normalised indicators by means of a simple average (plain or weghted).

Normalised values are then actually combined by means of a plain average.

What do the results mean?

The RICI is a composite index aimed at measuring the innovation capacity of *regional innovation systems*. A regional innovation system can be conceived as two subsystems embedded in a common economic and cultural context. On the one hand, we have the *Knowledge application and exploitation subsystem* in which firms, their clients, their partners and vertical and horizontal networks play a crucial role. On the other hand, we have the *Knowledge generation and diffusion subsystem* which includes public research institutions, technology mediated organizations as well as educational infrastructure.

This index is a pure absolute index obtained by a simple average of indicator values; it is mainly an input-oriented measure of innovation capacity, which could be used to assess the impact of public policies on the absolute availability of innovation inputs in the regional innovation system.

In this case, as in the first, the index is consistent in the sense that, if two regions are compared against a different framework of reference (for example increasing the number of considered regions) the more innovative one will still precede the less innovative region. What could change is the relative distance as, in presence of a more innovative context, differences between two regions not having characteristics of excellence could end up being smoothed.

3 Regional Incubation Innovation Index (RIII)

An interesting alternative is inspired by the Global Competitiveness Report, produced annually by the World Economic Forum. In this report, data and indices on countries' competitiveness are determined using three reference domains for measuring how competitive a nation is. The domains considered are:

- economic environment quality
- institutional quality
- innovative technology generation capacity

The underlying assumption of this index is that a good economic context, well-functioning institutions and a high technical progress growth rate, favour firms and economic actors in being successful in global market economies. Following Pavitt (1999), we recognize that these elements incubate innovation as well.

The considered indicators are:

- Share of high-tech, ICT, bio-tech, nano-tech venture capital investment;
- Percentage of S&E graduates (% of 20-29 years age class);
- Total Employment in high and medium high technology manufacturing and knowledge-intensive high-technology services (NACE Rev. 1.1 codes 24, 29 to 35, 64, 72 and 73);
- European Patent Office (EPO) high-tech patent applications (per million population);
- Percentage of Small and Medium Enterprises SMEs innovating in-house.

How does the index work?

The RIII measures the capacity of a region to incubate innovation, that is, to cultivate the innovation seeds provided by the scientific and technological worlds. By using this index we can value the absolute capacity to cultivate innovation.

- The index is calculated starting from reginal values (x_{ijk}) which have to be normalised (y_{ijk}) by comparing each value to the minimum and maximum value among the observed ones for the same indicator; the normalisation process, as mentioned above, allows us to obtain a normalised value which is between 0 and 1 ($0<(y_{ijk})<1$), and is therefore independent from the unity of measurment and suitable to be combined in a plain average. Normalised values are in fact combined by a plain average.

What do the results mean?

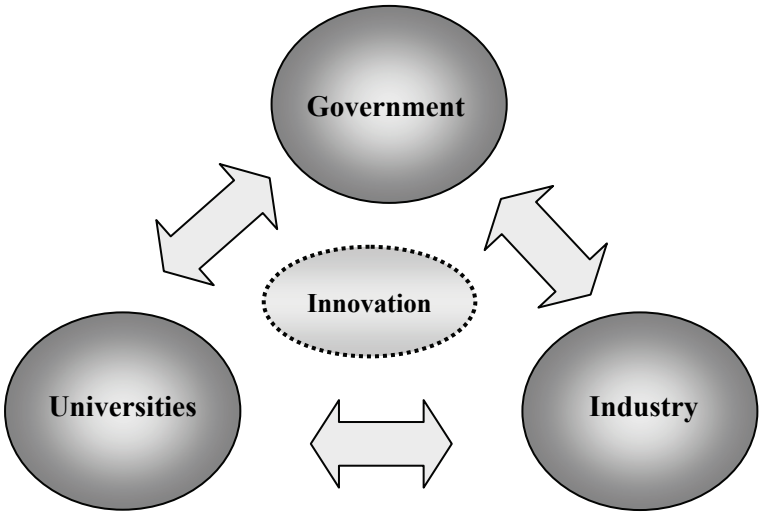
The RIII index is an impure index (i.e. both absolute and relative) obtained through the weighted average of indicator values and rescaled taking into account best and worst performances of a reference group of regions.

It does not present an absolute value of innovation, but alters depending on changes in the context (the regions taken into account). It is nevertheless consistent and better performing regions will precede worse performing regions even if the context (and therefore the ranking place) changes, as mentioned above in regard to the previously presented indices.

4 Regional Helices for Innovation Index (RHII)

The Triple Helix approach to innovation (Cooke 2005) is a policy-oriented perspective mainly focused on fostering synergies and co-operation in R&D activities among universities, public research centres and laboratories of firms. These three helices must work together and all three channels for innovation must be adequately nourished.

From this perspective, we can define a composite measure which determines how the regional triple helix works relative to other regional innovation systems.



Triple helix –model (Adapted from Saad and Zawdie, 2005, 95)

Possible indicators to be included in the RHI are:

- public funding for University R&D (% of GDP);
- business funding for University R%D (% of GDP);
- R&D expenditure by source of financing as a % of total (% of GDP);
- percentage of SMEs involved in innovation cooperation or networks;
- number of innovative clusters and innovation networks.

How does the index work?

The RHII index considers the main channels of innovation and how these work relative to other regional innovation systems; it measures the relative solidity of the channels of innovation.

The RHII index is obtained starting from the regional values (x_{ijk}) compared to the average of the observed values (μ_{jk}); the operation consists in comparing the value to the average value of the index for the considered regions; it allows us to:

- give more weight to regions performing above the average;
- highlight, in a positive or negative direction, those regions which could be considered outstanding, that is the regional values represent excellence or crisis.

The values (y_{ijk}) obtained are then combined to a weighted average, where weights are proportional to the importance of thematic areas in the evaluation of innovation.
It is worth mentioning that a weighted average is an average where the sum of given weights adds up to 1 (a plain average could be seen as well as a weighted average where weights are all equal one to each other).

What do the results mean?

The *Triple Helix approach* to innovation is a policy-oriented perspective mainly focused on fostering synergies and co-operation in R&D activities among universities, public research centres and laboratories of firms. These three helices must work together and all three channels for innovation must be adequately nourished.
This measure aims to quantify how well these three innovation engines are functioning. In doing this, it takes explicitly into account the role of innovation networks and innovative clusters.
The RHII index is a relative index obtained by the weighted average of indicator values rescaled, to emphasize the performance of leader regions, by using the percentage difference from the mean.
It allows us to assess the impact of public policies on the relative solidity of the channels of innovation.

Again, it is important to remember that this does not represent an absolute value of the innovation performance, but could change depending on the context considered (better performing regions will maintain higher ranking positions against worse performing regions).

5 Regional Excellence in Innovation Index (REII)

Finally, we mention a possible index that makes use of rank tables. The REII can be thought as a measure of leadership capacity of regions in the generation of innovative outputs. For illustrative purposes, we simply consider five indicators of innovative outputs:

1. exports of high-tech products (% of GDP);
2. sales of new-to-market products (% of the total);
3. number of scientific publications;
4. number of EPO high-tech patent applications;
5. percentage of SMEs innovating in-house.

How does the index work?

The REII index is an output-oriented index focused on the existence of *"cases of excellence"* in innovation. Based on the common view that to innovate means to be the first to generate a new idea; it measures the ability to foster excellence in innovation.
Regions are ordered along with the number of instances of excellence in performance, in relation to the considered output indicators.

What do the results mean?

There is no theoretical background for this index. Instead, it has an intuitive flavour. It considers some *innovative output* and the leadership capacity of a region with respect to these.

The REII index is a relative index obtained by counting the number of output indicators in which the region leads with respect to a reference group.It allows us to assess the impact of public policies on the regional ability to foster excellence in innovation.

It is worth mentioning once again that the meaning of the index is relative and depends on the context. By changing the observed regions, the values could change. However, this index is not consistent in the sense that if the context changes, the comparison between two regions could give different results depending on the possible excellence of the other regions considered in the analysis.

Calculating the indices

For your convenience, an online tool available at www.meripa.org to make calculation as effortless as possible. If the web tool is temporarily unavailable, indicator experts are at your disposal for performing the calculations. In this case, you should contact Giuditta De Prato with the required data via e-mail at the address GDePrato@Regione.Emilia-Romagna.it.

Indicators - Conclusions

Summing up what has been done

- Appropriate data has been used to calculate each of the five composite index measures of innovation performance

What has been achieved?

- You have historical data on innovation performance in the region and information about the innovation capacity of your region, both of which you can use to further develop your innovation policies in the future
- You have gained quantitative information about the impact of your regional innovation policy that is comparable with the performance of other national and European regions
- You have a general view of the overall effects of public policy, the absolute capacity to innovate, the relative solidity of channels of innovation and the ability to foster excellence in innovation in your region

Important to notice

- Any final assessment of the impact of public policies on innovation should be accompanied by a clear estimate of correlation coefficients.
- Assessments need to pay careful attention to the direction of the causation that relates measures. For instance, it a small increase in the RIII that causes a large change in the RSII or the opposite way around? Time series analyses, common factor analyses and Markovian transition matrices can be of great help in answering this question.
- Be very careful to distinguish between the meaning of absolute and relative values of innovation performance when you consider the results of your calculations.

Moving on – What comes next?

- Review: After all the calculations and data gathering are done, the evaluation is still at its beginning. Now comes the time to move from observing to learning. Discuss the facts and find room for improvement in the review chapter.

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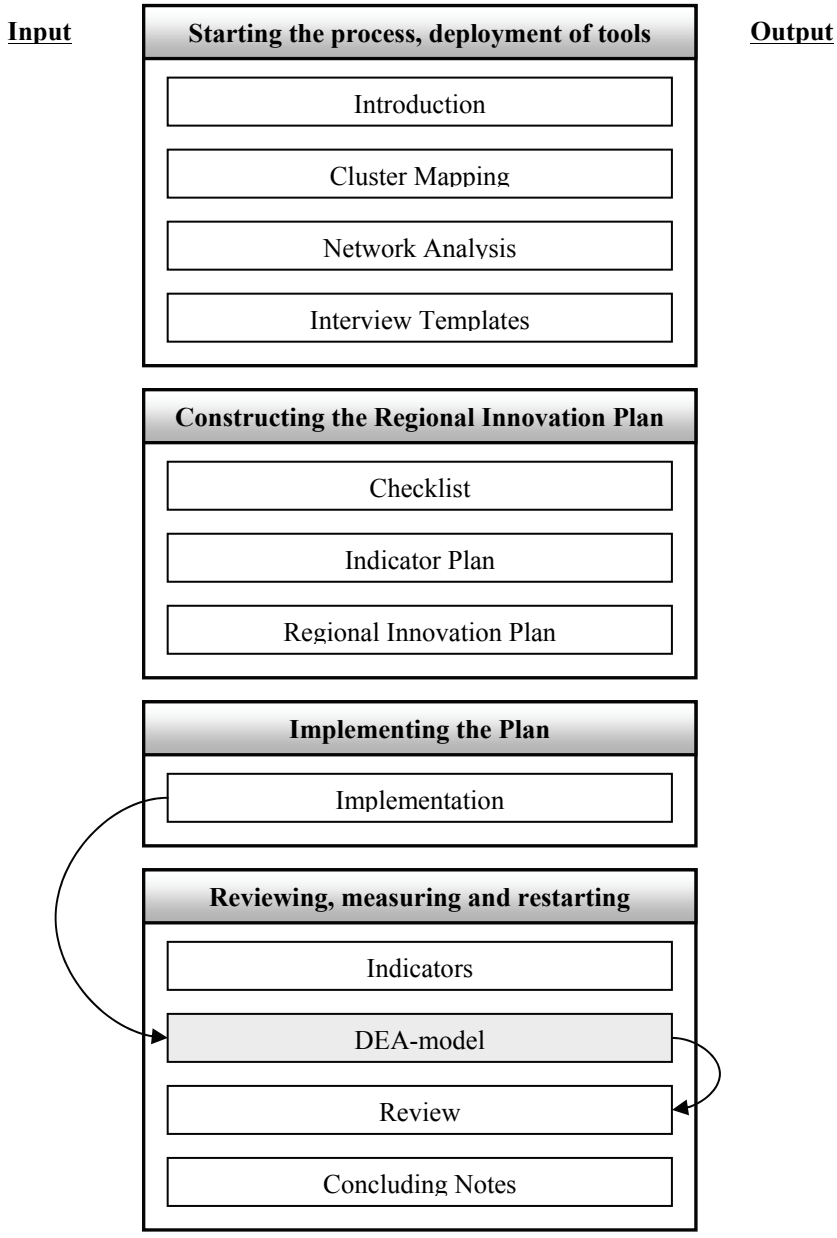
DEA-model

What is the purpose of this tool?

The Data Envelopment Analysis (DEA) model is a tool that enables the transnational ranking and benchmarking of a large set of regional innovation policies on the basis of impact and relative efficiency.



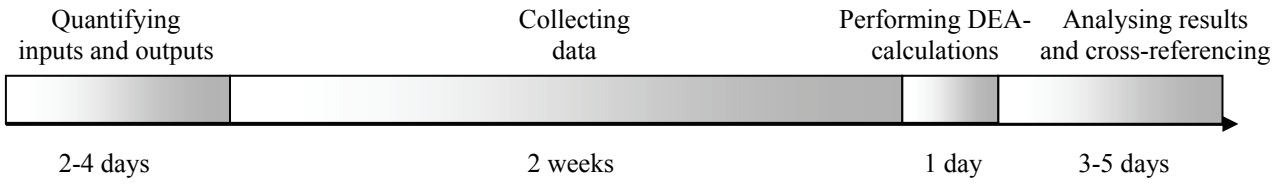
What issues may be addressed by use of the tool?

- You need a tool to easily communicate your achievements to non-specialist audiences
- You would like to identify a best practise case that roughly suits your region's innovation characteristics
- You need to learn from others
- You want to take advantage of benefits gained by comparing your policy's effectiveness with real benchmarks

Summary

This chapter provides a short introduction to the 'DEA-Model' evaluation tool. It is an advanced tool geared towards handling a large number of regions at a time, and may be used to provide data for creating ranking lists, seeking best practise cases among peers with roughly similar innovation characteristics as well as to verify and enhance performance through cross-national benchmarking. It utilizes selected statistical indicators and endogenously assigns 'benefit-of-the-doubt' weights separately for each region in question to provide an efficiency score ranging from 0 to 1 based on the amount of measurable innovation system outputs the region produces relative to the inputs it uses to produce them.

Timeline of the tool



What should be the outcome of this exercise?

- Finding out your relative efficiency score in comparison with numerous other European regional innovation policies
- Seeking a suitable benchmark that shares roughly similar characteristics to those of your own region providing a best practise case, from which you have a chance to learn
- Establishing your place in the ranking list of European regions
- Results that may be utilized for communicating the degree of success reached by policy efforts
- Valuable information for reviewing your policy based entirely on actual empirical data

Data Envelopment Analysis – model

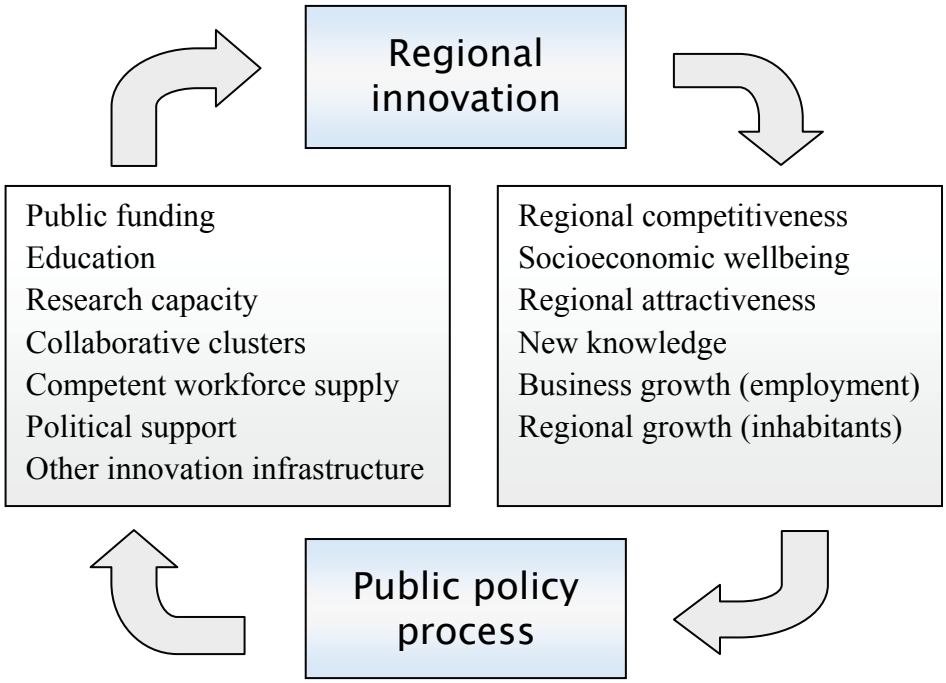
Data Envelopment Analysis (DEA) is a new method for evaluating regional innovation system performance, which can be used to calculate relative efficiencies of a given set of regions in comparison with each other. Research in this field is as yet scarce (Kutvonen 2007; Zabala-Iturriagagoitia et al. 2007), but results indicate that the method has many promising attributes that vouch for its usefulness as an auxiliary performance evaluation method. It is a quantitative analysis method that can be used to determine how efficiently regions manage their innovation resources to provide region-wide benefits by employing viable regional innovation policies.

DEA is inherently attuned to benchmarking practices as it readily provides an easily interpretable efficiency score, enables building ranking lists and identifies other units that utilize a similar set of inputs to create outputs as reference points for every unit. With a reliable DEA-model, these qualities enable identification of suitable best practice cases, even with such a complex issue as regional innovation, where no 'one size fits all' –solution can be found.

By selecting inputs, which may be influenced through well-founded policy decisions, and outputs that accurately describe the outcomes of the regional innovation system, the method provides information that may be used to identify best practice cases with roughly similar regional innovation conditions. Additionally, the results of the method inform decision makers about which inputs are used at sub-optimal efficiency through the examination of slacks. The communicational value of DEA-justified ranking lists is naturally also a notable benefit.

The steps in conducting DEA-analysis are:

1. Construct a conceptual model (see figure below)
2. Quantify the regional system inputs and outputs to measurable statistical indicators
3. Collect relevant high-quality data from common sources (such as Eurostat)
4. Perform the actual DEA-calculations with the help of suitable software (eg. DEAP, EMS or DEA-Solver)
5. Examine the results, especially noting efficiency scores, input/output slacks and reference regions
6. Cross-reference DEA-results with other performed analyses and available qualitative knowledge



Inputs and outputs of the regional innovation –phenomenon

In the figure above, the phenomenon of regional innovation is described as a collection of inputs and outputs based on the theorem of innovation systems, designed with special attention to the needs of the regional policy-makers. The simplification of regional innovation that is illustrated in the figure therefore emphasizes the inputs of the phenomenon that public policy can have an effect on and the outputs that are considered to benefit the region.

A feedback loop represents the process-oriented view of policy making inherent to the MERIPA project. In other words, the feedback feature may be expressed as follows. Public policy work influences the inputs either directly or indirectly, by direct intervention or subtle facilitation of input development. These inputs feed into the phenomenon of regional innovation and combined with the element of chance inherent to innovation processes determine the level of innovational activity in a region. Regional innovation produces outputs of which the most essential are listed in the figure. These outputs may be measured and the impact of policy work assessed, which provides motivation and guidance to further develop the policy, resulting in a new iteration of the cycle.

More information on performing DEA-analysis can be found on the MERIPA homepage.

DEA-model - Conclusions

Summing up what has been done

- Statistical information indicating the performance of your regional innovation system's performance has been gathered from common sources
- Data Envelopment Analysis has been performed on the collected data, providing you the efficiency score
- You have information on what inputs your regional innovation system takes advantage of efficiently and where room for improvement exists
- You have determined what outputs can be augmented further by reviewing and refining the policy to reach a higher level of efficiency

What has been achieved?

- Valuable information about the function of your policy has been unearthed
- Analytical evidence of your policy's effectiveness and impact has been established
- Prerequisites for learning by benchmarking have been fortified by the discovery of suitable benchmark regions in Europe

Important to notice

- MERIPA has provided the first case of applying DEA to innovation policy measurement. The method lacks extensive field testing, and therefore results should be treated with due caution.
- Comparison to the results given by the Indicators tool may provide interesting insights to policy review.
- The model is geared towards the evaluation of a large set of regions at once, imposing a minimum requirement of 36 analyzable regions. Calculations performed on smaller data sets will provide unreliable and/or unrealistic results.
- For regional policymakers the tool can prove to be exceedingly heavy to implement, so careful consideration of whether you have the resources and the need to do so is in order.
- Use of the tool is recommended primarily for later iterations of the policy process, not necessarily when working through the policy process the first time around.
- If unrealistically high scores are achieved all around, try augmenting the data set: this "brings more competition" into the model, lowering overall efficiency.

Moving on – What comes next?

- Review: After all the calculations and data gathering are done, you know where you stand among the benchmark regions. Now is the time to break out ideas about how you can move up the ranking list. Discuss the facts and find room for improvement in the review chapter.

Further reading and references

Cooper, W., Seiford, L. & Tone, K. (2007). *Data Envelopment Analysis: A Comprehensive Text with Models, Applications, References and DEA-Solver Software. 2nd Edition.* Springer Science+Business Media, LLC, New York. 490 p. ISBN 0-387-45281-8.

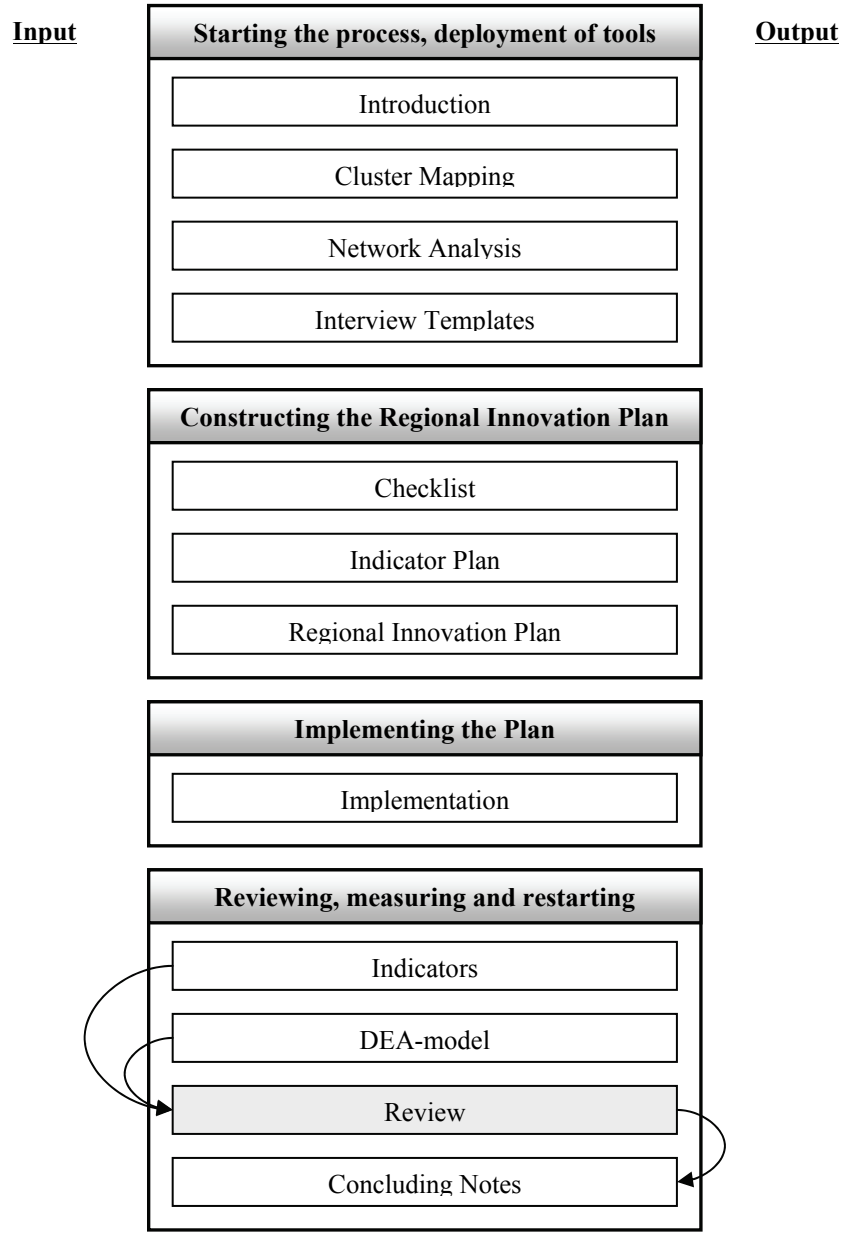
Kutvonen, A. (2007). *Ranking Regional Innovation Policies: DEA-based Benchmarking in an European Setting.* Master's Thesis.

Zabala-Iturriagagoitia, J.M., Voigt, P., Gutierrez-Gracia, A. and Jimenez-Saez, F. (2007). Regional innovation systems: How to assess performance. *Regional Studies* Jul2007, Vol. 41 Issue 5, pp. 661-672.

Review

What is the purpose of this tool?

This phase of the process is where the effects of the policy are assessed and the most ample opportunities for learning are captured. Project review reveals the magnitude of your achievements and process review sheds light on the reasons behind it.



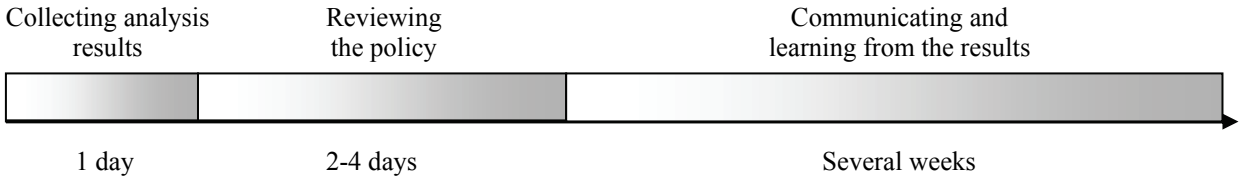
What issues may be addressed by use of the tool?

- Determining the effects of the policy work
- Learning and securing the lessons of experience

Summary

Reviewing your policy aims at enabling learning, establishing best practices, validating results, providing control, communicating the success (or lack of) of policies and the reasons behind it. The actions taken are twofold and best described by asking two questions "Did you do the right things?" (Project review) and "Did you do it right?" (Process review). Determining the effectiveness, efficiency and impact of your work and the reasons behind them initiate a phase of intense learning that deepens policy understanding and policy making skill.

Timeline of the tool



What should be the outcome of this exercise?

- Convincing and comprehensive review of the policy process along with a detailed estimate of the influence the policy has had
- Better understanding of the policy, possibilities for improving the policy and increased skill in policy work

Review

There are a number of motives and rationales for evaluating and benchmarking innovation policy performance. Essentially good evaluation practices aim towards enabling learning, establishing best practices, validating results, providing control, communicating the success (or lack of) of policies and the reasons behind it. Specific motives for carrying out policy evaluation are listed by the European Commission (2006, p. 35):

- assessing value-for-money,
- improving the design of future programmes,
- informing the priority setting process,
- enhancing policy design and
- other benefits (such as dissemination, documentation and promotion).

For evaluations and assessments to be able to provide the benefits mentioned above, the measurements must be put into use by integrating evaluation into the policy process, even as a part of the actual policy product, instead of treating it as a mandatory add-on to project reporting.

Benchmarking

Benchmarking goes beyond the routine collection of publicly available information. It consists of comparisons among competing peers on specific dimensions of performance with the purpose of identifying and catching up with best practice. (Tidd et al. 2005, p. 147) Benchmarking has established its position as a tool to improve organizations' performance and competitiveness in business life and recently extended its scope to also include public and semi-public sectors (Kyrö, 2003). It is establishing its scientific basis by proceeding from practice towards theorizing (Kyrö, 2004). Definitions of benchmarking today vary between scholars, but general aspects regardless of who does the defining include the evaluation and improvement (of among others, performance) by learning from others (Kyrö, 2003). To achieve greater results, the concept is further broadened by shifting from simply learning *from others* to genuinely learning *with others*.

Reviewing your work

When you come to evaluate the results of your innovation policy or plan, avoid overoptimistic expectations. The results should be interpreted in a regional context, understanding that even though significant progress was made with the policy, it may not be visible for several years. Implementing even a successful policy will not change innovativeness and regional economic outlook overnight**.**

Even though reviewing the policy is often understood only as determining the effectiveness and success of the innovation policy, the task of reviewing the innovation policy is twofold. The two important viewpoints, process review and project review, are best described by presenting yourself with two straightforward questions and seeking critical answers to them:

Did you do it right?	Did you do the right things?
Process review	Project review
Evaluation of execution	Evaluation of effect
Ongoing	Periodical
Main sources of information are Learning By Doing –tool and other internal process evaluations	Main sources of information are external benchmarks, reviews of other Regional Innovation Policies, feedback from the regional stakeholders, Indicators –tool and DEA –tool
Self-reflection and learning enable better policy work, deeper understanding of the work conducted and secures the beneficial experience gained from the project	Critical assessment of the policy, its design and effect, as well as how well it has met the goals set aim towards incremental improvement of the policy. Project review is supported by process review: combining these helps explain the possible shortcomings of the policy.

Process review – Did you do it right?

Process review is the ongoing practice of reflection, critique, feedback and learning from what you are doing that aims at evaluating the work of making and applying the policy. It is not restricted only to the design phase, but should be an integral part of every policy work phase. The effort however, may be intensified in the review phase and thereafter, as fresh review information becomes available. This allows for well-based critical reflection on which factors in the policy work contributed most significantly to the outcome of the policy. The Toolbox contains reminders about continuous process reviewing in the form of the Learning By Doing boxes throughout the process, but simply answering the questions in the boxes offers little help. The keywords in successful policy review are critical thought, learning and continual reflection. Properly taken care of, this leads to increased skill, experience and understanding about the policy and the work behind it.

Project review – Did you do the right things?

Project review is all about evaluating effectiveness, efficiency and actual impact of the policy. It is conducted periodically, using evaluations at yearly intervals with the help of information collected with qualitative and quantitative analysis methods, such as the Indicators and the DEA-model tools.

In conducting the project review, you will reap the results of integrating measurement and evaluation in to your policy. Thus far, you have undertaken the analysis provided by the Indicators –tool, and maybe even performed DEA-calculations. Feel free and encouraged to augment these with analyses of your own, such as surveys and interviews with relevant targets, e.g. in the private business sector. Having high-quality information from various approaches available makes the review all the more reliable and revealing. Some inquiries may even be instigated by issues uncovered when reviewing the project. Making use of all this information should aim at determining at least three essential aspects of policy performance:

EFFECTIVENESS - The policy's ability to meet its goals
EFFICIENCY - To make the most with the least
IMPACT - Determining additionality and actual effect

Effectiveness is the ability to achieve the set goals. Reviewing effectiveness properly requires that you have set clear, measurable goals for your policy along with a timeline entailing when these goals are to be reached. Evaluating the effectiveness of the policy depends largely on benchmarking and the performance indicators provided by the Indicators –tool. Taken on its own however, apparent effectiveness does not tell the whole story: it might simply be the result of cautious goal setting or excessive spending of public funds. It needs to be backed up by evaluations of both efficiency and impact.

Efficiency evaluation explores the management of regional innovation system activities and the extent that innovation policy is likely to have on them. It addresses the topics of communicating the objectives and progress, avoidance of redundancy and the ability to detect and address problems as they arise. (European Commission 2006) Most significantly, it determines how efficiently the policy was able to coordinate and utilize the inputs of the system to generate outputs revealing whether achieving the goals was due to overt spending of public resources or exemplary policy performance. The DEA –model focuses especially on this aspect of evaluation.

Impact assessment is all about the concept of *additionality*. Additionality is a deceptively simple idea. It refers to changes that can be attributed to the existence of the policy: what the additional effect of the policy is, as compared to what would have happened in the absence of the policy. (European Commission 2006) Determining additionality precisely is difficult due to the systematic nature of regional innovation systems. A number of factors outside the innovation policy also affect the functioning of the system. Often, an understandable tendency to take credit even for positive changes, which in reality are not the result of the policymakers' intervention, is evident. For example, the rise of innovative start-ups in a region may well be largely the result of other adjacent policies or even macroeconomic changes that are well beyond the reach of any regional governance. It is practically impossible to have a separate control set to effectively isolate the effects directly attributable to the innovation policy. But you can take advantage of reference regions that are found to be similar to yours as well as surveys or interviews to have a broader opinion on the actual effects attributable to your innovation policy.

Learning – Combining the lessons of process and project review

Ultimately it is possible to reach the stage where evaluation becomes more than a compulsory routine, often used only to validate or boast about the success the policy has enjoyed. A strong culture of evaluation is built on the principle of learning. Learning is enabled by openness, critical assessment of the policy and the work poured into it and combining the previous reviews. It is to be noted, however, that process review aims for continuous learning throughout the policy process: the learning process just intensifies in this phase. Project review essentially depicts what has happened and process review complements it by offering possible answers as to *why* it happened. Reflecting on the results of the policy and the process itself is a key to securing important lessons. It is important to keep in mind that even what the project review would denote as a "failure" is nonetheless a valuable opportunity for learning!

Review - Conclusions

Summing up what has been done

- Results of previous analyses have been evaluated critically
- Benchmarking of the regional innovation system and policy in relation to other regions has been conducted
- Report on policy effect and policy process has been created

What has been achieved?

- The scope of the effect the policy has on the innovation system has been determined
- Learning from reviews has resulted in deeper understanding of the policy and policy-making
- Communicating and validating policy effectiveness and impact to stakeholders has been made easier by the creation of a comprehensive report

Important to notice

- Even "policy failures" are significant learning opportunities
- The effort of reporting findings in the review of the policy pays off when communicating to stakeholders and validating your policy work
- Learning has been a worthy goal in itself all along

Moving on – What comes next?

- Concluding Notes: You came to the policy process, you saw with the analytical spectacles provided by the tools and you won by designing, implementing and learning from your policy through careful review. To wrap it all up, head to Concluding Notes.

Learning By Doing

"Evaluation" and the answers given to this topic will set back new questions within the design and the implementation process. Also, when evaluations are in place, there will be a possibility to better understand how close the strategy, the implementation and the outcomes of the strategy are.

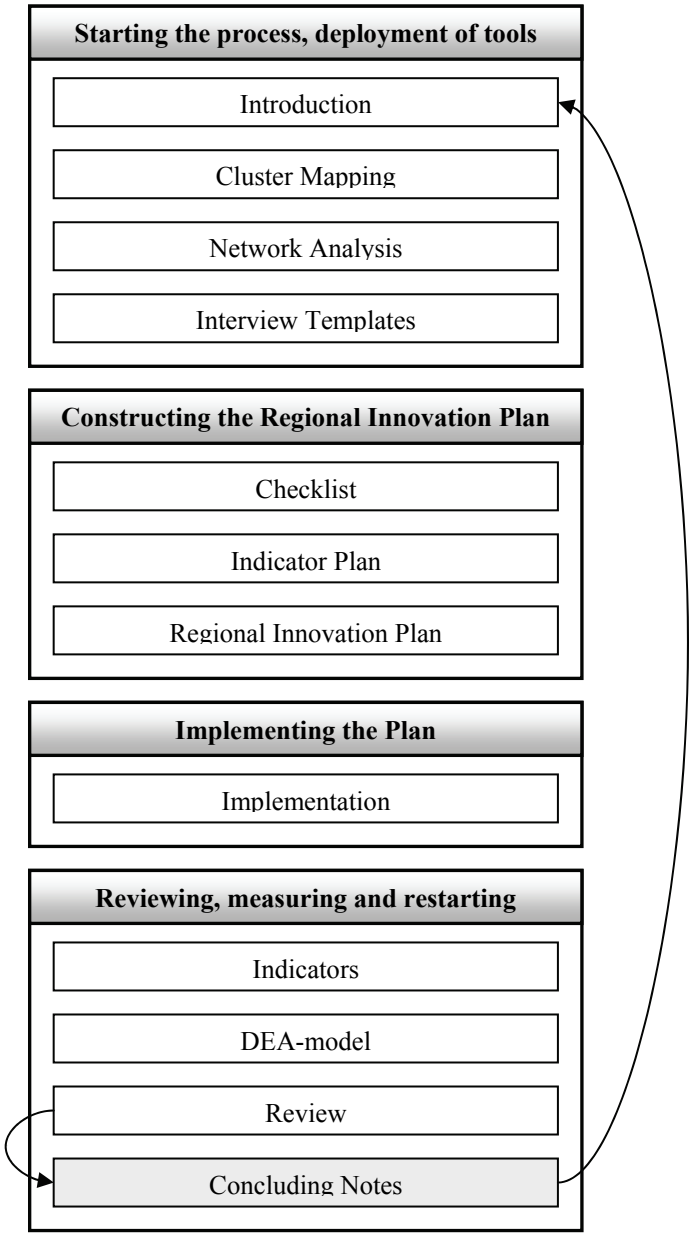
10. Describe what kind of steps you have taken in order to evaluate the innovation strategy in your region.
11. Which are the main conclusions that can be drawn from evaluations of the innovation strategy in your region, and how have these conclusions influenced subsequent strategies?
12. In what way, and how often, do you update your strategy regarding new circumstances, for instance, new technologies, new services, and new fields of knowledge?

Further reading and references

European Commission (2006). *Smart innovation: A practical guide to evaluating innovation programmes*. Luxembourg, Office for the Official Publications of the European Communities. 132 p. ISBN 92-79-01697-0

Concluding Notes

You have crafted, implemented and reviewed a regional innovation policy: congratulations are in order! Now is the time to think about the future in light of past experiences.



Reflecting upon your experiences

Now that the policy process is behind you, we suggest you take some time and let the experiences sink in. Look back and think about the different phases of the work, examine the policy review report and reflect on the effort you have put into the project. This is an ideal time to go through the 'Learning by Doing' questions and to think about process learning one last time: *What did you learn?*

Learning By Doing

The remaining questions, under the heading of "reflections," allow for further discussions about the impacts of the strategy, and how it is perceived by the actors involved in it. Throughout the whole questionnaire other issues such as Learning and Trust can be introduced and derived from the answers given.

13. Which do you consider to be the main strengths and weaknesses in your way of organising the innovation strategy process?
14. Please, describe what you consider to be the most innovative element in your regional innovation strategy?
15. What do you expect the impact of your regional innovation strategy will be?

This is not 'The End', merely an intermission

Even a good policy does not last forever in the modern, dynamic world. It may well last for years and it should, but sooner or later, minor tweaks and twists will not be enough to keep your region at the forefront of development. That is when you will need to go back to the beginning and start all over again, but this time with the valuable advantage of prior experience. Further iterations of the policy are inevitable in the long term, but remember that moderation is a virtue even then. Avoid the temptation to follow too closely in the footsteps of the existing policy and be mindful of how much change you can realistically expect to create in the regional innovation system. Even when you repeat the policy process for the second or even third time, start from the very beginning, trust your analyses and sharpen them with your experience.

Further updates and information

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