



# **Monitoring and impact evaluation for smart specialisation programmes: a review of international experience**

**Final Report**

**Mélodie Ruwet  
Consultant**

**August 2016**

**Abstract:** This document is a review of the international experience in terms of monitoring and impact evaluation applicable to CORFO's smart specialisation programmes. It includes a theoretical section on monitoring and impact evaluation of programmes, and a review of practical cases and experiences, and given the relative novelty of smart specialisation programmes it presents other examples such as cluster development programmes. It also contains an annotated bibliography, which covers and sums up additional documents.

# CONTENTS

MONITORING AND IMPACT EVALUATION FOR SMART SPECIALISATION PROGRAMMES: A REVIEW OF (RELEVANT) INTERNATIONAL EXPERIENCE .....	7
INTRODUCTION .....	7
PART I: MONITORING AND IMPACT EVALUATION: THEORETICAL FRAMEWORK .....	9
1.    MONITORING: GENERAL PRINCIPLES AND APPROACHES .....	9
MONITORING: DEFINITIONS.....	9
<i>FIRST STEP: DEFINING THE OBJECTIVES</i> .....	12
<i>SECOND STEP: BUILDING INDICATORS TO MONITOR OUR OBJECTIVES.</i> .....	13
<i>THIRD STEP: THE LOGISTICS AND IMPLEMENTATION</i> .....	16
2.    IMPACT EVALUATION.....	16
<i>WHAT IS AN IMPACT EVALUATION?</i> .....	16
<i>WHY DO WE NEED IMPACT EVALUATION?</i> .....	17
<i>HOW DO WE CONDUCT AN IMPACT EVALUATION?</i> .....	19
PART II: INTERNATIONAL EXPERIENCES.....	25
<i>EU AND THE SMART SPECIALISATION STRATEGIES</i> .....	25
<i>HOW ARE REGIONS SUPPOSED TO BUILD THEIR MONITORING SYSTEM?</i> .....	25
<i>MONITORING AND IMPACT EVALUATION BEFORE SMART SPECIALISATION STRATEGIES</i> .....	34
SOUTH KOREA.....	34
<i>SMART SPECIALISATION STRATEGIES IN AUSTRALIA</i> .....	37
LATIN AMERICA (CLUSTERS) .....	38
CONCLUSION .....	39
References .....	40

Annex: Annotated Bibliography .....	42
MONITORING AND EVALUATION .....	43
1. GIANELLE CARLO & KLEINBRINK ALEXANDER (2015). MONITORING MECHANISMS FOR SMART SPECIALISATION STRATEGIES. <i>S3 POLICY BRIEF SERIES</i> N° 13/2015 – APRIL 2015. S3 PLATFORM, JRC-IPTS.....	43
2. GUINEA, JOAQUIN (2014). GUIDELINES TO DESIGN AND MAKE OPERATIONAL MONITORING SYSTEMS TO ASSESS THE PROGRESS OF THE INNOVATION STRATEGIES FOR SMART SPECIALISATIONS (RIS3). <i>CITEK PROJECT POLICY BRIEF</i> .....	44
3. FORAY, DOMINIQUE ET AL. (2012), GUIDE TO RESEARCH AND INNOVATION STRATEGIES FOR SMART SPECIALISATION (RIS 3) (OCLC: 820480390), LUXEMBOURG, EUROPEAN COMMISSION. 45	
4. KLEIBRINK, ALEXANDER, CARLO GIANELLE AND MATHIEU DOUSSINEAU (2016), “MONITORING INNOVATION AND TERRITORIAL DEVELOPMENT IN EUROPE: EMERGENT STRATEGIC MANAGEMENT,” <i>EUROPEAN PLANNING STUDIES</i> , VOL. 24, NO. 8, AUGUST 2.....	46
5. COMISIÓN EUROPEA (2014), “ESTRATEGIAS NACIONALES Y REGIONALES PARA LA ESPECIALIZACIÓN INTELIGENTE (RIS3).” .....	48
6. OECD (2013), “INNOVATION-DRIVEN GROWTH IN REGIONS: THE ROLE OF SMART SPECIALISATION.” .....	48
7. MARTINEZ, DIEGO (2013), “PROFILING INDICATORS FOR RIS3: SETTING THE SCENE,” DOCUMENT PRESENTED IN THEMATIC WORKSHOP “ECONOMIC INDICATORS AND MONITORING AND EVALUATION TOOLS FOR SMART SPECIALISATION STRATEGIES.” .....	49
8. ROOD, SALLY (2013), “MONITORING AND EVALUATION FOR INNOVATION POLICY,” <i>WORLD BANK POLICY BRIEF. WASHINGTON, DC</i> .....	50
9. LENGRAND, LOUIS AND SMART INNOVATION ASSOCIÉS (2006), “A PRACTICAL GUIDE TO EVALUATING INNOVATION PROGRAMMES,” <i>EUROPEAN COMMUNITIES, BRUSSELS-LUXEMBOURG</i> ..	50
10. THE WORLD BANK (N/D), “GUIDELINE NOTE FOR A MONITORING AND EVALUATION SYSTEM FOR INNOVATION STRATEGIES (RIS3) IN POLAND.” .....	51
11. JAGER, HANS CHRISTIAN (2014), “SMART SPECIALISATION OF REGIONAL INNOVATION POLICY (RIS3): FOCUS ON RESULTS,” DOCUMENT PRESENTED IN TRAINING SESSION FOR POLICY MAKERS AND PRACTITIONERS. ....	51
12. DOUSSINEAU, MATHIEU (2015), “OPPORTUNITIES AND CHALLENGES FOR RIS3 IMPLEMENTATION FROM DESIGN TO IMPLEMENTATION,” DOCUMENT PRESENTED IN 13TH CZECH DAYS FOR EUROPEAN RESEARCH CZEDER 2015.....	52
13. J. Z. KUSEK, RAY C. RIST (2004), TEN STEPS TO A RESULTS-BASED MONITORING AND EVALUATION SYSTEM, THE WORLD BANK.....	53

14. A. NAUWELAERS, CLAIRE ET AL. (2014), "SMART SPECIALISATION FOR REGIONAL INNOVATION: UNDERPINNING EFFECTIVE STRATEGY DESIGN," <i>CARDIFF UNIVERSITY, SMARTSPEC, SEVENTH FRAMEWORK PROGRAMME</i> .....	54
B. NAUWELAERS, CLAIRE ET AL. (2015), "SMART SPECIALISATION FOR REGIONAL INNOVATION: UNDERPINNING EFFECTIVE STRATEGY DESIGN. WORK PACKAGE 4.," JANUARY 27.....	54
15. MAFFIOLI, ALESSANDRO, CARLO PIETROBELLI AND RODOLFO STUCCHI (EDS) (2016), <i>THE IMPACT EVALUATION OF CLUSTER DEVELOPMENT PROGRAMMES: METHODS AND PRACTICES</i> , INTER-AMERICAN DEVELOPMENT BANK. ....	55
16. KETELS, CHRISTIAN ET AL. (2013), "THE ROLE OF CLUSTERS IN SMART SPECIALISATION STRATEGIES.," <i>EUROPEAN COMMISSION</i> .....	56
17. THE WORLD BANK (2013), "INPUT FOR BULGARIA'S RESEARCH AND INNOVATION STRATEGIES FOR SMART SPECIALISATION." .....	56
IMPACT EVALUATION.....	56
18. GERTLER, PAUL J. ET AL. (2010), <i>IMPACT EVALUATION IN PRACTICE</i> , THE WORLD BANK, DEEMBER.....	57
19. KHANDKER, SHAHIDUR, GAYATRI B. KOOLWAL AND HUSSAIN SAMAD (2009), <i>HANDBOOK ON IMPACT EVALUATION: QUANTITATIVE METHODS AND PRACTICES</i> , THE WORLD BANK, OCTOBER. 57	
20. ROGERS, PATRICIA ET AL. (2015), "CHOOSING APPROPRIATE DESIGNS AND METHODS FOR IMPACT EVALUATION," AUSTRALIAN GOVERNMENT, DEPARTMENT OF INDUSTRY, INNOVATION AND SCIENCE: OFFICE OF THE CHIEF ECONOMIST, NOVEMBER. ....	58
21. CSIRO (2015), "IMPACT EVALUATION GUIDE." .....	59
22. FIGAL GARONEY, LUCAS AND ALESSANDRO MAFFIOLI (2016), "CAPÍTULO 8: EVALUACIÓN DE IMPACTO DE POLÍTICAS DE INNOVACIÓN EN AMÉRICA LATINA Y EL CARIBE: HACIA UNA NUEVA FRONTERA," <i>LA POLÍTICA DE INNOVACIÓN EN AMÉRICA LATINA Y EL CARIBE: NUEVOS CAMINOS</i> , NEW YORK, BANCO INTERAMERICANO DE DESARROLLO.....	60
23. RAMBERG, INGE AND MARK KNELL (2012), "CHALLENGES MEASURING EFFECTS OF RESEARCH AND INNOVATION POLICY INTERVENTIONS IN EX-POST IMPACT EVALUATIONS. A SYNTHESIS REPORT." .....	61
24. GRAUGNART, GILBERT AND NICOLAS HEEREN (1999), "PRISE EN COMPTE DE L'IMPACT ET CONSTRUCTION D'INDICATEURS D'IMPACT," CIEDEL. ....	62
25. WHITE, HOWARD (2007), <i>EVALUATING AID IMPACT</i> (OCLC: 315736599), HELSINKI, FINLAND, UNU WORLD INST. FOR DEVELOPMENT ECONOMICS RESEARCH (UNU/WIDER).....	63
INTERNATIONAL EXPERIENCES OF MONITORING AND EVALUATION .....	64

26.	KOUDOUMAKIS, PANAGIO (N/D), "MONITORING & EVALUATION SYSTEM OF REGIONAL RIS3: EASTERN MACEDONIA-THRACE." .....	64
27.	EUROPEAN COMMISSION (SMART SPECIALISATION PLATFORM )(N/D), "RIS3 IN PRACTICE: IMPLEMENTATION EXAMPLES (MONITORING)." .....	66
28.	NORTHERN NETHERLANDS PROVINCES (2013), "RESEARCH AND INNOVATION STRATEGY FOR SMART SPECIALISATION (RIS3): NORTHERN NETHERLANDS," NOVEMBER. ....	68
29.	PRIEDL, IRMA AND MARTINA EBNER (2013), "LOWER AUSTRIAN MONITORING AND EVALUATION SYSTEM." .....	68
30.	MINISTRY OF EDUCATION AND SCIENCE, REPUBLIC OF LATVIA (2015), "RIS3 IN THE CONTEXT OF EUROPE2020: THE ROLE OF UNIVERSITIES." .....	68
31.	(2016), "SCINNOPOLI," [ONLINE] < <a href="http://www.scinnopolleu/">HTTP://WWW.SCINNOPOLLEU/</a> > [DATE OF REFERENCE: 23 AUGUST 2016]. ....	70
32.	OECD (2014), <i>INDUSTRY AND TECHNOLOGY POLICIES IN KOREA</i> , OECD REVIEWS OF INNOVATION POLICY, OECD PUBLISHING, MAY 21.....	70
INTERNATIONAL EXPERIENCES OF IMPACT EVALUATION .....		72
33.	BERRER, HELMUT ET AL. (2011), "THE ECONOMIC IMPACT OF THE LOWER AUSTRIAN CLUSTERS," <i>ECONOMICA</i> , NOVEMBER.....	72
34.	CORPORATION, GRAINS RESEARCH AND DEVELOPMENT (2016), "IMPACT ASSESSMENT - GRAINS RESEARCH & DEVELOPMENT CORPORATION," [ONLINE] < <a href="https://grdc.com.au/research-and-development/impact-assessment">HTTPS://GRDC.COM.AU/RESEARCH-AND-DEVELOPMENT/IMPACT-ASSESSMENT</a> > [DATE OF REFERENCE: 24 AUGUST 2016]. ....	73
35.	LÓPEZ, ANDRÉS, ANA MARÍA REYNOSO AND MARTÍN ROSSI (2010), "IMPACT EVALUATION OF A PROGRAM OF PUBLIC FUNDING OF PRIVATE INNOVATION ACTIVITIES: AN ECONOMETRIC STUDY OF FONTAR IN ARGENTINA," INTER-AMERICAN DEVELOPMENT BANK... 73	
R&D TAX INCENTIVE AND THEIR EFFICIENCY .....		74
36.	DAVID, PAUL A., BRONWYN H. HALL AND ANDREW A. TOOLE (2000), "IS PUBLIC R&D A COMPLEMENT OR SUBSTITUTE FOR PRIVATE R&D? A REVIEW OF THE ECONOMETRIC EVIDENCE," <i>RESEARCH POLICY</i> , VOL. 29, NO. 4.....	74
37.	DECHEZLEPRÊTRE, ANTOINE ET AL. (2016), "DO TAX INCENTIVES FOR RESEARCH INCREASE FIRM INNOVATION? AN RD DESIGN FOR R&D," No. 22405, NATIONAL BUREAU OF ECONOMIC RESEARCH, JULY.....	74
38.	MOHNEN, PIERRE AND BORIS LOKSHIN (2009), "WHAT DOES IT TAKE FOR AN R&D TAX INCENTIVE POLICY TO BE EFFECTIVE?," <i>CIRANO-SCIENTIFIC PUBLICATIONS 2009S-11</i> .....	75

# MONITORING AND IMPACT EVALUATION FOR SMART SPECIALISATION PROGRAMMES: A REVIEW OF (RELEVANT) INTERNATIONAL EXPERIENCE

## INTRODUCTION

Smart specialisation strategies and/or smart specialisation programmes are a relative novelty. Their theoretical outlining is quite recent and comes from Europe. It initially appeared in a paper by Dominique Foray and others in 2009, in the mark of the “knowledge for growth” expert group. The concept is defined as follow by its author in a later paper:

*Smart specialisation is an innovative policy concept which emphasizes the principle of prioritisation in a vertical logic (to favour some technologies, fields, population of firms) and defines a method to identify such desirable areas for innovation policy intervention. Its rationale involves both the fact that, even in the information age, the logic of specialisation is intact, particularly for small entities such as regional economies in Europe and the argument that the task of identification (of what should be prioritised) is very difficult and therefore needs a sophisticated policy design. (Foray and Goenaga, 2013).*

The theoretical framework was barely being built when the European Union (EU) turned it into a real policy. The EU regions must now have a RIS3 (which stands for *Research and Innovation Smart Specialisation Strategy*) in order to claim structural funds<sup>1</sup>.

An important components of the EU smart specialisation strategies is their monitoring and evaluation systems (European Commission, 2012). As will be shown later, EU advisors and analysts deem it crucial that the region design an efficient monitoring

---

<sup>1</sup> The EU Structural funds correspond to the EU development program, that was put into place as a mean to diminish the gap between “poor regions” and “advanced regions”.

and evaluation system. The monitoring system is of such relevance because it enables the policy planner to see whether the policy he planned is well on track, and when it is not, he may correct it before it is too late. Another factor of importance is that it can facilitate the communication between stakeholders<sup>2</sup>. The general public should also have access to this information, since the funds are public ones.

CORFO (the Chilean Economic Development Agency) has recently started to develop its own smart specialisation programmes for the national economy. The challenge is to sophisticate and diversify the Chilean economy by using its natural competitive advantages, while managing to involve and induce the academic, public, and private sectors to cooperate (Bitran, 2015).

This document is divided into two sections. In the first section, will explain how to monitor and evaluate smart specialisation programmes, then the focus will shift onto impact evaluation, focusing on some of its complexities and what the main objectives and challenges are. We will then provide several advices to policy makers seeking to realize an impact evaluation (IE).

The second section of the document will be dedicated to international experiences in terms of monitoring and impact evaluation of innovation policies/programmes.

---

<sup>2</sup> The stakeholders usually identified in the context of a policy/program are all directly or indirectly individuals or groups affected by the policy/program.



# PART I: MONITORING AND IMPACT EVALUATION: THEORETICAL FRAMEWORK

In this first section, we will outline the theoretical framework for monitoring and impact evaluation. We will start of by laying out the basics of monitoring, with definitions and examples.

## 1. MONITORING: GENERAL PRINCIPLES AND APPROACHES<sup>3</sup>

### MONITORING: DEFINITIONS

Monitoring is “keeping an eye” on the project at all times to make sure everything is going as planned. It is defined as followed by the OECD:

*A continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. (OECD, 2005).*

Elaborating a monitoring system implies enabling the tracking of several elements through indicators. These elements are the inputs, the activities, the outputs and the outcomes. A policy usually implies the dedication of *inputs* (for instance, money) to organizing *activities* which will produce *outputs*, which in turn will have short to mid-term effects called *outcomes* and long term effects called *impacts*. It is essential to operate a distinction between the “outputs”, the “outcomes”, and the “impacts”. Those three concepts can be easily mixed up, and authors in the literature on monitoring and evaluation may use different wordings. To avoid any unnecessary confusion, we will consider the following definitions published by the OECD (OECD, 2005) throughout this paper:

---

<sup>3</sup> Please note that while a portion of authors use monitoring and evaluation with no intention of including impact evaluation, this document will use only the word monitoring for the same purpose, to avoid mixing it up with impact evaluation.

**Inputs:** The financial, human, and material resources used for the development intervention.

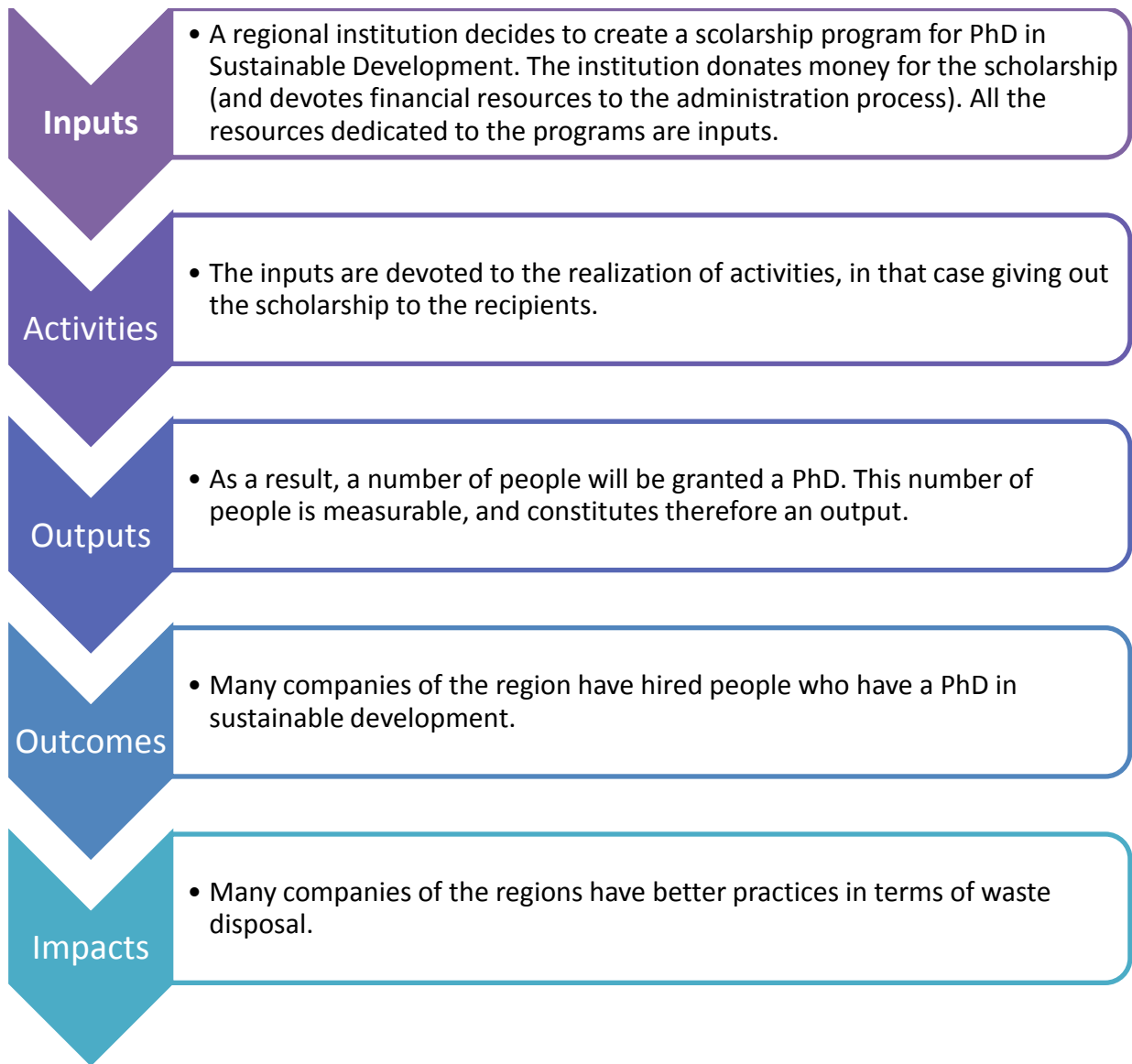
**Activities:** Actions taken or work performed through which inputs, such as funds, technical assistance and other types of resources are mobilized to produce specific outputs.

**Output:** The products, capital goods and services which result from a development intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes

**Outcome:** The likely or achieved short-term and medium-term effects of an intervention's outputs.

**Impacts:** Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.

Based on the preceding definitions, here is a concrete example (simple for didactic purposes, the reality is always more complicated):



Source: Own elaboration based on the OECD definitions and various sources on the logic model.

Monitoring is essentially taking care of the three first concepts, namely the inputs, activities and outputs, while impact evaluation is seeking to establish the outcomes and impacts of a program. Monitoring precedes the impact evaluation, and may help simplify the latter if done properly.

Indeed, a monitoring system must enable the stakeholders to track progress – that is, to control whether the goals are being reached, by collecting information on which to base indicators. Those indicators will enable the stakeholders to see whether the goals have been reached during the evaluation process. Therefore a bad monitoring can hamper a good impact evaluation - or that there be any evaluation at all for that matter.

There are always various phases in a monitoring system. While some authors identify up to ten steps (J. Z. Kusek, R.C. Rist 2004), the monitoring systems for smart specialisations strategies usually include much less (Gianelle, Kleibrink and others, 2015; Guinea, 2014). In our view, the process can be summed up to three broad phases.

The first phase corresponds to what is to be done before the implementation of the policy/program. A good monitoring system is preceded by a clear definition of the goals the innovation program is seeking to achieve. This is important, because if the goals are not clearly identified and delimited, it will be very hard to monitor progress. It is also at that point that policy-maker will need to determine whether what they are planning to do is achievable.

The second phase will be building indicators. Each of the goals will be associated to an indicator, or various indicators which will be the mirror of the progress achieved or not. Each indicator will be in turn associated to a baseline.

The third step includes the logistical considerations, such as how do we collect the information, who collects it and when, who will access the information, how do we make said information available to them and how do we pay for the monitoring?

#### *FIRST STEP: DEFINING THE OBJECTIVES*

All policies have ambitions, or they would not exist. Therefore, during the first phase we need to delineate those. The final objective of a policy will more than probably be something feasible, but that will take a lot of time to achieve. Therefore, the first step

will consist in defining short term objectives, or outputs (see above). We can also already define what outcome we will want to monitor.

For instance, if we decide to build a program that enables companies to work with PhD students in dedicated facilities on R&D projects, the objectives could be to increase the amount of private R&D spending, or to increase the employability of PhD students (a higher rate of PhD students within national companies), or to increase the number of students who decide to start a PhD (if the companies participate in paying their scholarship fee for instance). Sometimes, all of these examples can be objectives, sometimes a combination of them, sometimes only one. In all cases, it is important to have defined what change we are seeking to produce with our programme.

*SECOND STEP: BUILDING INDICATORS TO MONITOR OUR OBJECTIVES.*

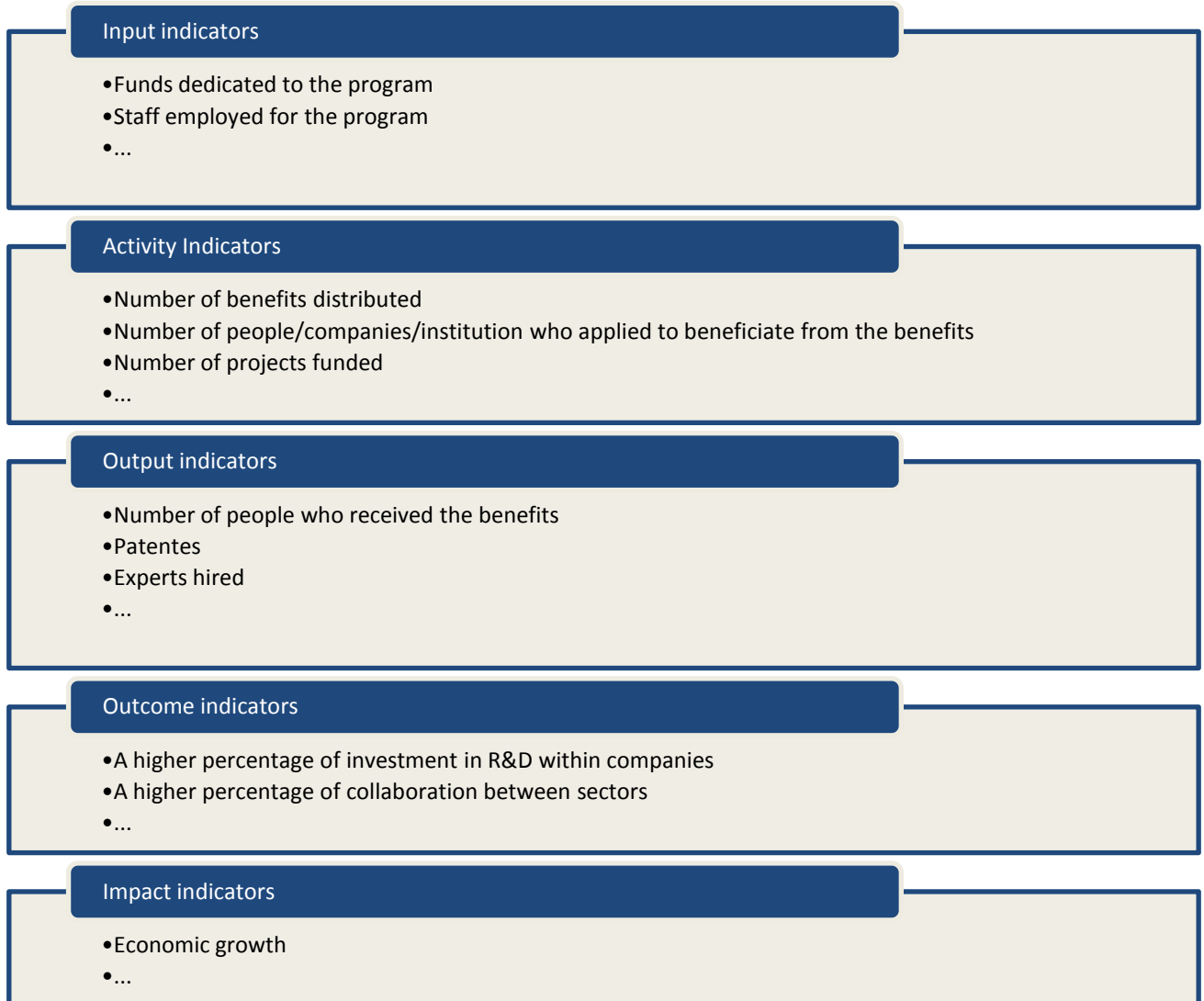
One of the most important components of monitoring is the indicators. Well designed indicators will allow the policy makers and analyst to monitor the program. Once we have decided what we want for our policy, we can put it under indicators that will be followed. If we take the example we used above, once we have decided what change we want to produce, we need to figure out how we will measure whether we are producing this change. Therefore, if we have decided we want to increase the number of PhD students employed within national companies (which will be our objective), we will need to create an indicator to measure the increase (an appropriate indicator could be: number of PhD within national companies).

**What is an indicator?**

Indicators are what will allow us to track the progress being made towards achieving the goal of our policy. The first thing to know about them is that there is not one type, but several types of indicators. The general concept of indicator is defined as followed by the OECD:

*Indicator: Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor.*  
(OECD, 2005)

Each element to monitor –inputs, activities, outputs, outcomes and impacts- will be associated to its own indicator. Therefore in a monitoring system we will be designing input indicators, activity indicators, output indicators, and if need be outcome indicators and impact indicators (although those latter tend to be designed during an impact evaluation). Examples for each of those indicators are listed below.



Source: Own elaboration

### **Choosing indicators**

Defining indicators is very important, but can also prove tricky. There are several errors to avoid, for instance, providing an inadequate number of indicators. While it is

pointless to flood the monitoring system with too many indicators, there should at least be one by priority. Moreover, the number of result indicators and output indicators should be balanced, and must not forget that what needs to be built is a system of indicators: they must be related to one another and not just be a loose bunch of unrelated indicators.

Indicators must be kept relatively simple. Additionally, while they must be molded to the program they are monitoring, if similar programmes have had a monitoring system, the same indicators can be reused whenever possible.

There are two popular mnemonic acronyms used to design good indicators. “**S.M.A.R.T.**” is the older of the two. It was first elaborated by Georges Duran in an article published in *Management Review* (Doran, 1981). According to this approach, a good indicator must be: **S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**ime-bound.

The second acronym often used is “**C.R.E.A.M.**”. **C**lear: Precise and unambiguous, **R**elevant: Appropriate to the subject at hand, **E**conomic: Available at a reasonable cost, **A**dequate: Provide a sufficient basis to assess performances, and **M**onitorable: Amenable to independent validation.

The acronyms are in our view, complementary. Indicators should be clear and specific, measurable/monitorable, relevant/adequate and time-bound. The economic specification is of interest, because it is an aspect often neglected.

Once the indicators have been selected, the following step will be to choose their baselines. In other words, responding to the question: where are we today? A baseline is defined after a baseline study, which can be defined as *[a]n analysis describing the situation prior to a development intervention, against which progress can be assessed or comparisons made.*(OECD, 2005)

If we go back to our example of the number of people with a PhD working in national companies, the baseline of the indicators would equal the number of workers with a PhD and who worked in national companies before the intervention. Without having an idea of what the situation was like before, one cannot evaluate whether there has

been any increase, and therefore one cannot determine whether the intervention was successful.

### *THIRD STEP: THE LOGISTICS AND IMPLEMENTATION*

The third step consists in planning the logistics of the monitoring system. This includes preparing a plan for data collection and analysis (who collects, when and how), the data collection tools (questionnaires, interviews). Making filling and sending in a questionnaire mandatory from the very first calls makes it easier to receive feedback. At this point, the way in which stakeholders and the civil society will have access to the information should also be defined. Results have to be presented in an appropriate and accessible way, so that weaknesses can be identified. Finally, one should develop the implementation plan. It should include a schedule for the gathering and review of data, the individual responsibilities, the dissemination strategy and a budget (for data collection, processing, analysis and reporting, capacity building and field support). It is considered helpful to determine a percentage of the total budget of the program to spend on monitoring (Guinea, 2014).

As we mentioned earlier, with the help of a sound monitoring system, stakeholders will be able to track whether the resources they have assigned to activities have been well spent and whether those activities yielded positive results. But some results are not easily identified and can require years before making an appearance. To successfully pinpoint and isolate those, we will need to conduct an impact evaluation.

## 2. IMPACT EVALUATION

### *WHAT IS AN IMPACT EVALUATION?*

An impact evaluation is a management tool that will allow us to identify effects of a program. In other terms, we will be able to communicate what would have happened in the absence of the program. The OECD (OECD, 2005) defines impact evaluation as follow:

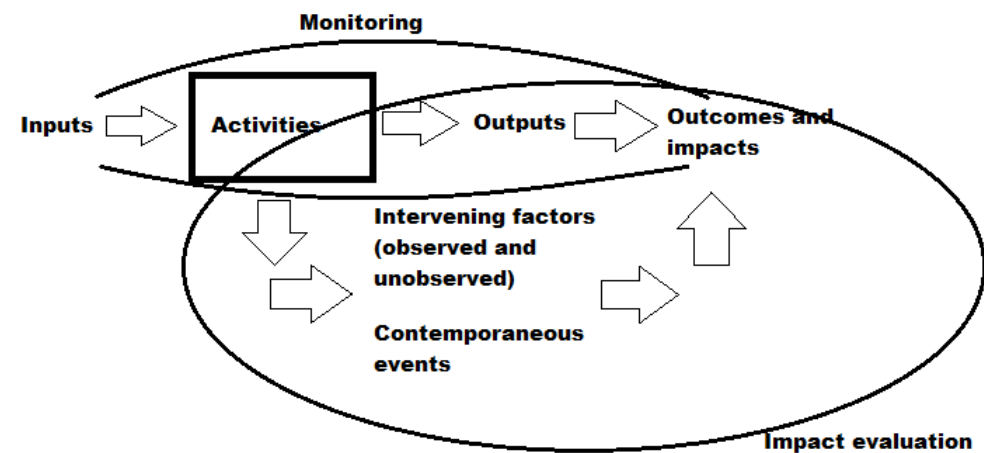
*Impact evaluation is an assessment of how the intervention being evaluated affects outcomes, whether these effects are intended or unintended. The proper analysis of*



*impact requires a counterfactual of what those outcomes would have been in the absence of the intervention.*

The difference between monitoring and impact evaluation is that impact evaluation is a more complex task. It is not just about determining whether targets have been reached, but about seeing what **change** has been produced, taking into account external factors as well as the intervention.

*The difference between monitoring and impact evaluation*



Source: Own elaboration based on (Feinstein and Picciotto, 2000)

#### *WHY DO WE NEED IMPACT EVALUATION?*

Impact evaluations are valuable tools for evidence base policy-making (Figueroa Garoney and Maffioli, 2016; Gertler et al., 2010; Lengrand and Associés, 2006). The purpose of development programmes is to produce positive changes such as more employment, better education, a structural change, to cite only a few. Impact evaluation will analyze whether those changes actually happened thanks to a policy, and if they did, the level those changes reached. Therefore, the first question an impact evaluation will provide answers to is: to what extent was the intervention effective? It is important to answer this question, because the response, positive or not, will have an influence on how the next policy is designed.

Answering this question will be achieved by determining what would have happened in the absence of the policy. Once this has been replied, it may be of use to conduct an impact evaluation to know more about the type of policy we are doing (and make advances in evidence-base policy making).

All programmes are different. Their impact evaluations will be different as well. An example of additional questions we could be seeking to answer with an impact evaluation is presented in the following table.

### **Examples of additional questions to be answered by the Impact Evaluationn**

- Are different groups of beneficiaries receiving different effects from the intervention?
- How much support is really needed? (Usually the interventions will vary according to the needs of the beneficiaries, and beneficiaries can also ask for support more than once in a given timeframe).
- How long does it take for the effects to appear?
- Are there any effects when the intervention is combined with other interventions? What are the effective combinations of interventions?
- Are there any externalities (positive or negative) caused by the intervention?

Adapted from (Figal Garoney and Maffioli, 2016)

With additional findings (answers to questions other than whether the intervention had been effective) we can also go further, thanks to impact evaluation. We can put at rest inefficient practices and spread good ones. Or we can analyze what went wrong in a specific program and do things differently in the next taking into account the lessons from the failure. It is also a mean of reassuring the stakeholders. For instance, a program which has several variants (for example, different possibilities of application process) can be greatly benefited by an IE since it will identify the most efficient processes.

It is important to note that there are cases for which it is not recommended to conduct an impact evaluation, since those are costly. Impact evaluations are not necessarily a

requisite for all policies and programmes. They are above all recommended for new and innovative projects, and/or small-scale or pilot projects that are to be expanded<sup>4</sup>.

#### *HOW DO WE CONDUCT AN IMPACT EVALUATION?*<sup>5</sup>

While monitoring was about checking periodically whether the programmes were well on track, the impact evaluation is an ex-post process which aims at analyzing not only whether the targets have been reached, but also what other effects they may have had.

Once the decision of conducting an impact evaluation has been taken, the next step will be deciding what to evaluate, or determining which questions we seek to answer. At this point it is also of importance determining the baselines for each question (the concept of baseline is the same than in a monitoring system: it consists in finding how the situation was before the intervention). Once we have decided what questions we will seek to find an answer to and have our baselines ready, we can move on to trying to answer them. This will involve determining the counterfactual and the attribution.

Let's take once again the example of a program which goal was to increase the number of people with a PhD employed by national companies. After 15 years, results show that there are much more employees with a PhD than before in the national companies. But is it only as a consequence of the policy? Would it not be correlated to other policies (like for instance if education became free), other contemporaneous events (such as skilled migration)

? An impact evaluation would try to identify which part of the improvement may be attributed to the policy. This is the **attribution**, defined by the International Initiative for Impact Evaluation (3IE) as: *the extent to which the observed change in outcome is*

---

<sup>4</sup> For more information on when to do an impact evaluation, you can see Worldbank [http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact\\_Evaluation\\_in\\_Practice.pdf](http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact_Evaluation_in_Practice.pdf). An impact evaluation is above all important to use for innovative, replicable, strategically relevant, untested and/or influential programs.

<sup>5</sup> The following section is built upon the recommendations of 3ie. The International Initiative for Impact evaluation is (3ie), in their own words: *[...] an international grant-making NGO promoting evidence-informed development policies and programmes. We are the global leader in funding and producing high-quality evidence of what works, how, why and at what cost in international development. We believe that better and policy-relevant evidence will make development more effective and improve people's lives.* You can find more information on 3ie's website: <http://www.3ieimpact.org/en/about/>

*the result of the intervention, having allowed for all other factors which may also affect the outcome(s) of interest* (International Initiative for Impact Evaluation, 2012). To be able to determine (estimate) the **attribution**, we will need to measure the **counterfactual**. The counterfactual corresponds to *the state of the world in the absence of the intervention. For most impact evaluations the counterfactual is the value of the outcome for the treatment group in the absence of the intervention. However, studies should also pay attention to unintended outcomes, including effects on non-beneficiaries* (International Initiative for Impact Evaluation, 2012).

This, in turn involves determining a **control group**, which will be a group of individuals/companies/institutions which have not benefited from the policy but need to be as similar as possible to the participating individuals/companies/institutions (which will be called **treatment group**). We can go back to using our example of the students who improved their level of English. Let's assume the program was implemented in only 10% of the schools of the territory. This means 90% of schools have not benefited from the intervention. Since students in those schools did not benefit from the intervention, they should give us an idea of what English capacities of the students are without the intervention.

Comparing the groups which received the intervention with those who did not will enable us to pinpoint the effect of the intervention, and different methods can enable us to identify this control group/the counterfactual. But groups have to be selected in an appropriate way, because the main problem consists in avoiding **selection bias** which are *potential biases introduced into a study by the selection of different types of people into treatment and comparison groups* (International Initiative for Impact Evaluation, 2012).

Let's go back to our example of the students who are learning English. After the program, an impact evaluation is done and the difference is really visible between the students who received the help and those who didn't. But it could be because students who did benefit from the intervention might be from different type of schools than the 90% who did not (for instance, what if the intervention mainly benefited school with a high percentage of compulsory English classes, and the control group includes

vocational training? The difference between the two groups after the intervention will not be relevant, since there already was a big difference between the English capacities of the students from each group). Thence, before the intervention, there might already have been a big difference in ranking which may explain the difference in outcome. It is possible that the intervention limited a gap that may have been a huge difference in English capacity of the students without the intervention.

As a result, the outcome differences may potentially be explained as a result of preexisting differences between the groups, rather than the treatment itself.

Different designs exist and correspond to different ways of choosing the control group (and sometimes the treatment group), while trying to avoid selection bias (White, Sinha and Flanagan, 2006):

- **Randomized control design (Or experimental randomized design)**

In the randomized design, units placed in control and treatment groups are placed randomly. It is often considered the most effective to avoid any selection bias.

- **Quasi experimental designs**

The quasi experimental design consists in using matching comparison, or in other words, in deliberately identifying non-participant units that are similar to the participating ones. There are several quasi-experimental designs:

- *Propensity score-matching*

With the propensity score-matching, the control group is chosen because it has several characteristics in common with the treated group. According to White, Sinha and Flanagan (2006) the ten steps required for a propensity score-matching design are:

The steps involved in carrying out propensity score matching are as follows:

1. Obtain a control dataset.
2. Run a participation model (probit/logit regression).

3. Calculate participation probabilities.
4. Drop observations outside the region of common support (i.e. observations in the treatment group whose probability of participation exceeds that of any from the potential comparison group, or those from the latter group with participation probabilities below those of any members of the treatment group).
5. Match observations based on participation probabilities.
6. Calculate project effect for each pair (or set) of matched observations.
7. Calculate the average of these differences (project effect).

- *Regression discontinuity design (RDD)*

If a program has a threshold for participation, for instance in the case of a company, having less than 50 employees, a regression discontinuity design would take the outcomes of companies just above and just below that threshold (i.e. companies with 49 and 51 employees) and compare them to deduct the effects of the intervention.

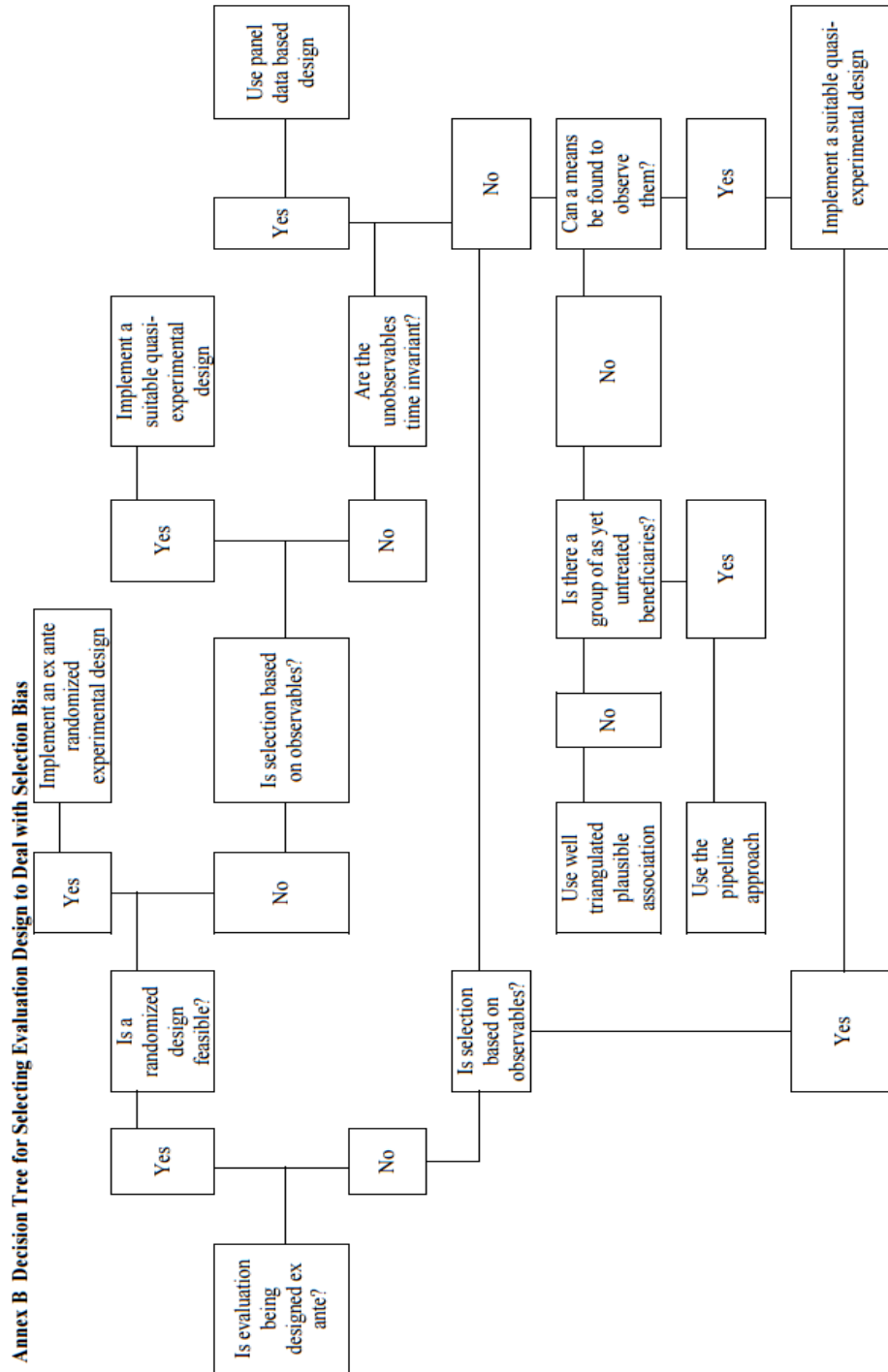
▪ **Pipeline approach**

In the pipeline approach, a number of yet-to-be treated units (that have been selected to receive the intervention but have not yet received it) are selected as the control group.

▪ **Non experimental design**

This type of design is used when it is not possible to determine a control group, and usually less recommended.

The question you might ask is: which model should I choose? It depends on several factors, two policies are never alike, and it also depends on whether you had planned that you wanted an impact evaluation from the very beginning (ex-ante) or not. The following decision tree from White, Sinha and Flanagan (2006) may help you make a decision.



Source: (White, Sinha and Flanagan, 2006)

Each design is more complex than we just outlined, and has its own literature.. Usually randomized control designs are the most efficient because of their relative simplicity in calculating the effects. Other designs may require econometrical

calculations. In all cases, it is important to have clearly defined evaluation questions (you can't get a clear answer without a clear question) and baselines.

To conclude this first section, an efficient system would be in our view one that would include an efficient monitoring system and one that lets the door open for an impact evaluation, although those may be difficult to conciliate for large-scale programmes.



## PART II: INTERNATIONAL EXPERIENCES

Smart specialisation strategies (often abbreviated S3 in the EU documents) are very new. This is why while there is a lot of information on how to design a monitoring and evaluation system for the regional and national smart specialisation strategies within the European Union, there is little on impact evaluation, since it is an ex-post process. In all cases, this section will present examples of how monitoring and impact evaluation have been conducted for similar innovation policies that preceded the smart specialisation one, in the European Union. We will also present evidence from other parts of the world.

### *EU AND THE SMART SPECIALISATION STRATEGIES*

As we have already mentioned, Smart Specialisation Strategies emerged from a paper by an expert group commissioned by the European Union. The concept has been applied while it was still being developed theoretically. While there is a plethora of papers on what *smart specialisation strategies* are and what makes them distinctive there is a lack of concrete experience. Nevertheless, there are a lot of policy briefs designed to help regions build their monitoring system, and a system of peer-reviewing between regions and countries. This section on the European Union and their vision of the smart specialisation strategies will include a summary of the information handed to regions that have to build their smart specialisation strategy and explain the *peer-review* to which regions and countries have access.

### *HOW ARE REGIONS SUPPOSED TO BUILD THEIR MONITORING SYSTEM?*

#### **First EU specific tool: the specific literature**

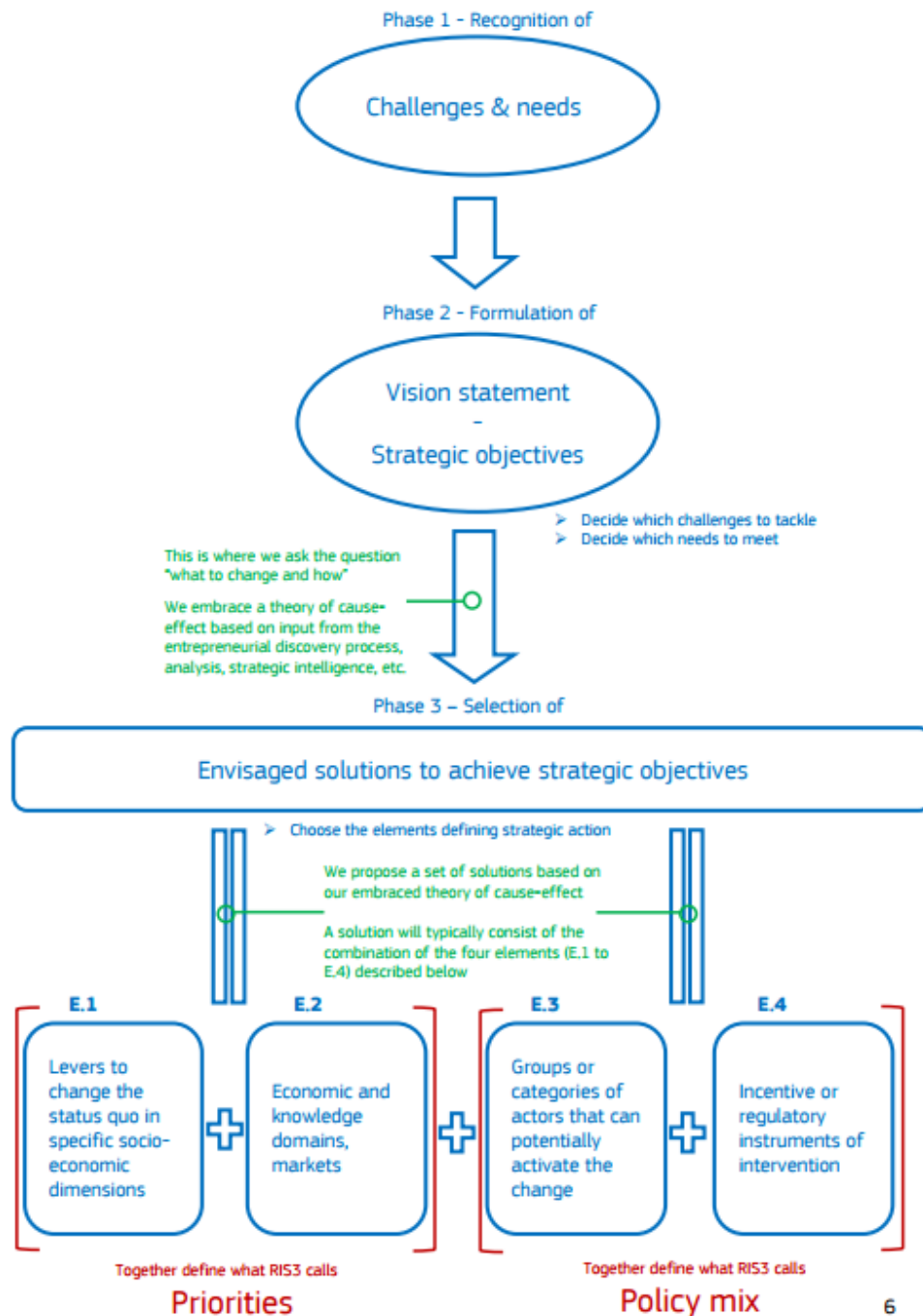
The programmes that have been, or are being implemented in the European Union are still fresh, thus they are in their first phases and one cannot learn much from it yet. They have, however, an online platform for *Smart Specialisation Strategies*, in which they offer guidance to the regions that are planning their own<sup>6</sup>. Thanks to this platform, we can get an idea of how to design such a program and of how best to monitor it. This platform offers advices and briefs on how to implement a *smart*

---

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

*specialisation strategy*, but also how to monitor one. The guide on S3 is also a tool regions often use when it comes to building their strategy.

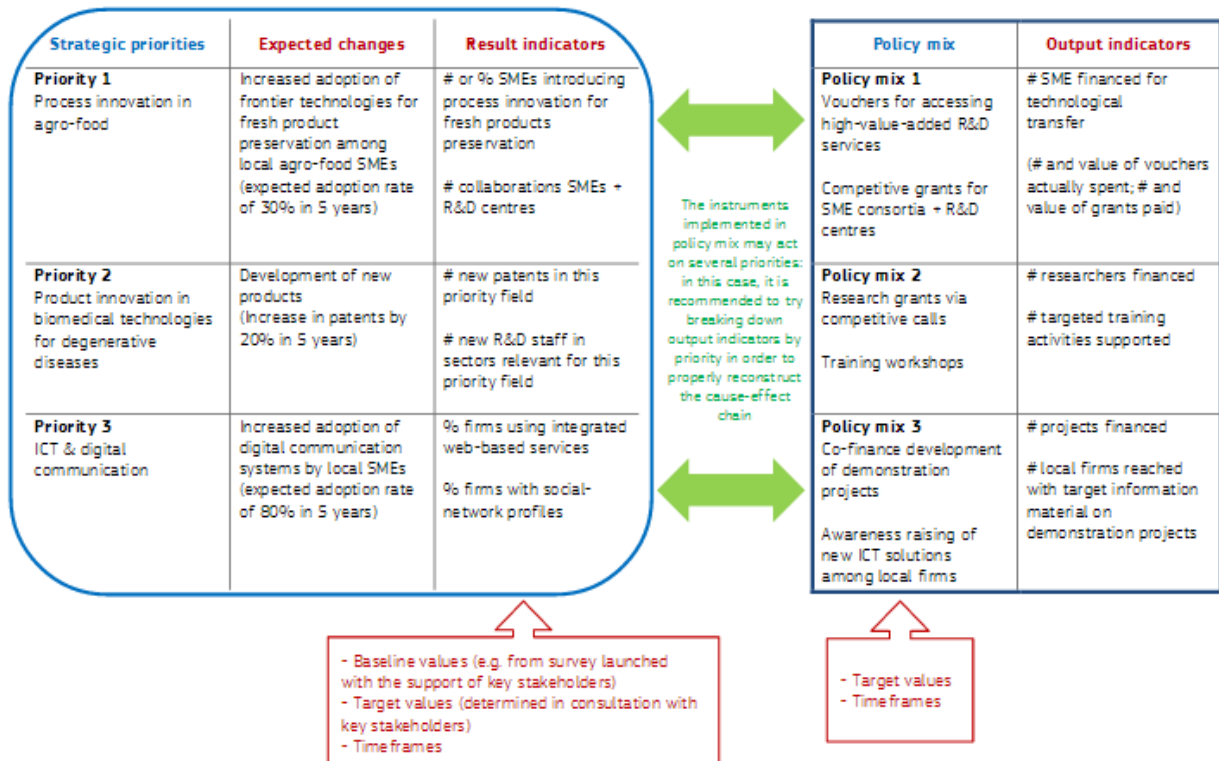
An interesting backup document is the one written by Gianelle and Kleinbrink (2015), a paper called “Monitoring mechanisms for smart specialisation strategies”. The RIS3 structure, in their view, looks as follow:



Source: Gianelle and Kleinbrink, 2015

The region, once it has been able to clearly outline the structure of its own *smart specialisation strategy* may build a monitoring system that would include expected changes and results indicators for the strategic priorities, and policy mix for the output indicators. An example is presented here:

**Dashboard for a monitoring system and its connection with RIS3 with illustrative examples**



Source: Gianelle and Kleinbrink

This policy brief by Gianelle and Kleinbrink was written on the basis of commentaries that had been highlighted at various peer-review seminars.

**Second EU specific tool: peer-reviews**

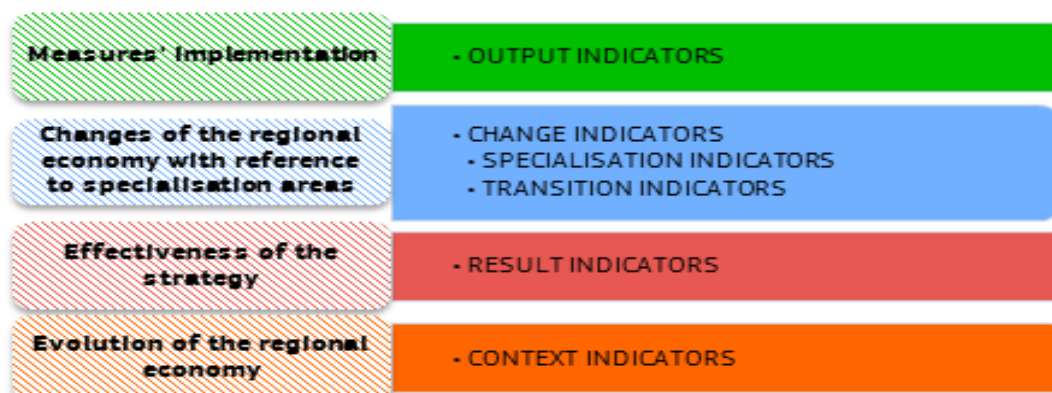
In terms of peer-review 2012 and 2014, 17 workshops were organized, thanks to which 53 regions and 15 member states were reviewed by their peers. From 2015 on, the format of these workshops changed, with only a few regions being reviewed during each event (European Commission, 2016). The concept of peer-review is quite

simple. Regions and/or countries<sup>7</sup> prepare a report on how they plan to (or are planning) their S3, and then meet up. Each countries/regions then present their system to the assembly of policy makers and experts, and also make comments on the systems of other regions/countries. At the end countries/regions receive a feedback report with the discussion summed up (strength and weaknesses of the document presented, advices and recommendations...).

Various peer reviewed cases can be found on the platform, but there is generally little information on the monitoring although some have been focusing on more specific sections of the S3, like one from November 2015 on monitoring<sup>8</sup>. It covered several cases.

The first one is that of an Italian region, Emilia-Romagna<sup>9</sup>. In the vision of that region, indicators of output correspond to measures' implementation; the changes of the regional economy with reference to specialisation area are to be written under change, specialisation and transition indicators. The effectiveness of the strategy will be conveyed by result indicators, and context indicators will track the evolution of the regional economy.

#### Emilia-Romagna's proposed monitoring system



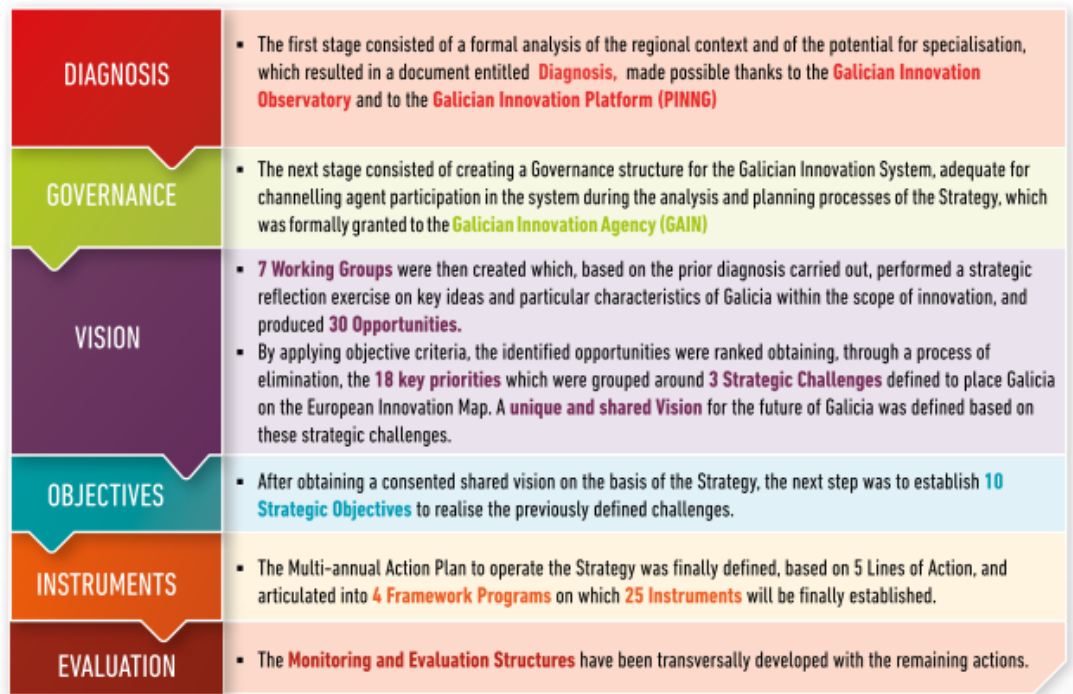
<sup>7</sup> Some seminars have focused on regions, others on countries.

<sup>8</sup> The information on this specific event can be found here <http://s3platform.jrc.ec.europa.eu/-/monitoring-smart-specialisation-peer-exchange-and-learning-pel-?inheritRedirect=true&redirect=%2Fs3-implementation-pxl>

<sup>9</sup> You can find the integrality of Emilia-Romagne's Smart specialisation strategy and its link to its monitoring system here: [http://s3platform.jrc.ec.europa.eu/documents/20182/149513/Emilia-Romagna\\_PXL\\_10Nov2015\\_final.pdf/](http://s3platform.jrc.ec.europa.eu/documents/20182/149513/Emilia-Romagna_PXL_10Nov2015_final.pdf/)

Source: RIS3 Platform, 2016

The second example is that of the Spanish region, Galicia. The region published a document on its smart specialisation strategy for 2014-2020. They summed up the process of elaborating it as follow (and based their work on the guide issued by the EU on how to elaborate a S3):



Source: Xunta de Galicia, 2014

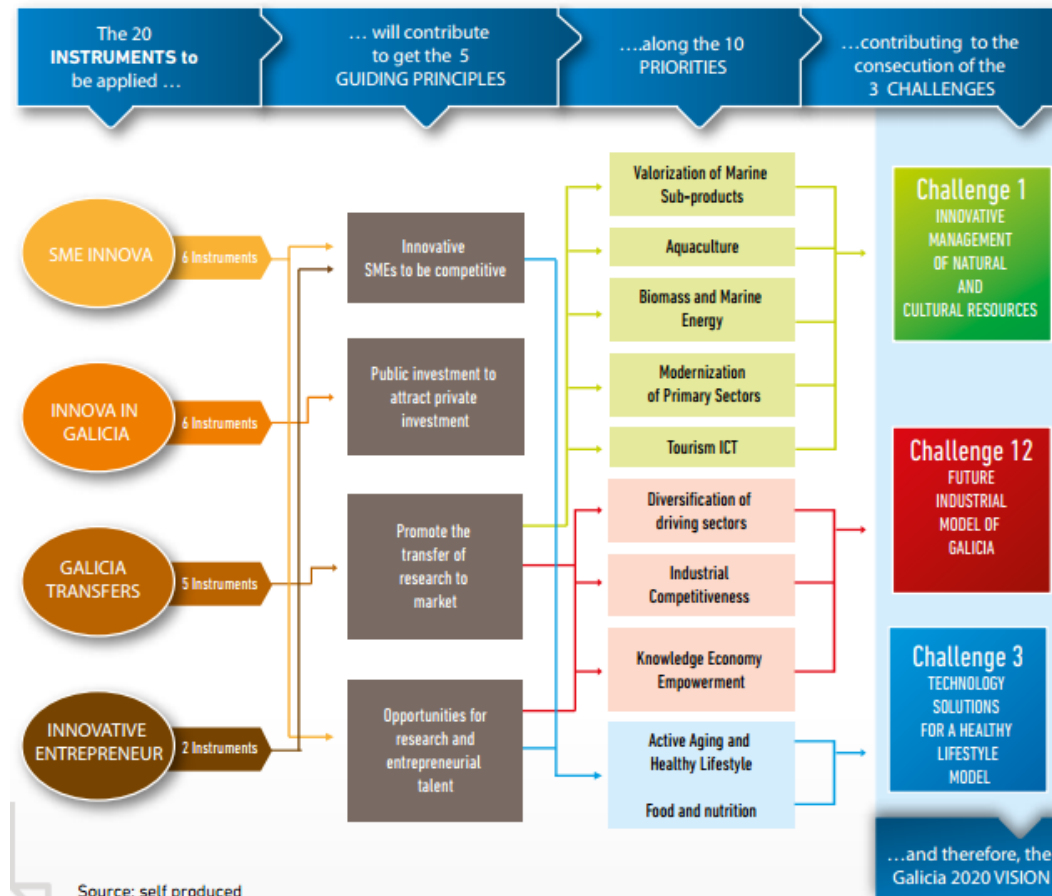
There is, in the report published by Galicia<sup>10</sup> a lot of information on each of the components mentioned in the table (the report is very well done and goes into details), but what is really of importance to us is the monitoring system which is what will now be developed.

The Galician monitoring system will be monitoring three key elements: the instruments, thanks to performance (output) indicators; the strategic priorities, with result indicators; and it will be tracking the region's challenges and visions with the

<sup>10</sup> You can find it here: [http://www.ris3galicia.es/wp-content/uploads/2015/09/RIS3\\_Strategy.pdf](http://www.ris3galicia.es/wp-content/uploads/2015/09/RIS3_Strategy.pdf)

help of impact indicators. Here is how the instruments, the priorities and the visions relate to each other in this particular S3.

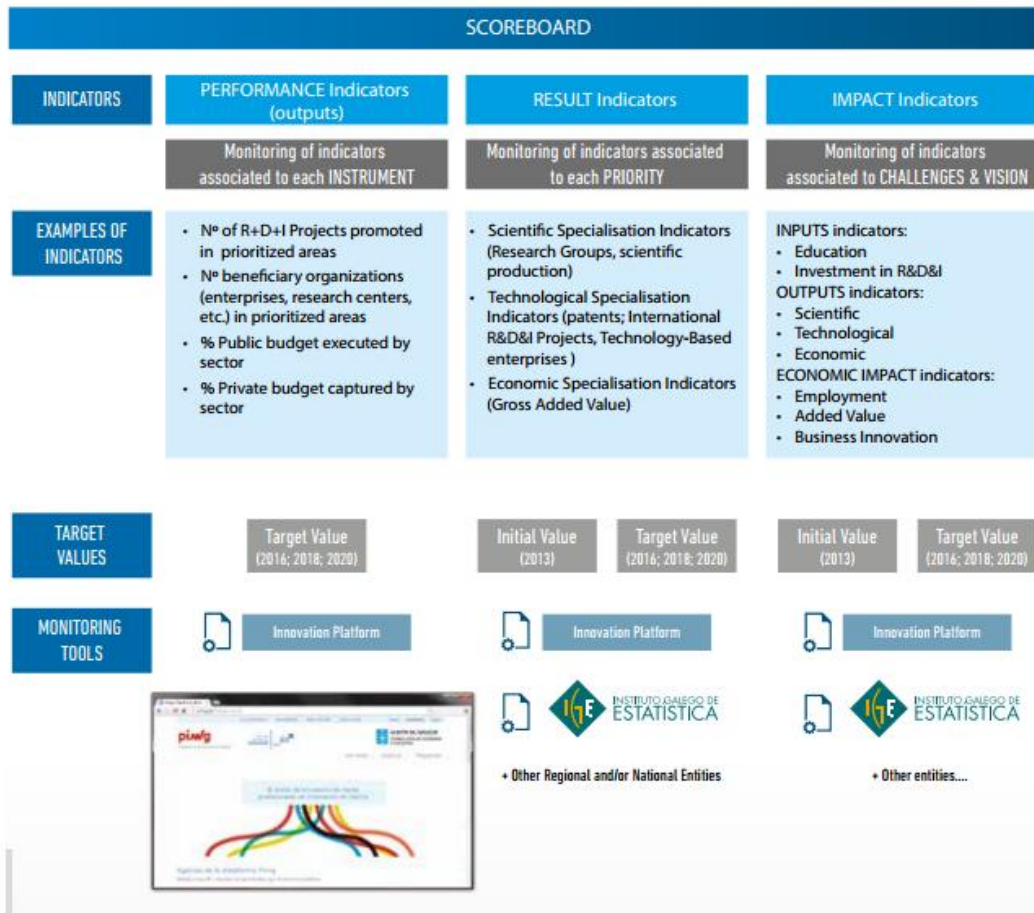
### Compilation of the Key Elements for the Galicia S3 Evaluation System



Source: Xunta de Galicia, 2014

What Galicia will be doing is therefore monitor these key elements to see whether they are well on track. The evaluation will take the form of a scoreboard, with indicators, targets, and monitoring tools<sup>11</sup>.

<sup>11</sup> There is much more extensive explanation of the whole monitoring system in the Galician report.

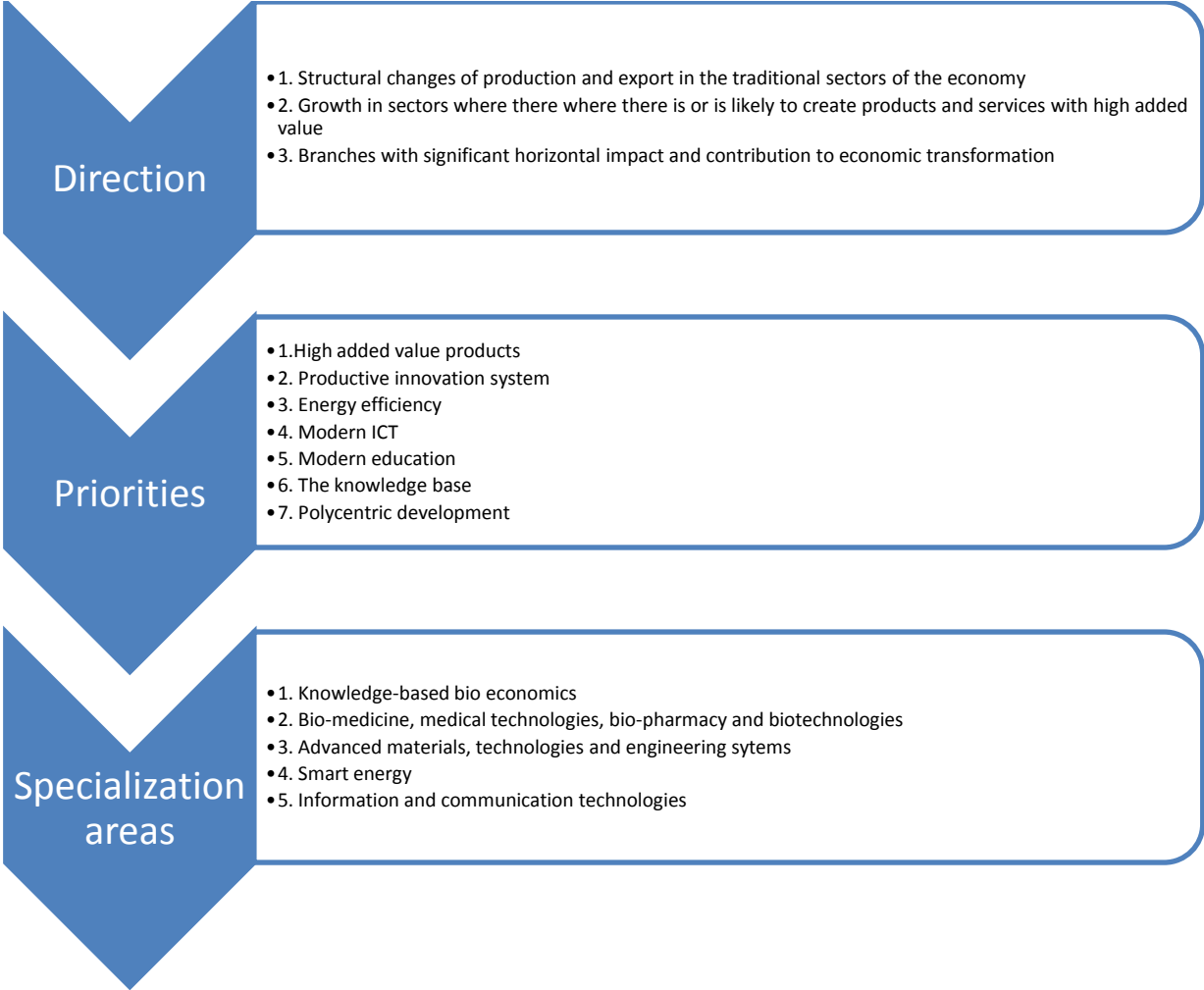


Source: Xunta de Galicia, 2014

This particular example seems like a good one, and the Galician government (Xunta, in Galician) seem to have taken very well note of the advices from the EU on how to design their monitoring system. This is an example which should be of interest to Corfo, since various of the prioritized areas are similar to the ones the Chilean agency decided to focus on<sup>12</sup>.

<sup>12</sup> The prioritized areas are: Enhancement-Sea, Aquaculture, Biomass, and Marine Energies Modernisation of Primary Sectors, Tourism-ICT, Diversification Driving Sectors, Industrial Sector Competitiveness, Boost Knowledge-based Economy, Active Ageing, Nutrition and Food.

Another example of a monitoring system for a smart specialisation strategy is that of Latvia (although it was not presented at the same peer-review event). Latvia’s smart specialisation strategy has the objective of increasing innovation capacity and creating an innovation system that will promote the growth of the economy. The Latvian policy-makers identified 3 directions, 7 priorities and 5 specialisation areas (Ministry of Education and Science Republic of Latvia, 2015):



Adapted from: (Ministry of Education and Science Republic of Latvia, 2015)

With this structure in mind, the Latvian policy-makers indicators for overall goals, and macro levels indicators, as follow:



OVERALL GOALS (3)	Base value	2017	2020	Data source
(1) Investment in R&D (% from GDP)	0.6 (2013)	1.2	1.5	CSB
(2) Position in the EU Innovation Union Scoreboard	modest (2013)	modest	follower	EC
(3) Efficiency in the processing industry (EUR per employee)	20,126 (2013)	24,500	29,000	CSB
<b>MACRO LEVEL INDICATORS (6)</b>				
(1) Private sector investments in R&D (% of total investments)	21.8 (2013)	46	48	CSB
(2) Proportion of innovative companies (% of all companies)	30.4 (2012)	35	40	CSB
(3) Proportion of high-technology and medium-high-technology sectors in the export of Latvian goods (%)	23.8 (2012)	27	31	CSB
(4) The number of R&D personnel (public, private sector)	5593 (2013)	6300	7000	CSB
(5) A smaller number of stronger publicly-funded scientific institutions	42 (2013)	30	20	MoES
(6) Proportion of graduates (ISCED level 5 and 6) in the STEM fields from the total number of graduates, %	19 (2012)	25	27	MoES <sup>1</sup> <sub>6</sub>

Source: (Ministry of Education and Science Republic of Latvia, 2015)

With those three first concrete examples, we can already see that different strategies call for different monitoring. There is no magical recipe for designing monitoring systems, but the peer-reviewing system is a good way to get feedback on a strategy. Some regions may have had more experience than others, since before the emergence of smart specialisation strategies there already were some innovation programmes at the regional or national level and which included a monitoring system or an ex-post evaluation (impact evaluation).

## *MONITORING AND IMPACT EVALUATION BEFORE SMART SPECIALISATION STRATEGIES*

As we just mentioned, the European regions already monitored some of their programmes before it spread with the emergence of smart specialisation strategies,

### **Scinnopoli**

A particular online resource called *Scinnopoli* was established between various regions and “(...) is a Capitalisation Project based on the insights and Good Practices of 4 interregional projects on 'Regional Innovation Policy Impact Assessment and Benchmarking' (Specific Support Action "Research and Innovation" activity area, Sixth Framework Programme) and further Good Practices of the partner regions in impact assessment of regional innovation policy. The partnership consists of 9 regions from 8 countries spread over Europe with a good mixture of advanced regions and catching up regions. All partners are involved in the development of their own regional innovation policy as being the Regional Operational Programme managing authority or an intermediate body and will have full support of the respective ROP managing authority confirmed by a signed letter of support for SCINNOPOLI” (European Regional Development Fund, 2016).

### **Impact evaluation of the clusters in Lower Austria (Berrer et al., 2011)**

Another example of evaluation before the emergence of smart specialisation strategies (this time of an ex-post impact evaluation strategy) is that of one that was conducted by a team of economists, on the effects of clusters in Lower Austria. After outlining the theory on clusters and what they are supposed to offer to a region, and then calculating the effects the ones presents in Lower Austria have produced in the sector<sup>13</sup>.

### **SOUTH KOREA**

South Korea has developed in a spectacular way over the last 30 years. The key to its success might be its efficient industrial policy. There was already a cluster in South Korea in the 1970s, although it was not called explicitly cluster. The term “cluster” was used for the first time in the 1990s (Kim, 2015). The common factor is that, from the 1960s, the Korean government was always pushing an industrial policy.

---

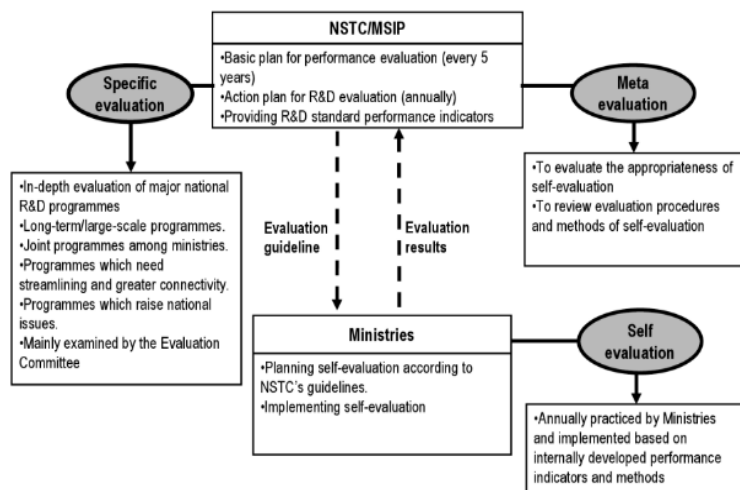
<sup>13</sup> For the complete study, please consult directly the document here: [http://www.clusterplattform.at/fileadmin/user\\_upload/clusterbibliothek/cluster\\_noe\\_-\\_research\\_report\\_-\\_the\\_economic\\_impact\\_of\\_the\\_lower\\_austrian\\_clusters\\_-\\_2012-en.pdf](http://www.clusterplattform.at/fileadmin/user_upload/clusterbibliothek/cluster_noe_-_research_report_-_the_economic_impact_of_the_lower_austrian_clusters_-_2012-en.pdf)

In a paper published by the Asian Development bank, Kim explains that the success of the Korean industrial policy comes from two categories of factors: the export orientation, and the policy effectiveness. One factor of importance is the existence of monitoring mechanisms from the very first years of policy planning.

Since 2005 there is a law, in Korea, for the evaluation of R&D programmes. The government prepared the National Evaluation System (NES) a new evaluation system based on this law. There exist three types of ex-post evaluation of R&D programmes: the self evaluation, the Meta evaluation and the specific evaluations (OECD, 2014).

- The self evaluation is conducted internally by departments or agencies with a committee of external experts. Its purpose is to improve the implementation processes and/or institutional management.
- The Meta evaluation is undertaken by the MSIP (Ministry of Science, ICT, and Future Planning) and is used for budget allocation decisions. It reviews the reliability of self evaluation.
- Specific evaluation are initiated by the MSIP for large scale programmes that require funds over a long period of time, and that require coordination between ministries and/or programmes. What is revised include patents and citation data, qualitative data. Those types of evaluation (of which 10-20 are conducted each year) are used for budget allocations or programmes improvement. It is conducted along six major criteria:
  - Validity of program planning and content
  - Efficiency of program management
  - Effectiveness of program results (outputs and outcomes)
  - Necessity of the program
  - Utility of the program
  - Appropriateness of budget size

### **R&D program evaluation system in Korea**



Source: OECD 2014

The monitoring and evaluation processes for R&D program is different from the ones designed for R&D projects<sup>14</sup>. There is also a section on the evaluation of R&D projects. Korea is there compared on the base of how it chooses the projects to found, with the UK, the US, Israel and France. The following table is the conclusion from this exercise.

**Table 3.6. Comparison of R&D project evaluation systems**

Organisation	Korea KEIT	US ARPA-E	UK TSB	Israel OCS	France ANR
Type	Public institution	Government Agency	Public institution	Office in the Ministry	Public institution
R&D Type	Industrial R&D	Applied R&D	Basic, applied and industrial R&D	Industrial R&D	Basic and applied R&D
<b>Project Selection</b>	<b>Project selection by PD</b>	<b>No separate project selection*</b>	<b>No separate project selection*</b>	<b>No separate project selection*</b>	<b>No separate project selection*</b>
<b>Awardee Selection</b>					
Application Submission	One stage	Two stages	Two stages	One stage	Two stages
Evaluation body	Committee (Expert pool)	Programme Director	Individual assessors (Expert pool)	Individual assessors (Expert pool) In-house experts	Individual assessors (Expert pool)
Evaluation Criteria	Technical criteria and economic impacts (the detailed criteria differ in each country).				
<b>Project Monitoring</b>	<ul style="list-style-type: none"> <li>• Yearly</li> <li>• Report &amp; site visit</li> <li>• Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly</li> <li>• Site visit</li> <li>• Programme Director</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly</li> <li>• Site visit</li> <li>• Monitoring officer</li> </ul>	<ul style="list-style-type: none"> <li>• Site visit</li> <li>• Independent assessors</li> </ul>	<ul style="list-style-type: none"> <li>• Report</li> </ul>
<b>Final Evaluation</b>					
Evaluation Body	Committee (expert pool)	Programme Director	Monitoring officer	Independent assessors (expert pool)	Independent assessors (expert pool)
Evaluation Criteria	•Goal achievement (detailed criteria differ in each country).				
Evaluation Result	No determination	Success, Failure	Success, Failure	No determination	No determination

\* Projects are selected in the process of awardee selection.

<sup>14</sup> For more information on the monitoring and evaluation of R&D projects in Korea and compared to the US, UK and France, see OECD, 2014.

Source: OECD 2014

The document is far more complete, and you can find all of these examples developed in the section on evaluation ([http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/industry-and-technology-policies-in-korea\\_9789264213227-en#.V8Avy1srLcs#page21](http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/industry-and-technology-policies-in-korea_9789264213227-en#.V8Avy1srLcs#page21)).

#### *SMART SPECIALISATION STRATEGIES IN AUSTRALIA*

Australia is another country in which the State played an important role for the development of its industry. Monitoring and evaluation tools are usually an important component of the governmental programmes. The Grain Research and Development Corporation is an example of something resembling a smart specialisation strategy in Australia.

The Grain Research and Development Corporation (GRDC) is a research institution founded by the Australian government at the beginning of the 1990s. Its function is to help investigate and develop R&D projects to improve the quality of Australia products on the global market. All the projects they take care of are carefully assessed ex-post<sup>15</sup>. We will not review all the projects, but we will sum up an example.

The example we picked is of a program for lentil breeding. The investment considered from the impact assessment goes from the year 2000 to 2016. The main findings are presented at the beginning of the document in a short table:

---

<sup>15</sup> All the impact assessment can be found here: <https://grdc.com.au/Research-and-Development/Impact-Assessment>

Triple Bottom Line Summary of Principal Benefits from the Investment

Levy Paying Industry	Spillovers		
	Other Industries	Public	Foreign
<b>Economic benefits</b>			
<p>Increased profitability of lentils via increased yields, reduced input costs of fungicides, and improved product quality</p> <p>Potential for increased area of lentils grown in cereal rotations with associated productivity and sustainability benefits</p> <p>Increased confidence, profits and expansion for lentil processing companies</p> <p>Potential increase in capital value of lentil germplasm in the program between 2000 and the end of the program in 2016</p>	<p>Potential for increased area of lentils grown on cropping farms leading to benefits to other crops in the rotation</p>	<p>Nil</p>	<p>Nil</p>
<b>Environmental benefits</b>			
<p>Reduced use of chemicals (fungicides) in growing lentils</p>	<p>Nil</p>	<p>Reduced use of chemicals (fungicides ) in growing lentils</p> <p>Reduced use of nitrogenous fertilisers (and hence export to the environment) from new areas of lentils</p>	<p>Nil</p>
<b>Social benefits</b>			
<p>Improved farmer wellbeing through reduced chemical use by farmers</p>	<p>Nil</p>	<p>Potentially reduced chemical export to waterways resulting in positive potential impact on regional wellbeing</p> <p>Increased regional investment and employment</p>	<p>Nil</p>

Source: (Grain Research and Development Corporation (GRDC), 2013)

### LATIN AMERICA (CLUSTERS)<sup>16</sup>

There are several examples of impact assessments of clusters in Latin America, namely of one in Brazil and two in Argentina. They can be found in a book published by the BID, “The Impact Evaluation of Cluster Development Programmes: Methods and Practices” (Maffioli, Pietrobelli and Stucchi, 2016). It is actually a collection of chapters on clusters and their evaluation, with some being more theoretical and the three examples mentioned.

The first example goes over the case of the “arranjos productivos locais” (productive local arrangements) in Brazil. The authors used firm-level administrative data on Brazilian SME from between 2002-2009 to determine the effects of participating in that policy.

<sup>16</sup> <https://publications.iadb.org/bitstream/handle/11319/7605/The-Impact-Evaluation-of-Cluster-Development-Programs-Methods-and-Practice.pdf?sequence=1>.

The second example is of the electronic cluster located in Cordoba, Argentina. What has been the focus of the investigators is the relationship between cluster development programmes and the evolution of local interorganizational networks.

Finally the third example is also set in Cordoba, and evaluates the impact of support to the Information and Communication Technology Cluster. Just like the title implies, it seeks to analyze the effects of the help received by ICT firms in Cordoba from the local government.

Additionally, the last chapter presents conclusion it draws from several other examples from Argentina, Brazil, Chile, and Uruguay, and therefore may be of interest since it is less case-specific and provides more general insights on what is generally happening.

## CONCLUSION

It is not easy to find examples of monitoring and impact evaluation of smart specialisation strategies. Clusters examples can be of used, but they are usually much more limited than smart specialisation strategies. The best tool at our disposal might be the access to peer-review which may give us keys to understanding what one region or country does right and/or wrong. In the case of a newly developed set of programmes, peer-reviewing indeed seems like a good idea, since one country may find ideas in the practices of others, and can also receive positive feedback from those. The idea of integrating experts equally seem of interest since the symbiosis between the policy-makers who are close to the decision making process, and people from a more academic background may be able to generate good systems of monitoring and evaluation. The most important thing to consider is that there exist no “ready to apply” scheme, but that given the specificity of each program, their monitoring and impact evaluation will always be different. Therefore, while it is of use to consider examples when preparing it, the questions the policy-maker must not forget to ask himself are “how is my program different”? And “how do I translate those differences in my monitoring system/in my impact evaluation”?

## REFERENCES

- Berrer, Helmut et al. (2011), "The Economic Impact of the Lower Austrian Clusters," *Economica*, November.
- Bitran, Eduardo (2015), "PROGRAMAS ESTRATEGICOS DE ESPECIALIZACION INTELIGENTE: DESAFIOS Y OPORTUNIDADES 'HACIA UNA POLITICA DE DESARROLLO PRODUCTIVO MODERNA.'"
- Doran, George T. (1981), "There's a S.M.A.R.T. way to write managements's goals and objectives," *Management Review*, vol. 70, No. 11, November .
- European Commission (2012), *Guide to research and innovation strategies for smart specialisation (RIS 3)* (OCLC: 820480390), Luxembourg, Publications Office of the European Union.
- (2016), "Peer Reviews - Smart Specialisation Platform," [online] <<http://s3platform.jrc.ec.europa.eu/s3-design-peer-review>> [date of reference: 1 August 2016].
- European Regional Development Fund, INTERREG IVC (2016), "Scinnopoli Project," [online] <<http://www.scinnopoli.eu/Project.html>> [date of reference: 1 August 2016].
- Feinstein, Osvaldo and Robert Picciotto (eds) (2000), *Evaluation and Poverty Reduction: Proceedings from a World Bank Conference*, The World Bank, June.
- Figal Garoney, Lucas and Alessandro Maffioli (2016), "Capítulo 8: Evaluación de impacto de políticas de innovación en América Latina y el Caribe: hacia una nueva frontera," *La política de innovación en América Latina y el Caribe: Nuevos caminos*, New York, BID.
- Foray, Dominique and Xabier Goenaga (2013), "The goals of smart specialisation," *S3 Policy Brief Series*, No. 01/2013 (OCLC: 870635447), European Commission.
- Gertler, Paul J. et al. (2010), *Impact Evaluation in Practice*, The World Bank, December.
- Gianelle, Carlo, Alexander Kleibrink and others (2015), "Monitoring Mechanisms for Smart Specialisation Strategies," Institute for Prospective and Technological Studies, Joint Research Centre.
- Grain Research and Development Corporation (GRDC) (2013), "An Economic Analysis of GRDC Investment in the Lentil Breeding Program."
- Guinea (2014), "Guidelines to design and make operational monitoring systems to assess the progress of the innovation strategies for smart specialisations (RIS3)."



International Initiative for Impact Evaluation (2012), "Impact evaluation glossary."

J. Z. Kusek, Ray C. Rist (2004), *Ten Steps to a Results-Based Monitoring and Evaluation System*, The World Bank.

Kim, Jong-il (2015), "Lessons for South Asia from the Industrial Cluster Development Experience of the Republic of Korea."

Lengrand, Louis and Smart Innovation Associés (2006), "A Practical Guide to Evaluating Innovation Programmes," *European Communities, Brussels-Luxembourg*.

Maffioli, Alessandro, Carlo Pietrobelli and Rodolfo Stucchi (eds) (2016), *The Impact Evaluation of Cluster Development Programmes: Methods and Practices*, Inter-American Development Bank.

OECD (2014), *Industry and Technology Policies in Korea*, OECD Reviews of Innovation Policy, , OECD Publishing, May 21.

--- (2005), "Glossary of Key Terms in Evaluation and Results Based Management."

White, Howard, Shampa Sinha and Ann Flanagan (2006), "A review of the state of impact evaluation," *Washington, DC: Independent Evaluation Group, World Bank*.

## ANNEX: ANNOTATED BIBLIOGRAPHY

This annex includes relevant literature concerning monitoring and evaluation, as well as impact evaluation as defined in a previous document on the subject. It is divided into different sections according to the main object of each document. However, this division is arbitrary since several documents could fall into more than one category. Each document is associated to a set of hash tags that enables you to get a more direct access to the contents you wish to review:

**Process:**

#Monitoring #Impactevaluation #Indicators #General

**Program:**

#Smartspecialisationstrategies #Innovation #Developmentprogrammes #SME  
#Clusters #R&Dincentives #General

**Literature type:**

#Theoreticalconcepts #Concreteexamples

**Geographical area area:**

#EU #Korea #Australia #LatinAmerica #Argentina #Brazil #Turkey #Israel

**Document type:**

#Article #Book #Bookchapter #Infosheet #Document #Onlineresource #Presentation  
#Report

Just do a CTRL+F with the combination you are looking for to see related documents.

The corresponding number next to each article corresponds in the number of the article in the archived file.

# MONITORING AND EVALUATION

1. GIANELLE CARLO & KLEINBRINK ALEXANDER (2015). MONITORING MECHANISMS FOR SMART SPECIALISATION STRATEGIES. *S3 POLICY BRIEF SERIES* N° 13/2015 – APRIL 2015. S3 PLATFORM, JRC-IPTS

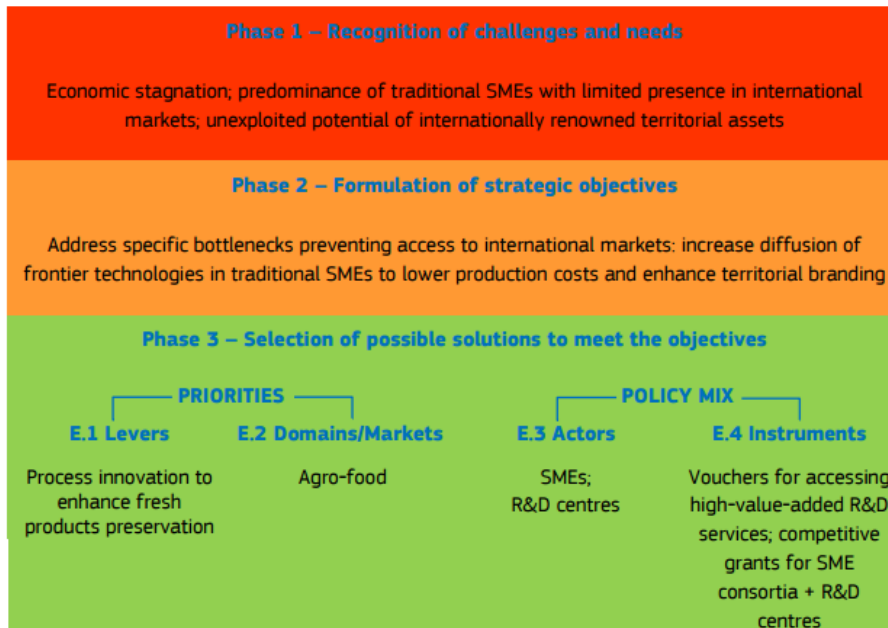
*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #EU #Article*

This is a guide to the EU smart specialisation strategies. The European Union developed an online platform for networking between regions and countries implementing their smart specialisation strategies (<http://s3platform.jrc.ec.europa.eu/>).

Various seminars and workshop have been taking place to help policy makers from different regions share their experiences. This policy brief was written by the two people in charge of the monitoring topic on the RIS3 platform, and in the light of the experiences shared at these various workshops. Therefore, it can be seen as an important document in the literature on monitoring of smart specialisation strategies.

After briefly explaining what purposes a monitoring system serves in the context of a smart specialisation strategy, the two authors develop the logic of intervention of a smart specialisation strategy. They sum the structure up in a graphic on page six, and also present it with concrete examples, as follow:

Figure 3: Example of RIS3 logic of intervention



After presenting the strategic design, they go on to explaining how we go from it to a monitoring system. To sum it up, one will need a variable, as well as a baseline and a timeframe. There is an explicative scheme on how to make the connection between the strategic objectives and the designing of indicators.

Finally, there is some information on how the difficulties and challenges in collecting data, and a small part dedicated to the governance process.

You can find the document under this link:

[http://s3platform.jrc.ec.europa.eu/documents/20182/114948/JRC95458\\_Monitoring\\_Mechanisms\\_S3\\_Policy\\_Brief.pdf/ce74fd68-cd17-4574-950d-4551582655d2](http://s3platform.jrc.ec.europa.eu/documents/20182/114948/JRC95458_Monitoring_Mechanisms_S3_Policy_Brief.pdf/ce74fd68-cd17-4574-950d-4551582655d2)

2. GUINEA, JOAQUIN (2014). GUIDELINES TO DESIGN AND MAKE OPERATIONAL MONITORING SYSTEMS TO ASSESS THE PROGRESS OF THE INNOVATION STRATEGIES FOR SMART SPECIALISATIONS (RIS3). *CITEK PROJECT POLICY BRIEF*.

*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #EU #Article*

This document offers a design for monitoring of smart specialisation strategies, in six steps:

STEPS FOR PREPARING A SUCCESSFUL STRATEGY FOR MONITORING  
THE PROGRESS OF THE RIS3

- STEP 1 - DEFINE THE PURPOSE OF THE MONITORING
- STEP 2 - DEVELOP A LOGICAL FRAMEWORK FOR THE STRATEGY DEFINED IN THE RIS3
- STEP 3 - SELECT THE INDICATORS TO BE MONITORED AND THEIR BASELINE
- STEP 4 - PREPARE A PLAN FOR DATA COLLECTION AND ANALYSIS
- STEP 5 - DEFINE A PROCEDURE FOR USING AND DISSEMINATING THE MONITORING INFORMATION
- STEP 6 - DEVELOP AN IMPLEMENTATION PLAN INCLUDING THE ALLOCATION OF THE APPROPRIATE RESOURCES

It also includes a glossary of key terms for monitoring and evaluation in the context of smart specialisation strategies in the European Union.

You can find the document under this link:

<http://innovatec.es/wp-content/uploads/2015/07/2014-Policy-Brief-Monitoring-RIS3-Innovatec.pdf>

3. FORAY, DOMINIQUE ET AL. (2012), GUIDE TO RESEARCH AND INNOVATION STRATEGIES FOR SMART SPECIALISATION (RIS 3) (OCLC: 820480390), LUXEMBOURG, EUROPEAN COMMISSION.

*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #EU #Book*

This is a guide to the EU smart specialisation strategies: how to design them, where they come from etc. The section that is of interest to us goes from page 60 to 65 (the section concerning “Integration of monitoring and evaluation mechanisms). While the explanations are much shorter than the ones developed in document 1 and 2, there is a table of potential programmes objectives and outputs and other expected results:

Objectives	Expected results		
	Programme aims	Outputs	Short-term results
Increase awareness of a set of new technologies	Awareness campaign, visits to fairs, advisory services	Adoption of technologies	Improved business performance; continuing awareness and adoption of related technologies
Improve the skill basis of a set of industries	Training sessions, staff exchanges	Improved technical competencies of staff, increase effectiveness of in-house R&D	Improved innovation performance, increased technological absorptive capacity
Increase science-industry links	Student placements, academic-industry cooperation projects or networks	Improved skill, technical competence and knowledge base, change of behaviours, increase in prototypes	New products and services based on innovation, increased quality of production
Increase of research activity in a region	Research subsidies to enterprises or universities/research centres	Increase in research expenditure in firms, increase in patents or publications	Improved innovation performance, enhanced reputation
Stimulate the start-up of new technology-based companies	Finance and information for future entrepreneurs, incubation	Creation of new high-tech companies	Long-term growth and sustained development of new high-tech industrial sectors
<b>Possible indicators (1)</b>	Number of visits, placements, projects, incubated start-ups, and amount of funding for future entrepreneurs etc.	Number of new enterprises created in the region, number of enterprises having adopted a new technology, number of staff reporting new working behaviours, etc.	Increase rate of productivity in regional SMEs Increased share of turnover based on innovation, increased export share, new products on the market, growth of employment in knowledge-intensive sectors, R&D expenditure per worker, etc.

(1) Indicators should be selected to reflect the programme's objectives and intervention logic.

The rest of the document may be interesting to get a more complete view of the smart specialisation strategies (aside from monitoring), since it is one of the main backups documents of the RIS platform.

You can find the document under this link:

<http://s3platform.jrc.ec.europa.eu/documents/20182/84453/RIS3+Guide.pdf/fceb8c58-73a9-4863-8107-752aef77e7b4>

4. KLEIBRINK, ALEXANDER, CARLO GIANELLE AND MATHIEU DOUSSINEAU (2016), "MONITORING INNOVATION AND TERRITORIAL DEVELOPMENT IN EUROPE: EMERGENT STRATEGIC MANAGEMENT," *EUROPEAN PLANNING STUDIES*, VOL. 24, NO. 8, AUGUST 2.  
*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #Concreteexamples #EU #Article*

This article could be seen as a continuation of the document 1, but it takes a different turn, since instead of simply listing theoretical concepts, it develops a theoretical framework to analyze how regional and national policy makers in Europe conceive monitoring mechanisms for Smart Specialisation Strategies. It is also different in its wording, since this is an article published in a scientific journal, while the one published on the RIS3 platform (document 1) seems to have been written for a broader audience.

The first section of the article consists in a review of theory of monitoring smart specialisation strategies, and includes the same graphics for the logic of intervention of a smart specialisation strategy. It is followed by the study of how policy makers conceive smart specialisation strategies in Europe, study which was done while the monitoring was still a work in progress (and it still is as of August 2016). They analyzed the transition from pure financial monitoring towards novel approaches, and how the policy-makers perceived result indicators, and the difference between national and regional policy-makers, principally.

Their conclusions summed up are the following: most respondents said the monitoring is still an ongoing process, but that policy makers are already seeing it as something that must go beyond the requirement for audit, and rather a management instrument and one to communicate with stakeholders. Evidence suggest the Smart specialisation concepts are rather well understood. Another problem highlighted is that policy makers want to minimize the administrative burden and stick to very simple measures for monitoring, which will be complicating the evaluation process.

If you are interested in reading the findings, conclusion starts on page 1455.

You can find the document under this link:

<http://www.tandfonline.com/doi/full/10.1080/09654313.2016.1181717>

5. COMISIÓN EUROPEA (2014), “ESTRATEGIAS NACIONALES Y REGIONALES PARA LA ESPECIALIZACIÓN INTELIGENTE (RIS3).”

*#General #Smartspecialisationstrategies #EU #Infosheet*

This infosheet is a good way to get a rapid understanding of smart specialisation strategies in the EU (and it is in Spanish).

You can find the document under this link:

[http://ec.europa.eu/regional\\_policy/sources/docgener/informat/2014/smart\\_specialisation\\_es.pdf](http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_es.pdf)

6. OECD (2013), “INNOVATION-DRIVEN GROWTH IN REGIONS: THE ROLE OF SMART SPECIALISATION.”

*#General #Monitoring #Smartspecialisationstrategies #EU #Australia #Korea #Turkey #Book*

In this book, we can find information on the concepts of smart specialisation strategies, as well as examples from several parts of the world. It is divided into three sections:

The first section is a synthesis of the theory surrounding the concept of smart specialisation, especially how it evolved from a theoretical concept to real policies (there is an executive summary pp.11-16).

The second section is devoted to various case studies from Australia, Belgium, Netherlands, Korea, Spain, Turkey, UK, Austria, the Czech Republic, Estonia, Finland, Germany, and Poland. The following table sums up the cases that can be found within the report:



Table 3.6. Nature of priorities

Explicit priorities	Countries	Regions
Life science, biotech, biomedicine, pharma, health	Austria, Estonia, Finland, Netherlands, Poland, Spain, South Korea, United Kingdom	Lower Austria, Upper Austria, Flanders, South Moravia, Berlin&Brandenburg, Noord Brabant, Malopolska, Andalucia, Basque country
ICT	Austria, Estonia, Finland, Poland, Spain, South Korea, United Kingdom	Upper Austria, Flanders, South Moravia, Berlin&Brandenburg, Noord Brabant, Malopolska, Andalucia, Basque country, Gwangju
Environmental/green technologies, energy	Austria, Estonia, Finland, Netherlands, Spain, South Korea, United Kingdom	Lower Austria, Upper Austria, Flanders, Lahti, Noord Brabant, Malopolska, Andalucia, Basque country
Mobility, traffic, transport, logistics	Austria, Netherlands, South Korea, United Kingdom	Lower Austria, Upper Austria, Flanders, Berlin&Brandenburg, Noord Brabant, Andalucia, Basque country
Nanotechnology, materials	Austria, Estonia, Netherlands, Poland, South Korea	Lower Austria, Upper Austria, Flanders, Noord Brabant, Malopolska
Agrifood	Austria, Netherlands, South Korea, United Kingdom	Lower Austria, Flanders, Andalucia
Production processes, industrial equipment	Austria, United Kingdom	Flanders, South Moravia, Basque country
Services	Austria, Finland, South Korea	
Maths and chemistry	Austria	
Maths and engineering		Upper Austria
Optics		Berlin&Brandenburg, Noord Brabant, Gwangju
Chemicals	Netherlands	Flanders, Noord Brabant
Water	Netherlands, South Korea	
Design		Lahti, Noord Brabant
Creative sector	Netherlands	Berlin&Brandenburg
Heritage, cultural industries, tourism	South Korea	Flanders, Malopolska, Andalucia
Arts and humanities	Austria	

The third section of the document is dedicated to the diagnostic tools and indicators for specialisations, and is rather general.

You can find this document here:

<https://www.oecd.org/innovation/inno/smart-specialisation.pdf>

7. MARTINEZ, DIEGO (2013), “PROFILING INDICATORS FOR RIS3: SETTING THE SCENE,” DOCUMENT PRESENTED IN THEMATIC WORKSHOP “ECONOMIC INDICATORS AND MONITORING AND EVALUATION TOOLS FOR SMART SPECIALISATION STRATEGIES.”  
*#Monitoring #Indicators #Smartspecialisationstrategies #Theoreticalconcepts #EU #Presentation*

A few considerations concerning how to construct indicators. Relatively short, and incomplete, but nonetheless can complement other sources.

You can find this document here:

[http://s3platform.jrc.ec.europa.eu/documents/20182/153897/Martinez\\_S3\\_Platform.pdf/37e07a98-5e9f-4521-a763-53ee1b504264](http://s3platform.jrc.ec.europa.eu/documents/20182/153897/Martinez_S3_Platform.pdf/37e07a98-5e9f-4521-a763-53ee1b504264)

8. ROOD, SALLY (2013), "MONITORING AND EVALUATION FOR INNOVATION POLICY," *WORLD BANK POLICY BRIEF. WASHINGTON, DC.*

#Monitoring #Innovation #Theoreticalconcepts #Article

This is a good summary of monitoring and evaluation for innovation programmes. There is information on why it is important, the challenges when it comes to innovation programmes, and how to design a functioning monitoring and evaluation system. Here is an example that the author used to explain the difference between output, outcomes, results and inputs and is very clear:

*A new schoolhouse (an input) is of no benefit to the number of children who are educated there (an output) unless there are improvements in learning (an outcome). Learning improvements result in higher quality jobs in the community (an impact).*

Another example of how to make better indicators and which could be of use:

**Table 1: Program Indicator examples**

Satisfactory indicator	Better indicator!
The number of technology companies that received financing from an early fund	The number of technology companies that created innovative products in knowledge-based fields that were financed by an early-stage fund
Percentage of innovative start-ups that receive financial investments	Percentage of entrepreneurs who obtained deals with investors within 6 months after receiving training on innovation management
Measure of GDP, in general	Share of GDP generated by high technology firms in the economy

You can find this document here:

[https://innovationpolicyplatform.org/sites/default/files/rdf\\_imported\\_documents/Monitoring%20and%20Evaluation%20for%20Innovation%20Policy.pdf](https://innovationpolicyplatform.org/sites/default/files/rdf_imported_documents/Monitoring%20and%20Evaluation%20for%20Innovation%20Policy.pdf)

9. LENGRAND, LOUIS AND SMART INNOVATION ASSOCIÉS (2006), "A PRACTICAL GUIDE TO EVALUATING INNOVATION PROGRAMMES," *EUROPEAN COMMUNITIES, BRUSSELS-LUXEMBOURG.*

#Monitoring #Impactevaluation #Innovation #Theoreticalconcepts #EU #Document

This document is from 2006 and is very interesting because of the way it is written. All sections answer particular question one may ask about monitoring, impact evaluation, and

their link to innovation program. If you have questions or doubts, it is very useful to take a look at this document and you will probably find your question in the table of contents, with its answer inside the document.

You can find this document here:

[http://cordis.europa.eu/innovation-policy/studies/pdf/sar1\\_smartinnovation\\_master2.pdf](http://cordis.europa.eu/innovation-policy/studies/pdf/sar1_smartinnovation_master2.pdf)

10. THE WORLD BANK (N/D), “GUIDELINE NOTE FOR A MONITORING AND EVALUATION SYSTEM FOR INNOVATION STRATEGIES (RIS3) IN POLAND.”  
*#Monitoring #Indicators #Smartspecialisationstrategies #Concreteexamples #Poland #Document*

This is a document which was written after five workshops which had been requested by Poland to the World Bank. It is interesting because it is theory applied to a concrete example. In summary, the document goes over the challenges of implementing a smart specialisation strategy and the particular problems for Poland, and it offers various recommendations.

The annexes are very interesting, and show various indications on how to construct indicators and the timing for monitoring (i.e. outputs should be monitored x times a year, outcomes should be monitored after two years etc). Beware that the definition for outcomes and outputs may vary from the ones we decided to use.

You can find this document here:

[http://www.errin.eu/dev/sites/default/files/publication/media/Guideline%20note%20for%20a%20M%26E%20system%20for%20innovation%20strategies%20\(RIS3\)%20in%20Poland.pdf](http://www.errin.eu/dev/sites/default/files/publication/media/Guideline%20note%20for%20a%20M%26E%20system%20for%20innovation%20strategies%20(RIS3)%20in%20Poland.pdf)

11. JAGER, HANS CHRISTIAN (2014), “SMART SPECIALISATION OF REGIONAL INNOVATION POLICY (RIS3): FOCUS ON RESULTS,” DOCUMENT PRESENTED IN TRAINING SESSION FOR POLICY MAKERS AND PRACTITIONERS.  
*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #EU #Presentation*

This presentation is from a training session for policy makers and practitioners. It is redundant with all the literature on smart specialisation strategies and their monitoring, except there is a nice summary of what to take into account when building the monitoring system:



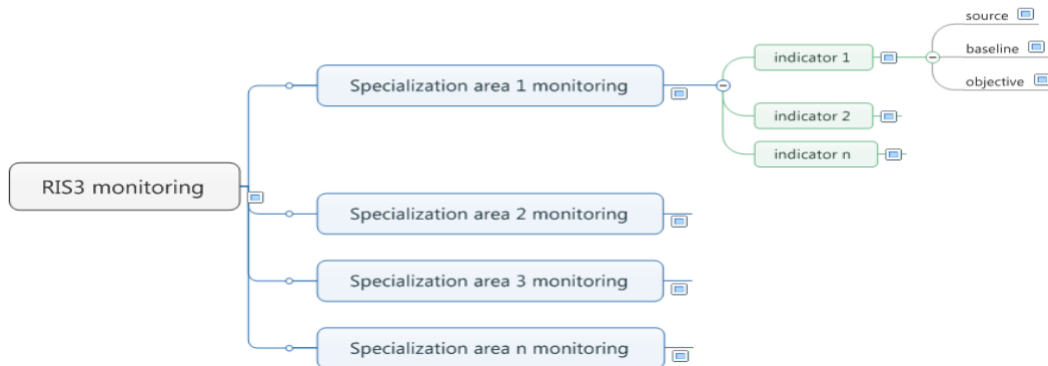
You can find this document here:

[http://webcache.googleusercontent.com/search?q=cache:suwhY3mohAMJ:know-hub.eu/static/global/media\\_catalog/2014/04/15/211/original.pdf%3Fdownload%3Dyes%26filename%3DSmart%2BSpecialisation%2Bof%2BRegional%2BInnovation%2BPolicy%2B\(RIS3\)%2BFocus%2Bon%2BResults.pdf+%&cd=3&hl=fr&ct=clnk&gl=cl](http://webcache.googleusercontent.com/search?q=cache:suwhY3mohAMJ:know-hub.eu/static/global/media_catalog/2014/04/15/211/original.pdf%3Fdownload%3Dyes%26filename%3DSmart%2BSpecialisation%2Bof%2BRegional%2BInnovation%2BPolicy%2B(RIS3)%2BFocus%2Bon%2BResults.pdf+%&cd=3&hl=fr&ct=clnk&gl=cl)

12. DOUSSINEAU, MATHIEU (2015), "OPPORTUNITIES AND CHALLENGES FOR RIS3 IMPLEMENTATION FROM DESIGN TO IMPLEMENTATION," DOCUMENT PRESENTED IN 13TH CZECH DAYS FOR EUROPEAN RESEARCH CZEDER 2015.

*#Monitoring #Smartspecialisationstrategies #Theoreticalconcepts #EU #Presentation*

While a big portion of the document is redundant with the rest of the documents we have already outlined, here is an interesting representation of how the monitoring of a smart specialisation strategy should unfold (in the EU conception): there is a series of indicators for each specialty, then a meta-monitoring of all the specialisation areas. While it may look evident, it may always be useful to have a clear representation of these kinds of processes.

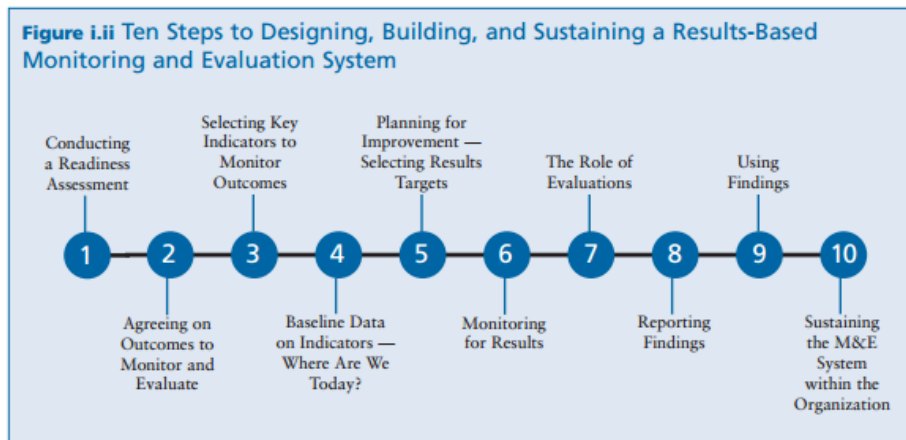


You can find this document here: <http://www.h2020.cz/files/svobodova/Doussineau-CZEDER-MD.pdf>

13. J. Z. KUSEK, RAY C. RIST (2004), TEN STEPS TO A RESULTS-BASED MONITORING AND EVALUATION SYSTEM, THE WORLD BANK.

*#Monitoring #Developmentprogrammes #Theoreticalconcepts #Book*

This source is useful because it is very complete, even though it is not oriented to innovation but broader development programmes. The authors developed a ten step monitoring and evaluation system. Each chapter of this book corresponds to one of the 10 step of the monitoring and evaluation design:



You can find this document here:

<https://openknowledge.worldbank.org/bitstream/handle/10986/14926/296720PAPER0100steps.pdf?sequence=1>

14. A. NAUWELAERS, CLAIRE ET AL. (2014), "SMART SPECIALISATION FOR REGIONAL INNOVATION : UNDERPINNING EFFECTIVE STRATEGY DESIGN," *CARDIFF UNIVERSITY, SMARTSPEC, SEVENTH FRAMEWORK PROGRAMME.*  
*#Monitoring #Smartspecialisationstrategies #EU #Article*

This document is a collection of articles concerning good practices in designing smart specialisation strategy. The document goes over seven challenges of Smart Specialisation Strategies:

1. The "prioritization" challenge
2. The "stakeholders' engagement" challenge
3. The "policy mix" challenge
4. The "multi-level governance" challenge
5. The "cross-border collaboration" challenge
6. The "smart policy-making" challenge
7. The "policy capacity" challenge

All the challenges are of interest, in the sense that they could apply to countries beyond the European Union, but the section most related to monitoring and evaluation scheme is the 6<sup>th</sup> challenge "smart policy-making".

You can find this document here:

<http://www.cardiff.ac.uk/cplan/sites/default/files/Underpinning%20Effective%20Strategy%20Design.pdf>

B. NAUWELAERS, CLAIRE ET AL. (2015), "SMART SPECIALISATION FOR REGIONAL INNOVATION: UNDERPINNING EFFECTIVE STRATEGY DESIGN. WORK PACKAGE 4.," JANUARY 27.  
*#Monitoring #Indicators #SME #Smartspecialisationstrategies #EU #Article*

This is another paper by the same group of people as 14.A. It actually includes several articles:

- Institutional weaknesses and smart specialisation – day and night? (chalk and cheese?). Jiri Blazek and Kevin Morgan.
- Reconciling territorial strategies goals and means: towards smart competitiveness policies. Edurne Magro and Claire Nauwelaers.
- Evaluating territorial strategies. Edurne Magro and James R. Wilson.
- Smart Specialisation: Results-Oriented Policies and the Use of Results Indicators with Specific Reference to Entrepreneurship and SMEs policies. Philip McCann and Raquel Ortega-Argilés.
- The contribution of peer reviews to smart specialisation strategies. Claire Nauwelaers.

All the articles could potentially be of interest (since they are not redundant) but they are a bit remote from our main focus. The last two articles could still be highlighted, since one contains indicators with a focus on SME (the authors included many examples).

You can find this document here:

<http://www.cardiff.ac.uk/cplan/sites/default/files/underpinning%20effective%20strategy%20design.pdf>

15. MAFFIOLI, ALESSANDRO, CARLO PIETROBELLI AND RODOLFO STUCCHI (EDS) (2016), *THE IMPACT EVALUATION OF CLUSTER DEVELOPMENT PROGRAMMES: METHODS AND PRACTICES*, INTER-AMERICAN DEVELOPMENT BANK.

*#Impactevaluation #Clusters #Concreteexamples #LatinAmerica #Argentina #Brazil #Book*

This is a very recent book which aims at evaluating the impacts of various cluster programmes. It is subdivided into different chapters, the first four being written about how to evaluate the impacts of cluster development programmes with a more theoretical approach, whereas the following are more practical with three concrete examples (one in Brazil, two in Argentina)

Another chapter which may be important to read is the one concerning the lessons to learn from other case studies (which include Chile and Uruguay) that start on p.167.

You can find this document here:

<https://publications.iadb.org/bitstream/handle/11319/7605/The-Impact-Evaluation-of-Cluster-Development-Programmes-Methods-and-Practice.pdf>

16. KETELS, CHRISTIAN ET AL. (2013), "THE ROLE OF CLUSTERS IN SMART SPECIALISATION STRATEGIES.," *EUROPEAN COMMISSION*  
*#General #Smartspecialisationstrategies #Clusters #Theoreticalconcepts #Article*

This article is interesting to read in the light of the N.15. The difference between clusters and smart specialisation strategies is the following:

*Clusters are potential elements of a regional innovation eco-system, while S3 are wider policies aiming at transforming this eco-system. Clusters can come close to "smart specialisation domains" if they stimulate new types of knowledge spill overs with a high leverage effect on the growth path of the economy.*

You can find this article here:

[https://ec.europa.eu/research/evaluations/pdf/archive/other\\_reports\\_studies\\_and\\_documents/clusters\\_smart\\_spec2013.pdf](https://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/clusters_smart_spec2013.pdf)

17. THE WORLD BANK (2013), "INPUT FOR BULGARIA'S RESEARCH AND INNOVATION STRATEGIES FOR SMART SPECIALISATION."  
*#Monitoring #ImpactEvaluation #Smartspecialisationstrategies #Theoreticalconcepts #Concreteexamples #EU #Document*

This is the result of a technical assistance from the World Bank to Bulgaria. Although the whole document is of interest, the most relevant section for us is the chapter 6 on monitoring (pp.156-184). The chapter is rather complete, and although it tends to mix up monitoring and impact evaluation, it is a good summary on the subject.

You can find this document here:

[http://www.mi.government.bg/files/useruploads/files/innovations/full\\_report\\_3s.pdf](http://www.mi.government.bg/files/useruploads/files/innovations/full_report_3s.pdf)

## IMPACT EVALUATION



18. GERTLER, PAUL J. ET AL. (2010), *IMPACT EVALUATION IN PRACTICE*, THE WORLD BANK, DEEMBER.

*#ImpactEvaluation #General #Theoreticalconcepts #Book*

Complete manual on how to do impact evaluations for development programmes, with the different methodologies. Very in details, useful for a deeper analysis of each potential designs.

If there is only time to read one book on impact evaluation, this one should do the job, because it includes sections that cover the following questions:

- Why evaluate?
- How to choose evaluation questions?
- How to evaluate?
  - Causal Inference and Counterfactuals
  - Randomized Selection Methods
  - Regression Discontinuity Design
  - Difference-in-Differences
  - Matching
  - Combining methods
  - **Evaluating multifaceted programmes**
- How to implement an impact evaluation?
  - Operationalizing the Impact Evaluation Design
  - Choosing the sample
  - Collecting data
  - Producing and disseminating findings

You can find this document here:

[http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact\\_Evaluation\\_in\\_Practice.pdf](http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact_Evaluation_in_Practice.pdf)

19. KHANDKER, SHAHIDUR, GAYATRI B. KOOLWAL AND HUSSAIN SAMAD (2009), *HANDBOOK ON IMPACT EVALUATION: QUANTITATIVE METHODS AND PRACTICES*, THE WORLD BANK, OCTOBER.

*#ImpactEvaluation #General #Theoreticalconcepts #Book*

It is just like the preceding book a very complete document on impact evaluation, except it comes with a special focus on quantitative evaluations, and reminds of a school manual (it even includes practical exercises on STATA!). Very practical.

You can find this document here:

<https://openknowledge.worldbank.org/bitstream/handle/10986/2693/520990PUB0EPI1101Official0Use0Only1.pdf>

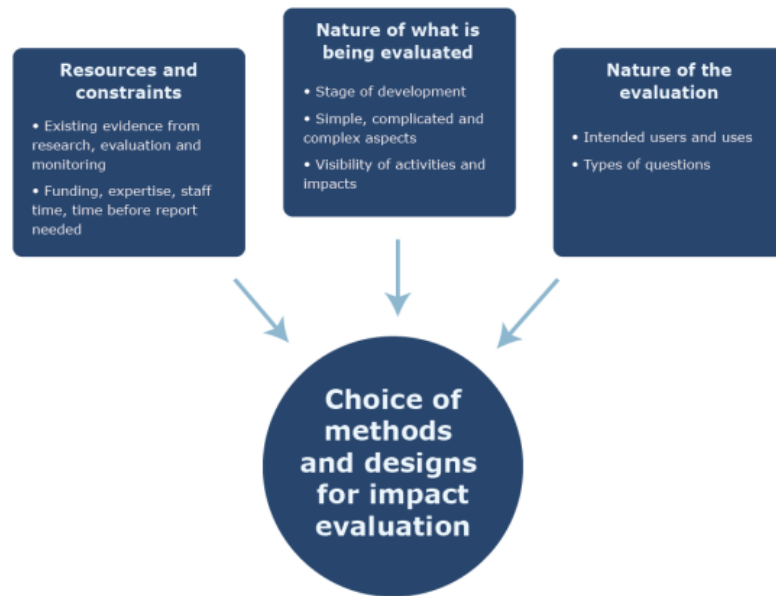
20. ROGERS, PATRICIA ET AL. (2015), "CHOOSING APPROPRIATE DESIGNS AND METHODS FOR IMPACT EVALUATION," AUSTRALIAN GOVERNMENT, DEPARTMENT OF INDUSTRY, INNOVATION AND SCIENCE: OFFICE OF THE CHIEF ECONOMIST, NOVEMBER.

*#ImpactEvaluation #General #Theoreticalconcepts #Australia #Article*

This is an article commissioned by the Australian government. Its goal is to answer the following question: what is the most appropriate design for an impact evaluation according to the type of governmental policy evaluated?

Aside from complete definitions on the different impacts that exist (i.e. environmental, social,...) it is above all interesting because it provides an original framework of how to choose the design to use for an impact evaluation which they summed up in the following figure:

Figure 3.1: Framework for choosing appropriate methods and designs



The explanation of the framework starts on page 20.

You can find this document here:

<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Choosing-appropriate-designs-and-methods-for-impact-evaluation.aspx>

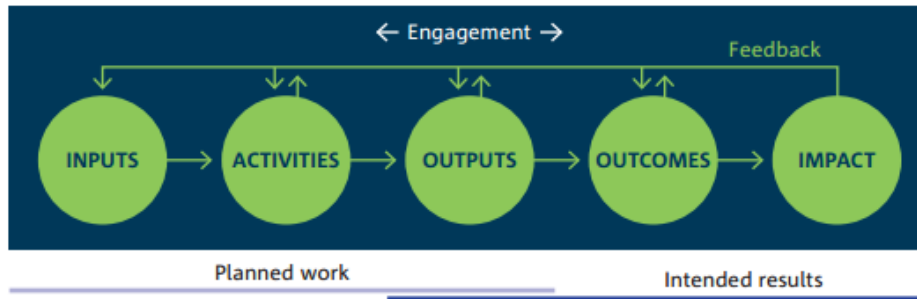
21. CSIRO (2015), "IMPACT EVALUATION GUIDE."

*#ImpactEvaluation #General #Theoreticalconcepts #Australia #Document*

This document largely inspired the preceding one, since its goal is to set guidelines for the commonwealth in terms of evaluation of impacts. The appendix A is of interest, because it offers an impact framework (based on a logic model). What is "new" about the model is the relation between inputs, activities, outputs, outcomes and impacts, of which, CSIRO says, inputs, activities and outputs can be controlled, whereas outcomes come from a direct influence of the program, and impacts, an indirect influence.

CSIRO Impact Framework:

FIGURE A1: CSIRO'S IMPACT FRAMEWORK



Can be controlled		Direct influence	Indirect
<ul style="list-style-type: none"> <li>- Staff FTE</li> <li>- Non-staff FTE</li> </ul> <p>Dollar value estimates using:</p> <ul style="list-style-type: none"> <li>- appropriation funding</li> <li>- external funding</li> <li>- grants</li> <li>- in-kind contributions</li> <li>- equipment/facilities</li> </ul>	<ul style="list-style-type: none"> <li>- Research/technology development</li> <li>- Education</li> <li>- Industry engagement (incl. with small and medium enterprises)</li> <li>- International engagement</li> </ul>	<ul style="list-style-type: none"> <li>- Publications</li> <li>- Prototypes</li> <li>- Patents granted</li> <li>- Training packages</li> <li>- Students completed</li> <li>- New services</li> <li>- New/updated standards</li> <li>- Reports</li> </ul> <p><b>Uptake and adoption</b></p> <ul style="list-style-type: none"> <li>- Training accessed by users</li> <li>- Adoption of new research protocols and techniques</li> <li>- Industry, government &amp;/or community usage</li> <li>- Process changes implemented</li> <li>- Behavioural change</li> <li>- Licenses / IP sold</li> </ul>	<p><b>Economic impact</b></p> <ul style="list-style-type: none"> <li>- Increased economic activity such as sales of new products with impact measured as net change</li> <li>- Higher quality workforce</li> <li>- Productivity improvement</li> </ul> <p><b>Environmental impact</b></p> <ul style="list-style-type: none"> <li>- Water savings</li> <li>- Habitat rehabilitation</li> <li>- Prevention of invasive species</li> <li>- Reduced CO<sub>2</sub> emissions</li> </ul> <p><b>Social impact</b></p> <ul style="list-style-type: none"> <li>- Expanded knowledge economy</li> <li>- Improved health &amp; wellbeing</li> <li>- Reduced morbidity</li> <li>- Increased social cohesion</li> </ul>

Sources: WK Kellogg Foundation (2004) and cf. Department of Finance (2015)

You can also find definitions for all these concepts, which are basically similar to the ones we can find in other documents.

You can find this document here:

<http://www.csiro.au/en/About/Our-impact/Our-impact-model/Ensuring-we-deliver-impact>

22. FIGAL GARONEY, LUCAS AND ALESSANDRO MAFFIOLI (2016), "CAPÍTULO 8: EVALUACIÓN DE IMPACTO DE POLÍTICAS DE INNOVACIÓN EN AMÉRICA LATINA Y EL CARIBE: HACIA UNA NUEVA FRONTERA," *LA POLÍTICA DE INNOVACIÓN EN AMÉRICA LATINA Y EL CARIBE: NUEVOS CAMINOS*, NEW YORK, BANCO INTERAMERICANO DE DESARROLLO.

*#Impactevaluation #Innovation #Theoreticalconcepts #Latinamerica #Bookchapter*

This book offers on complete chapter on impact evaluation in the context of innovation policies in Latin America (pp.238-289). One of the contributions of this chapter is the questions one may ask when deciding to conduct an impact evaluation.

**CUADRO 8.1: PREGUNTAS DE UNA EVALUACIÓN DE IMPACTO E IMPLICANCIAS PARA LA POLÍTICA PÚBLICA**

	PREGUNTA	IMPLICANCIAS PARA LA POLÍTICA
Primera generación	<b>Atribución básica:</b> ¿Es la política/programa efectiva(o) en el logro de sus resultados de desarrollo (finales e intermedios)?	Expansión, cancelación o modificación de la política.
Segunda generación	<b>1. Heterogeneidad:</b> ¿Son diferentes los efectos entre diversas categorías de beneficiarios?	Focalización de los beneficiarios.
	<b>2. Dosificación (efectos marginales):</b> ¿Dependen los efectos de la intensidad del tratamiento? (Magnitud, repitencia.)	Dimensionamiento del tratamiento.
	<b>3. Dinámica:</b> ¿Cuánto tiempo se tarda en observar los efectos de la política? ¿Varían estos efectos a lo largo del tiempo? ¿Cuál es la verdadera secuencia de los efectos?	Identificación de cuellos de botella/definición de los flujos de beneficios (CBA & CEA).
	<b>4. Multitratamiento:</b> ¿Son diferentes los efectos si se combinan con otras intervenciones? ¿Cuál es la secuencia de intervención más efectiva?	Coordinación de políticas públicas.
	<b>5. Efectos de derrame y externalidades:</b> ¿Produce la intervención algún efecto de derrame positivo (negativo)?	Definición de los flujos de beneficios (CBA & CEA).
	<b>6. Efectos estructurales:</b> ¿Cuáles son los efectos de equilibrio general de la intervención? (y/o) ¿Cuáles son los efectos de las intervenciones/reformas estructurales)?	Definición de los flujos de beneficios (CBA & CEA).

Fuente: Elaboración propia.

CBA = Análisis de costo-beneficio.

CEA = Análisis de costo-efectividad.

There are also various examples of impact evaluation conducted for Latin American innovation programmes, but they don't go into any details

You can find the document here:

<https://publications.iadb.org/bitstream/handle/11319/7705/La-politica-de-innovacion-en-America-Latina-y-el-Caribe-nuevos-caminos.pdf?sequence=1>

23. RAMBERG, INGE AND MARK KNELL (2012), "CHALLENGES MEASURING EFFECTS OF RESEARCH AND INNOVATION POLICY INTERVENTIONS IN EX-POST IMPACT EVALUATIONS. A SYNTHESIS REPORT."

*#Impactevaluation #Innovation #Theoreticalconcepts #Article*

This article also focuses on the particular case of assessing the impacts of innovation policies, and focuses on ex-post evaluation. Here are the main challenges when it comes to evaluating the impacts of an innovation policy highlighted in this document:

1. Need for the development of relevant methodological approaches to measure long-term effects of policy initiatives aimed at research and/or innovation programmes in general.
2. Second, a major challenge for quantitative impact analysis is to obtain relevant panel (multidimensional) data for impact evaluation of programmes including baseline data.
3. Third, funding agencies may therefore also benefit from developing their evaluation strategies by making room and preparing for longer term as well as broad scaled impact evaluations
4. Fourth, impact evaluation of research and innovation policy interventions is a relatively new field. Many issues remain to be explored, both in terms of the methodology used and the source and quality of statistics used in the analysis.

You can find this document here:

<http://www.forskningsradet.no/servlet/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadername1=Content-Disposition%3A&blobheadervalue1=+attachment%3B+filename%3DPREMEFFSyntesisreport040312c.pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1274493505517&ssbinary=true>

24. GRAUGNART, GILBERT AND NICOLAS HEEREN (1999), "PRISE EN COMPTE DE L'IMPACT ET CONSTRUCTION D'INDICATEURS D'IMPACT," CIEDEL.  
*#Impactevaluation #General #Theoreticalconcepts #Article*

This document is redundant in the sense that it pretty much says the same as the others concerning impact evaluation, but it is useful to see the definitions in French. Everything matches, which is a good thing to check.

You can find this document here:

[http://f3e.asso.fr/media/transfer/doc/guideimpact\\_4.pdf](http://f3e.asso.fr/media/transfer/doc/guideimpact_4.pdf)

25. WHITE, HOWARD (2007), *EVALUATING AID IMPACT* (OCLC: 315736599), HELSINKI, FINLAND, UNU WORLD INST. FOR DEVELOPMENT ECONOMICS RESEARCH (UNU/WIDER).

*#ImpactEvaluation #Theoreticalconcepts #Concreteexamples #Document*

This is a paper written on how to evaluate the impacts generated by international aid, but it is of use all the same because the models of how to calculate are the same we have already seen. Therefore, the part concerning the designs is of interest because it is very clear and because there is a model on how to choose which design to use according to the data of which one has access to (pp. 6-14). One can also find interesting recommendations on what to do when there is no baseline.

You can find this document here:

<http://www.oecd.org/dac/evaluation/dcdndep/37634226.pdf>

# INTERNATIONAL EXPERIENCES OF MONITORING AND EVALUATION

## 26. KOUDOUMAKIS, PANAGIO (N/D), "MONITORING & EVALUATION SYSTEM OF REGIONAL RIS3: EASTERN MACEDONIA-THRACE."

*#Monitoring #Indicators #Concreteexamples #EU #Presentation*

This is a presentation that was made during one of the peer reviewing session between EU region (the date is unclear). It is of interest because the policy-maker from Greece peer-reviewed two good practices from other participants: the Navarra (Spain) monitoring system and the Italian one. He also presented a proposed set of indicators for his own region.

*Navarra, Spain*

In this example, a Greek policy-maker cites a good practice by the region of Navarra in Spain. Here is the monitoring framework developed in that region:

AREA	INDICATOR	STARTING POINT	CURRENT 27/11/2012	OBJECTIVE 2015	OBJECTIVE 2020	OBJECTIVE 2030
EDUCATION	PISA points <small>Source: PISA</small>	502 <small>Year 2006</small>	505 <small>Year 2009</small>	510	525	550
	% Population aged 18 with a B2 level of English <small>Source: Estimate</small>	7% <small>Year 2010</small>	7% <small>Year 2010</small>	30%	50%	90%
	% of Honours Graduates and Pre-university <small>Source: Ministry of Education and Government of Navarra (&lt;2009) / Eurostat (&gt;2009)</small>	36,0% <small>Year 2007</small>	39,7% <small>YearYear</small>	40%	45%	55%
INNOVATION	% Investment in R+D+I <small>Source: INE</small>	1,92% <small>Year 2008</small>	2,05% <small>Year 2011</small>	2,20%	3,00%	4,00%
	Total No. of Patents <small>Source: OEPM</small>	172 <small>Year 2008</small>	176 <small>Year 2011</small>	285	410	844
	Innovation Index and position in Europe <small>Source: Eurostat</small>	0,48 y 76 <small>Year 2006</small>	0,529 y 53 <small>Year 2011</small>	0,51 y 60	0,60 y 50	0,70 y 35
INTERNATIONALIZATION	Exports (M€) <small>Source: IEN</small>	5.450 <small>Year 2009</small>	6.827 <small>Sep'11-Aug'12</small>	6.500	8.000	10.000
	No. of exporting companies <small>Source: ICEX - Estacom</small>	711 <small>Year 2009</small>	801 <small>Sep'11-Aug'12</small>	1.000	1.300	2.000
	No. of multinational companies <small>Source: Navarra Chamber of Commerce / Sodena</small>	133 <small>Year 2010</small>	133 <small>Year 2010</small>	150	175	200
EMPLOYMENT AND COMPANY	No. employees <small>Source: IEN - EPA</small>	284.000 <small>Year 2009</small>	262.700 <small>EPA 3rd T 2012</small>	298.000	331.000	365.000
	Production per worker (€) <small>Source: IEN</small>	61.000 <small>Year 2009</small>	67.867 <small>Year 2011</small>	68.000	73.000	85.000
	% of companies over 50 workers <small>Source: INE</small>	1,30% <small>Year 2009</small>	1,21% <small>Year 2011</small>	1,60%	2,00%	2,50%
	Nº of new companies/Year <small>Source: IEN</small>	943 <small>Year 2009</small>	950 <small>Oct'11-Sep'12</small>	1.100	1.250	1.600
PROSPERITY AND SOCIAL COHESION	Position in GDP/Capita <small>Source: Eurostat</small>	32 <small>Year 2007</small>	37 <small>Year 2009</small>	30	25	20
	GDP per Capita in Purchasing Power Parity (PPP) <small>Source: IEN</small>	30.614 <small>Year 2007</small>	32.900 <small>Year 2009</small>	34.000	37.000	43.000
	Distribution of wealth <small>Source: IEN</small>	28 <small>Year 2007</small>	28 <small>Year 2007</small>	27	26	23
	Quality of life (HDI) <small>Source: IEN, PNUD &amp; INE</small>	0,9720 <small>Year 2007</small>	0,9720 <small>Year 2007</small>	0,9725	0,9790	0,9870
	Environmental sustainability	2.132	2.029	1.900	1.650	1.450



Italia- example of peer review

The other good practice showed in this presentation is the Italian one.

INDICATOR 1 – ECONOMIC AND INSTITUTIONAL REGIME	INDICATOR 2 – EDUCATION AND SKILLS	INDICATOR 3 – INFORMATION AND COMMUNICATION INFRASTRUCTURE	INDICATOR 4 – INNOVATION SYSTEM
Gross Capital Formation as % of GDP (Average)	Adult Literacy Rate (% age 15 and above)	Telephones per 1,000 people	FDI Outflows as % of GDP
Employment in Services (% of total employment)	Secondary Enrollment (% gross)	Telephone Mainlines per 1,000 people	FDI Inflows as % of GDP
Trade as % of GDP	Tertiary Enrollment (% gross)	Mobile Phones per 1,000 people	Royalty and License Fees Payments, (€ millions)
Soundness of Banks	Public Spending on Education as % of GDP	Computers per 1,000 persons	Royalty and License Fees Payments (€ millions) per million population
Exports of Goods and Services as % of GDP	School Enrollment, Secondary, Female (% gross)	TV Households with Television	Royalty and License Fees Receipts (€ millions)
Difference between Enterprise Birth and Death Rates (percentage)	School Enrollment, Tertiary, Female (% gross)	Daily Newspapers per 1,000 people	Royalty and License Fees Receipts (€ millions) per million population
Cost to Register a Business (% of GNI per capita)	No Schooling, total	International Internet Bandwidth (bits per person)	Royalty and License Fees Payments and Receipts (€ millions)
Days Required to Start a Business	No Schooling, female	Internet Users per 1,000 people	Royalty and License Fees Payments and Receipts (€ millions) per million population
Cost to Enforce a Contract (% of debt)	Secondary School completion, total (% of pop 15+)	Fixed Broadband Internet Access Tariff (€ per month)	Royalty and License Fees Payments and Receipts (€ millions) per million population
Rule of Law	Tertiary School completion, total (% of pop 15+)	Enterprises in Industry and Services - less than 10 employees - with Computer Availability (percentage)	Science and Engineering Enrollment Ratio
Control of Corruption	Secondary School completion, female (% of pop 15+)	Enterprises in Industry and Services - more than 10 employees - with Computer Availability (percentage)	Science Enrollment Ratio
Added value of Business Services Sector per Employee in the Same Sector	Unemployment Rate (% of total labor force)	Municipalities provided with Wide Broadband as percentage of the total number	Patent Applications Granted by the EPO per million people
Added Value of Industry Sector per employee in the Same Sector	Employment in Industry (% of total employment)	Household Internet Access as percentage of the total	High-Technology Exports as % of Manufactured Exports
	Employment to Population ratio	Number of Employees in Enterprises (with more than 10 employees) in Industry and Services who use internet (percentage)	Private Sector Spending on R&D
	Adult Unemployment rate	Enterprises in Industry and Services (with more than 10 employees) holding a Web Site as percentage of the total	R&D <i>intra muros</i> Expenditure of Public Administration, Universities and Private and Public Enterprises (percentage of GDP)
	Long-term Unemployment, total		
	Labor Force with Tertiary Education (% of total)		
	Labor Force with Secondary Education (% of total)		
	Population Studying or Attending a Professional Training Course		
	Science and Technology Graduates aged 20 to 29 per 1,000 people		



Proposed indicators for the Thrace region (Greece)

## Our approach

### Results Indicators at the Regional Operational Programme relative to RIS 3 Strategy

Code	Indicator	Units	Base Value	Base Year	Target Value (2023)	Source of data
T1012	R & D Expenditure of Enterprises as a percentage of GDP	Percentage	0,16%	2013	0,20%	National Documentation Centre /Eurostat
T1013	Number of technology transfer agreements between public research organizations and businesses	Number	54	2013	75	Regional Research
T1014	Persons interacting online with public authorities in the last 12 months.	Percentage	35,53	2013	50,00	Eurostat - ICT Households survey
T1015	Percentage of start-ups / new companies in the RIS3 sector to total new business	Percentage	3,71%	2013	8%	Creek General Commercial Register
T1016	Gross Value Added	million €	7.226	2011	7.373	Eurostat
T1017	Export Value	million €	682,55	2013	745	Eurostat
T1035	Number of overnight stays of foreign tourists in hotels	Number	677.513	2012	750.000	Eurostat

You can find this document here:

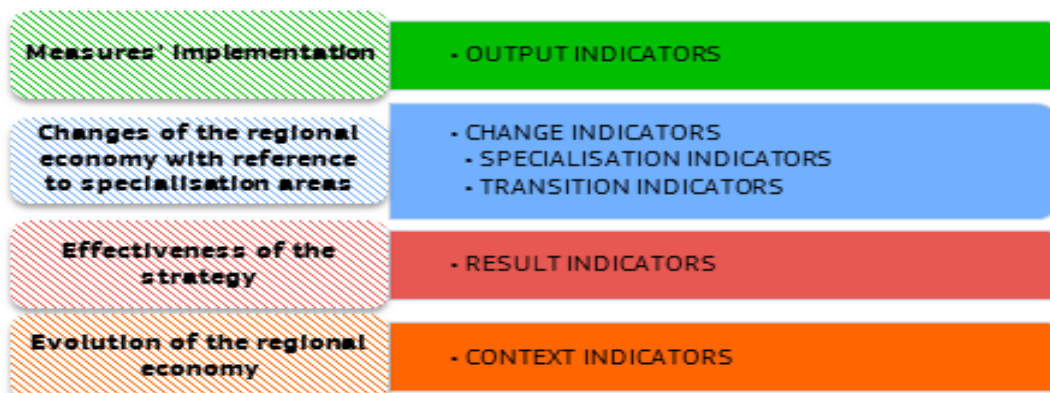
[http://www.eydamth.gr/lib/articles/newsite/ArticleID\\_612/Panagiotis\\_Koudoumakis\\_A2.pdf](http://www.eydamth.gr/lib/articles/newsite/ArticleID_612/Panagiotis_Koudoumakis_A2.pdf)

27. EUROPEAN COMMISSION (SMART SPECIALISATION PLATFORM )(N/D), “RIS3 IN PRACTICE: IMPLEMENTATION EXAMPLES (MONITORING).”

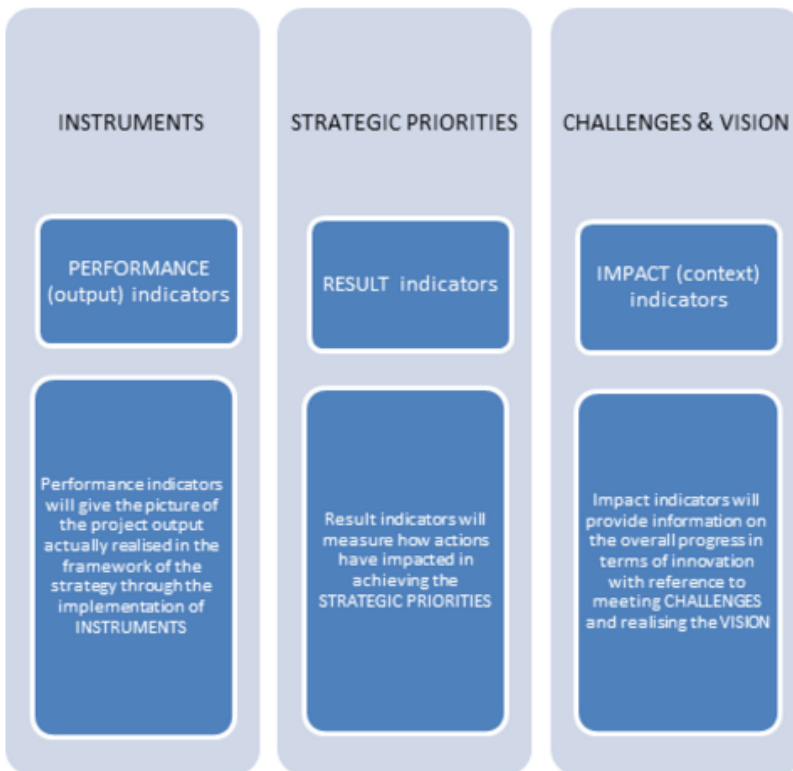
*#Monitoring #Concreteexample #EU*

This document is available on the Smart Specialisation platform. It includes several monitoring examples, from four regions:

- **Emilia Romagna:** Here is how the region conceives indicators:



- **Galicia:** The Spanish region has adopted a different indicator structure for its program:



- **Wales :** It commissioned a charity to develop a data platform
- **Aquitaine:** In the monitoring system of that region, indicators have three functions: they should measure the extent to which the projects are aligned with the selected priority areas, they should be able to track “cross fertilization” (the number of projects covering more than one domain/ sectors), and indicators should also be able to reflect the impact of the projects on firms’ development.

You can find this document here:

<http://s3platform.jrc.ec.europa.eu/documents/20182/173082/6-RIS3+In+practice-Monitoring-1.pdf/eab9fa0d-0d78-4e22-8a84-b5d755072bb9>

28. NORTHERN NETHERLANDS PROVINCES (2013), "RESEARCH AND INNOVATION STRATEGY FOR SMART SPECIALISATION (RIS3): NORTHERN NETHERLANDS," NOVEMBER.

*#Monitoring #Concreteexamples #EU #Report*

In a report on their smart specialisation strategy, the region of Northern Netherlands expose their vision of smart specialisation strategies and explain how they planned to create their monitoring and evaluation system, on page 19.

You can find this document here:

<http://www.snn.eu/upload/documenten/europa/ris3/draft-ris3.pdf>

29. PRIEDL, IRMA AND MARTINA EBNER (2013), "LOWER AUSTRIAN MONITORING AND EVALUATION SYSTEM."

*#Monitoring #Concreteexamples #EU #Presentation*

Lower Austria is an example often cited because before the smart specialisation programmes even started, the region already had been qualified with good practices for its regional innovation program.

Lower Austria plans to monitor its regional smart specialisation strategy thanks to a monitoring system on three target groups (Companies, Intermediaries and Policy maker), and three levels of monitoring (project, programme, and region). The document includes the larger explanation and a diagram, as well as other example of schemes put into place by the region

You can find this document here:

[http://www.redidi.es/sites/default/files/actualidad/20130926\\_prasentation\\_madrid\\_baja\\_austria.pdf](http://www.redidi.es/sites/default/files/actualidad/20130926_prasentation_madrid_baja_austria.pdf)

30. MINISTRY OF EDUCATION AND SCIENCE, REPUBLIC OF LATVIA (2015), "RIS3 IN THE CONTEXT OF EUROPE2020: THE ROLE OF UNIVERSITIES."

*#Monitoring #Concreteexamples #EU*

Latvia has the following smart specialisation strategy:



## RIS3 for Latvia: "Hybrid Strategy"

**Transformation of economy towards higher added value, productivity and more effective usage of resources**

**Objective: to increase innovation capacity and to create innovation system that promotes growth of economy**

### Directions:

1. Structural changes of production and export in the traditional sectors of the economy;
2. Growth in sectors where there is or is likely to create products and services with high added value;
3. Branches with significant horizontal impact and contribution to economic transformation.

### Priorities:

1. High added value products
2. Productive Innovation System
3. Energy Efficiency
4. Modern ICT
5. Modern education
6. The knowledge base (*Bi-economy; Biomedicine, medical technologies, biopharmacy and biotechnology; Smart materials, technology and engineering, Smart energy; ICT*)
7. Polycentric development

### Specialization areas:

1. Knowledge-based bio-economics
2. Bio-medicine, medical technologies, biopharmacy and biotechnologies;
3. Advanced materials, technologies and engineering systems
4. Smart energy
5. Information and communication technologies.

A central role is allocated to universities for the development of this strategy. Here is how the Latvian policy makers see the adequate monitoring system match to their strategy.

Here are the proposed macro level indicators and overall goals:

OVERALL GOALS (3)	Base value	2017	2020	Data source
(1) Investment in R&D (% from GDP)	0.6 (2013)	1.2	1.5	CSB
(2) Position in the EU Innovation Union Scoreboard	modest (2013)	modest	follower	EC
(3) Efficiency in the processing industry (EUR per employee)	20,126 (2013)	24,500	29,000	CSB
<b>MACRO LEVEL INDICATORS (6)</b>				
(1) Private sector investments in R&D (% of total investments)	21.8 (2013)	46	48	CSB
(2) Proportion of innovative companies (% of all companies)	30.4 (2012)	35	40	CSB
(3) Proportion of high-technology and medium-high-technology sectors in the export of Latvian goods (%)	23.8 (2012)	27	31	CSB
(4) The number of R&D personnel (public, private sector)	5593 (2013)	6300	7000	CSB
(5) A smaller number of stronger publicly-funded scientific institutions	42 (2013)	30	20	MoES
(6) Proportion of graduates (ISCED level 5 and 6) in the STEM fields from the total number of graduates, %	19 (2012)	25	27	MoES

You can find this document here:

[http://www.izm.gov.lv/images/RIS3\\_Baltic\\_dimension\\_25032015.pdf](http://www.izm.gov.lv/images/RIS3_Baltic_dimension_25032015.pdf)

31. (2016), "SCINNOPOLI," [ONLINE] <[HTTP://WWW.SCINNOPOLI.EU/](http://www.scinnopoli.eu/)> [DATE OF REFERENCE: 23 AUGUST 2016].

*#Monitoring #Impactevaluation #Concreteexamples #EU #Onlineresource*

Before the emergence of Smart Specialisation Strategies there already were some regional innovation programmes in the EU. There is an online resource called Scinnopoli, full of good practices examples (in monitoring and in impact evaluation).

Here you can find good practices based on the following matrix, out of a total of 19 good practices.

**?** Note: Choose your answers by clicking them. The associated documents are listed below.  
 → Select all  
 → Deselect all

<b>What is monitored?</b>	Input	Output/Activities	Outcomes/Impact
<b>What is the level of monitoring?</b>	Project	Measure/Program	Strategy of regional innovation policy
<b>When do we monitor?</b>	Ex-ante	In process/Mid-term	Ex-Post
<b>Who is the target group / subject of monitoring?</b>	Companies	(Intermediary) Organisations	Regional authorities/ policy makers

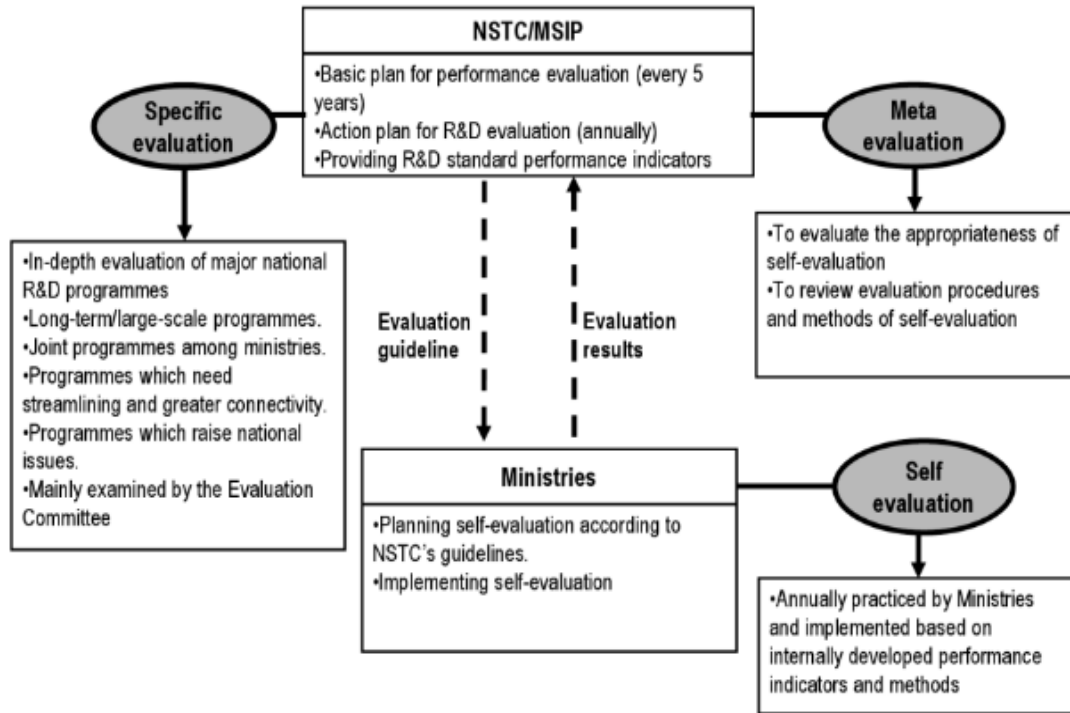
You can find this resource here: <http://www.scinnopoli.eu/Results.html>

32. OECD (2014), *INDUSTRY AND TECHNOLOGY POLICIES IN KOREA*, OECD REVIEWS OF INNOVATION POLICY, OECD PUBLISHING, MAY 21.

*#Monitoring #Impactevaluation #R&D #Concreteexamples #Korea #USA #UK #France #Israel #Book*

This document contains a chapter which focuses on evaluation of R&D programmes and projects. Here is, summed up, what the program evaluation system looks like, in Korea.

R&D program evaluation system in Korea



There is also a section on the evaluation of R&D projects. Korea is there compared on the base of how it chooses the projects to fund, with the UK, the US, Israel and France. The following table is the conclusion from this exercise.

**Table 3.6. Comparison of R&D project evaluation systems**

Organisation	Korea KEIT	US ARPA-E	UK TSB	Israel OCS	France ANR
Type	Public institution	Government Agency	Public institution	Office in the Ministry	Public institution
R&D Type	Industrial R&D	Applied R&D	Basic, applied and industrial R&D	Industrial R&D	Basic and applied R&D
Project Selection	Project selection by PD	No separate project selection*	No separate project selection*	No separate project selection*	No separate project selection*
Awardee Selection					
Application Submission	One stage	Two stages	Two stages	One stage	Two stages
Evaluation body	Committee (Expert pool)	Programme Director	Individual assessors (Expert pool)	Individual assessors (Expert pool) In-house experts	Individual assessors (Expert pool)
Evaluation Criteria	Technical criteria and economic impacts (the detailed criteria differ in each country).				
Project Monitoring	<ul style="list-style-type: none"> <li>• Yearly</li> <li>• Report &amp; site visit</li> <li>• Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly</li> <li>• Site visit</li> <li>• Programme Director</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly</li> <li>• Site visit</li> <li>• Monitoring officer</li> </ul>	<ul style="list-style-type: none"> <li>• Site visit</li> <li>• Independent assessors</li> </ul>	<ul style="list-style-type: none"> <li>• Report</li> </ul>
Final Evaluation					
Evaluation Body	Committee (expert pool)	Programme Director	Monitoring officer	Independent assessors (expert pool)	Independent assessors (expert pool)
Evaluation Criteria	•Goal achievement (detailed criteria differ in each country).				
Evaluation Result	No determination	Success, Failure	Success, Failure	No determination	No determination

\* Projects are selected in the process of awardee selection.

You can find this document here:

[http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/industry-and-technology-policies-in-korea\\_9789264213227-en#page72](http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/industry-and-technology-policies-in-korea_9789264213227-en#page72)

## INTERNATIONAL EXPERIENCES OF IMPACT EVALUATION

Now that various examples on monitoring smart specialisation strategies in Europe, have been presented, a few impact evaluation examples will be introduced in this section (please also consider the preceding example on Korea which fitted both categories of monitoring and impact evaluation).

33. BERRER, HELMUT ET AL. (2011), "THE ECONOMIC IMPACT OF THE LOWER AUSTRIAN CLUSTERS," *ECONOMICA*, NOVEMBER.

*#Impactevaluation #Clusters #Concreteexamples #EU #Report*

This is the economic impact evaluation of the Lower Austrian cluster policy. It is very detailed and was conducted by *Economica* (an institute for economic research). It explains the concept of clusters and the special focuses of the five located in Lower Austria, then the



Economica team moves on to the evaluation, first by investigating quantitatively the activities of the clusters, then calculating the regional benefits they produced.

You can find this document here:

[http://www.clusterplattform.at/fileadmin/user\\_upload/clusterbibliothek/cluster\\_noe - research report - the economic impact of the lower austrian clusters - 2012-en.pdf](http://www.clusterplattform.at/fileadmin/user_upload/clusterbibliothek/cluster_noe_-_research_report_-_the_economic_impact_of_the_lower_austrian_clusters_-_2012-en.pdf)

34. CORPORATION, GRAINS RESEARCH AND DEVELOPMENT (2016), "IMPACT ASSESSMENT - GRAINS RESEARCH & DEVELOPMENT CORPORATION," [ONLINE] <[HTTPS://GRDC.COM.AU/RESEARCH-AND-DEVELOPMENT/IMPACT-ASSESSMENT](https://grdc.com.au/research-and-development/impact-assessment)> [DATE OF REFERENCE: 24 AUGUST 2016].

*#Impactevaluation #Concreteexamples #Australia #Onlineresource*

The Grain Research and Development Corporation (GRDC) is a research institution founded by the Australian government at the beginning of the 1990s. Its function is to help investigate and develop R&D projects to improve the quality of Australia products on the global market. All the projects they take care of are carefully assessed ex-post. All of these ex-post evaluations can be found on the website of the corporation,

You can find many more examples on the grain research and development corporation website: <https://grdc.com.au/Research-and-Development/Impact-Assessment>

35. LÓPEZ, ANDRÉS, ANA MARÍA REYNOSO AND MARTÍN ROSSI (2010), "IMPACT EVALUATION OF A PROGRAM OF PUBLIC FUNDING OF PRIVATE INNOVATION ACTIVITIES: AN ECONOMETRIC STUDY OF FONTAR IN ARGENTINA," INTER-AMERICAN DEVELOPMENT BANK.

*#Impactevaluation #Innovation #Concreteexamples #Argentina #Article*

This is a (rather) short econometric impact evaluation of FONTAR grants. The chosen design is difference-in-difference since receivers of the grants usually have specific characteristic. The analysts came to the conclusion that the FONTAR grants and especially the ANR (aporte no reembolsables) benefit did invest more in R&D. They could not however detect any effect on the long-term productivity.

Here is where to find the document:

<https://publications.iadb.org/bitstream/handle/11319/4842/Impact%20Evaluation%20of%20a%20Program%20of%20Public%20Funding%20of%20Private%20Innovation%20Activities.%20An%20Econometric%20Study%20of%20FONTAR%20in%20Argentina.pdf?sequence=1>

## R&D TAX INCENTIVE AND THEIR EFFICIENCY

36. DAVID, PAUL A., BRONWYN H. HALL AND ANDREW A. TOOLE (2000), "IS PUBLIC R&D A COMPLEMENT OR SUBSTITUTE FOR PRIVATE R&D? A REVIEW OF THE ECONOMETRIC EVIDENCE," *RESEARCH POLICY*, VOL. 29, No. 4.

*#Impactevaluation #R&DTaxincentives #Article*

To prove their point, the authors create a conceptual framework to measure the "net" private R&D effects of public R&D. They decided to focus their efforts on the incentives the government can offer for the private sector to invest, namely tax incentives and direct incentives. The main difference between those two types of incentives is that fiscal incentives usually allow the private firms to choose in what they will invest, whereas direct subsidies are usually directed at a specific sector. Another advantage of the tax incentives is that crowding out usually does not happen, since the effect of the incentives is to reduce marginal costs. Usually, what will happen is that the R&D tax incentives will induce firms to favor project that are more likely to generate short run profits. This also implies that projects with high social rates of return and long-term infrastructure are less likely to be funded as a result of that kind of policy.

You can find this document here:

<http://eml.berkeley.edu/~bhhall/papers/DavidHallToole%20RP00.pdf>

37. DECHEZLEPRÊTRE, ANTOINE ET AL. (2016), "DO TAX INCENTIVES FOR RESEARCH INCREASE FIRM INNOVATION? AN RD DESIGN FOR R&D," No. 22405, NATIONAL BUREAU OF ECONOMIC RESEARCH, JULY.

*#Impactevaluation #R&DTaxincentives #Innovation #Article*

The purpose of this paper is to analyze whether R&D tax incentives have an effect on innovation. The difference with the N.36 is that according to the authors sometimes the measuring of R&D has several shortcomings, for instance that companies can just relabel under R&D activities that were not previously called as such. Therefore the authors decided to do a new analysis taking into account patent activities. They start by reviewing *in extenso* the existing literature, and the institutional setting of R&D tax incentives, before moving on to doing their analysis. The paper is quite technical.

You can find this document here:

<http://www.nber.org/papers/w22405>

38. MOHNEN, PIERRE AND BORIS LOKSHIN (2009), "WHAT DOES IT TAKE FOR AN R&D TAX INCENTIVE POLICY TO BE EFFECTIVE?," *CIRANO-SCIENTIFIC PUBLICATIONS 2009S-11*.

*#Impactevaluation #R&DTaxincentives #Article*

This article is pretty much in the same vein as the two other articles. To assess whether an R&D tax incentive is efficient, the first method consist in testing for additionality. In other words, what will need to be measured is the incrementality ratio. It is measured by dividing the amount of R&D generated by the R&D tax incentive, by the nex tax revenue loss (=tax expenditures). It is not as simple as it sounds, because it is quite easy to make mistakes (i.e. adding up all credits without considering the change in the firm's tax position because of the tax credits).

Another way to estimate the additionality is to ask directly to the firms whether the tax incentive made a difference in their R&D spending (an Australian study suggests that what the firms respond is quite consistent with the econometric evidences). Finally, one can also use econometric techniques to estimate the effect of the R&D tax incentive. Two approaches exist: the structural modeling approach, and the treatment evaluation method. The structural modeling approach consists in regressing an R&D demand equation (in terms of stocks or flow but preferably stocks), on its usual determinants which must

include the user cost of R&D incorporating the R&D tax parameters. The user/cost of R&D includes a quantification of the tax incentives via what has come to be known as the B-index. This B-index was first introduced in 1983 by Warda and McFetridge and is defined as the ratio of the net cost of a Euro spent on R&D, after all other quantifiable tax incentives have been accounted for, to the net income from one Euro of revenue. In other words, it indicates the marginal income before taxes needed for the marginal R&D investment to break even.

The R&D that has been induced may take time before becoming apparent.

Aside from measuring additionality, one should also try to figure out whether the additional R&D yielded private benefits.

You can find this document here:

<http://ieb.ub.edu/aplicacio/fitxers/2009/10/Doc2009-9.pdf>