

## **Seguimiento y evaluación de las estrategias para la Especialización Inteligente en Investigación e Innovación (RIS3): La importancia de los indicadores cualitativos**

## **Monitoring and Evaluation the Strategies for Smart Specialisation (RIS3): The importance of qualitative indicators**

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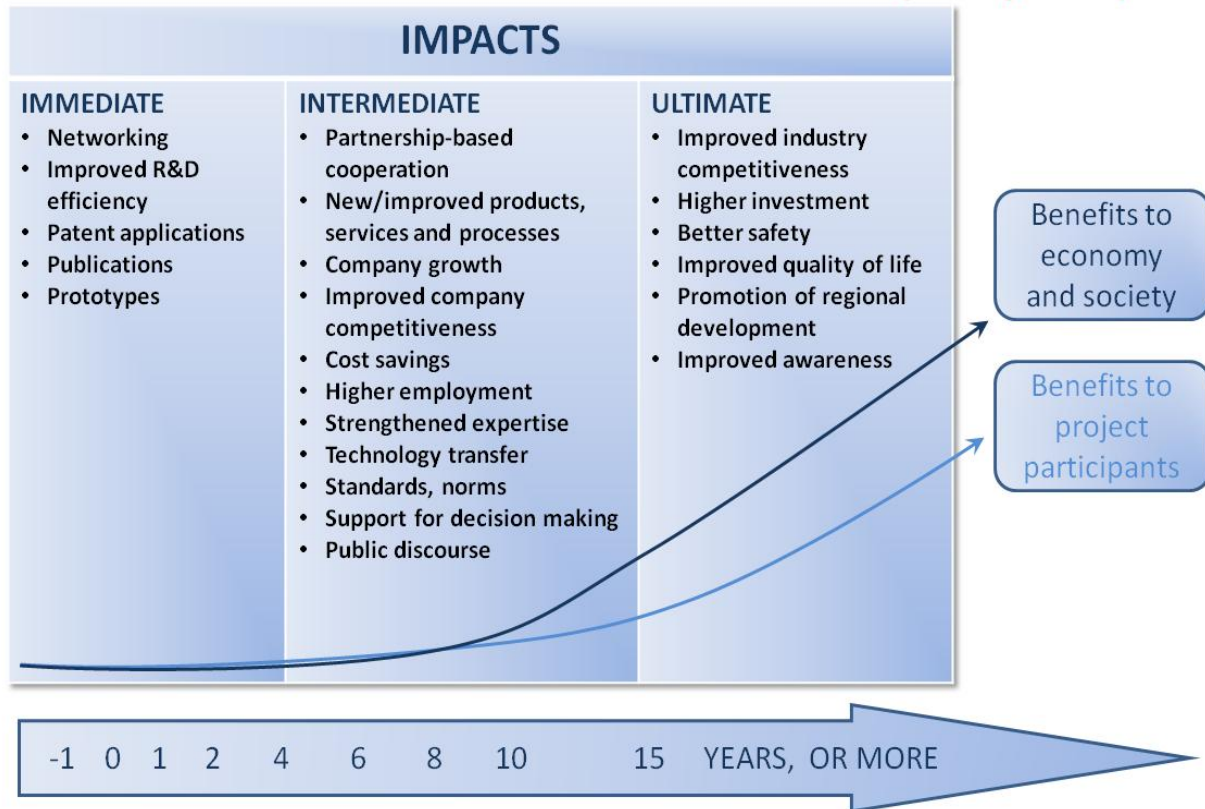
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**INNOVATEC**

# IMPORTANT ISSUES FOR DETERMINING RESEARCH AND INNOVATION RESULTS (outputs/outcomes/impacts)

- **ATTRIBUTION ISSUES:** the contribution of the project or programme funded *versus* “other factors” to the expected/accomplished impacts
- The **DYNAMIC NATURE OF IMPACT**, as the impact changes over time
- The **HALO EFFECT:** only consider positive impacts of research
- **COUNTERFACTUAL** (*what would have happened without the research being done?*) very difficult to know

## EXPECTED TIME PERSPECTIVES OF RESEARCH IMPACT (Tassey, 2003)



Tassey G. (2003). Methods for Assessing the Economic Impacts of Government R&D. Planning Report 03-1. National Institute of Standards & Technology (NIST).

# MONITORING AND EVALUATION TERMINOLOGY: THE IMPORTANCE OF USING A "COMMON LANGUAGE"

The terminology used in Monitoring and Evaluation (M&E) is far from standardized, resulting in a confused jargon of contradictory definitions [*it is probably due to the use of "broad meaning" English words (result, output, outcome, impact, indicator, monitoring, evaluation, etc.) to address quite narrow concepts in this specific field*]. However it is quite clear the importance of using a "common language", well understood by all the stakeholders involved in monitoring and evaluation activities to try to avoid possible misunderstandings

## INTERVENTION LOGIC

### INPUTS:

Resources that feed into the project/programme

### ACTIVITIES:

Actions that describe how the inputs are used to carry out the project/programme

### RESULTS

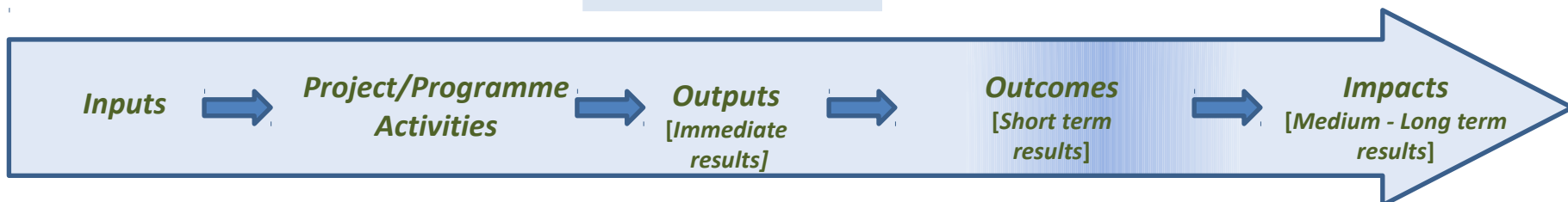
**(OUTPUTS):**  
Direct/immediate "products" (*deliverables*) of the project/programme activities

### RESULTS

**(OUTCOMES):**  
Short-term effects of the project/programme outputs

### RESULTS

**(IMPACTS):**  
Medium and long-term effects produced by the project/programme outputs



## **STEPS FOR PREPARING A SUCCESSFUL STRATEGY FOR MONITORING & EVALUATION THE PROGRESS AND THE RESULTS OF RIS3 INITIATIVES (Projects/Programmes)\***

- STEP 1**      **DEFINE THE PURPOSE OF THE MONITORING & EVALUATION (M&E)**
- STEP 2**      **DEVELOP A LOGICAL FRAMEWORK FOR THE STRATEGY DEFINED IN THE RIS3 PROJECT/PROGRAMME TO BE M&E**
- STEP 3**      **SELECT THE INDICATORS TO BE MONITORED AND ITS BASELINE**
- STEP 4**      **PREPARE A PLAN FOR DATA COLLECTION AND ANALYSIS**
- STEP 5**      **DEFINE A PROCEDURE FOR USING AND DISSEMINATING THE M&E INFORMATION**
- STEP 6**      **DEVELOP AN IMPLEMENTATION PLAN FOR M&E INCLUDING THE ALLOCATION OF THE APPROPRIATE RESOURCES**

\* 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, 14 pp.  
<http://innovatec.es/wp-content/uploads/2015/07/2014-Policy-Brief-Monitoring-RIS3-Innovatec.pdf>

## STEP 1

# DEFINE THE PURPOSE OF THE MONITORING&EVALUATION

- **Monitoring** aims to **verify that planned activities are being carried out as intended**, funds are correctly used and spent on delivering planned outputs and that result indicators evolve in the desired direction.
- **Evaluation** refers to **assessing whether and how the expected short, medium and long-term objectives have been met**.
- **Monitoring & Evaluation** should be understood as an investment to make sound operational and strategic decisions
- Valuing M&E means providing the necessary time, personnel, and financial resources to support M&E activities and the use of findings

## STEP 2

# DEVELOP A LOGICAL FRAMEWORK FOR THE STRATEGY DEFINED IN THE RIS3 PROJECT/PROGRAMME TO BE M&E (1)

- Decisions on *what* and *how* to carry out M&E cannot be made independently from the definition of the *objectives*, the *resources available*, the *types of activities planned* and the *short, mid and long-term results expected*, all of which should be related to each other in a logical way
- Establishing these *logical relationships* (the *intervention logic*) is a very important and critical part of developing an effective Monitoring and Evaluation system

## STEP 2

# DEVELOP A LOGICAL FRAMEWORK FOR THE STRATEGY DEFINED IN THE PROJECT/PROGRAMME TO BE M&E (2)

- The **Logic Framework Approach** (LFA) is a methodology widely used for planning, implementation, monitoring and evaluation of programmes and projects which helps to identify **logical connections between the objectives, inputs, activities, outputs, and results of an intervention**
- This methodology should be thought of as an '**aid to thinking**' and allows information to be analyzed and organized in a structured way
- As an element of this methodology a **conceptual framework** (also called a *logic model*) is normally developed and it describes, usually in the form of a diagram, how a particular programme or project is intended to work

## **STEP 2**

# **DEVELOP A LOGICAL FRAMEWORK FOR THE STRATEGY DEFINED IN THE PROJECT/PROGRAMME TO BE M&E (3)**

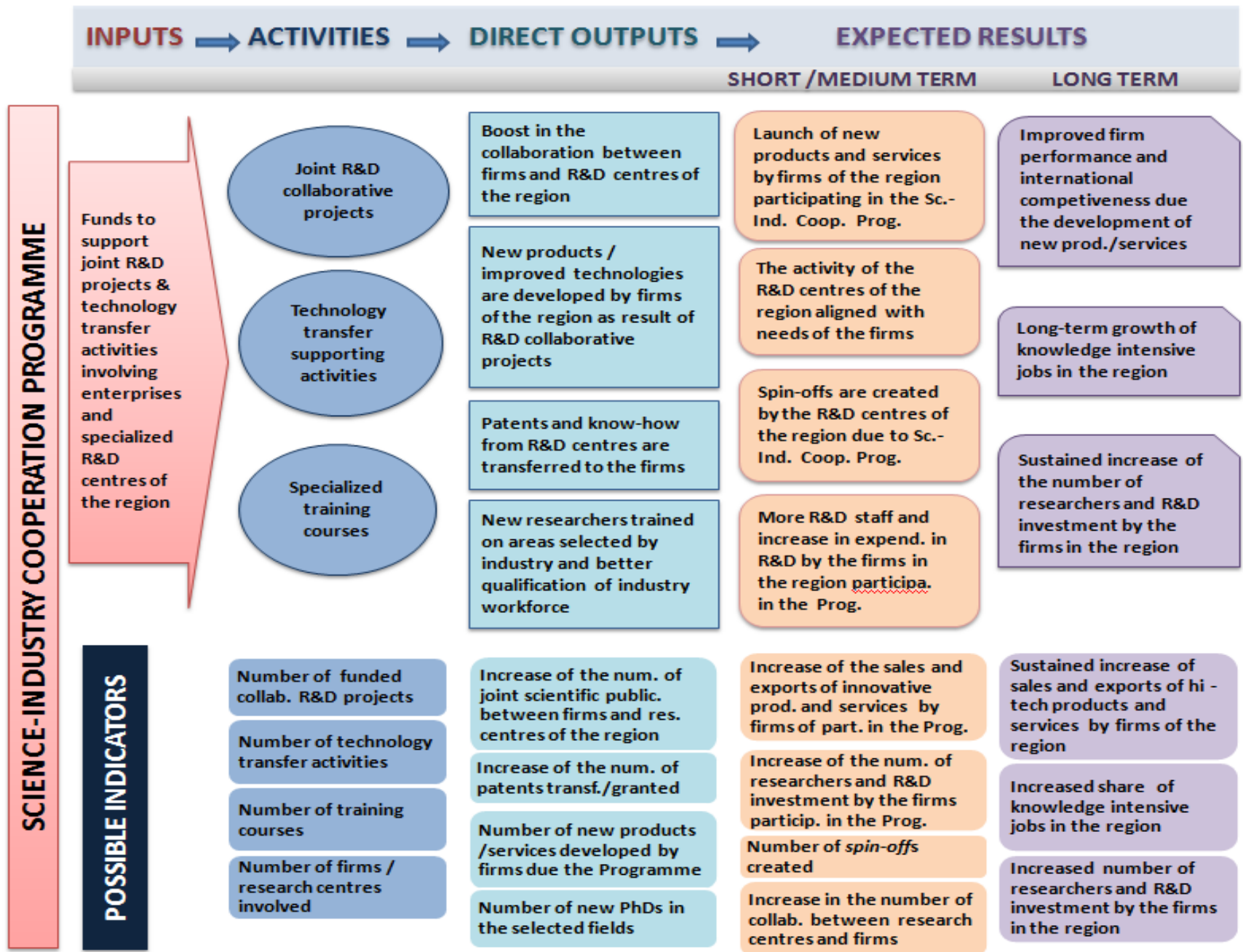
## **EXAMPLE FOR ILLUSTRATIVE PURPOSES: SCIENCE-INDUSTRY COOPERATION PROGRAMME**

### **SCIENCE-INDUSTRY COOPERATION PROGRAMME AIMS:**

- Increase the science-industry links in the nation/region
- Increase of the R&D activity in the nation/region
- Stimulate the start-up of new technology-based companies (*spin-offs*)
- Increase the knowledge intensive jobs in the nation/region
- Increase the competitiveness of the firms of the national and international level



# LOGIC FRAMEWORK FOR A SCIENCE-INDUSTRY COOPERATION PROGRAMME



## STEP 3

# SELECT THE INDICATORS TO BE USED FOR M&E AND ITS BASELINE

**INDICATORS:** quantitative or qualitative variables that allow changes produced by an intervention to be measured. They should provide a reasonably simple and reliable basis for assessing an intervention in terms of its activities, outputs and results. Indicators can be further subdivided into:

- **ACTIVITY INDICATORS:** refer to indicators to measure whether planned activities took place. They are also named *Process indicators*.
- **OUTPUT INDICATORS:** indicators describing the concrete products (*deliverables*) directly associated to the activities supported through policy intervention.
- **RESULT INDICATORS:** indicators describing specific aspects of the results associated with the short, medium and/or long term objectives of the intervention, sometimes referred as *Outcome indicators* or *Impact indicators*.
- **CONTEXT INDICATORS:** indicators scoring the nation/region against the average score of its Member State or other similar nation/regions. Examples are the total expenditure in R&D as % of the GDP of the nation/region, the % of innovating firms etc. These indicators are usually attached to the overall objectives of the strategy of the nation/region.

**BASELINE:** the value of the indicator before the new intervention is undertaken.

# QUANTITATIVE vs QUALITATIVE INDICATORS

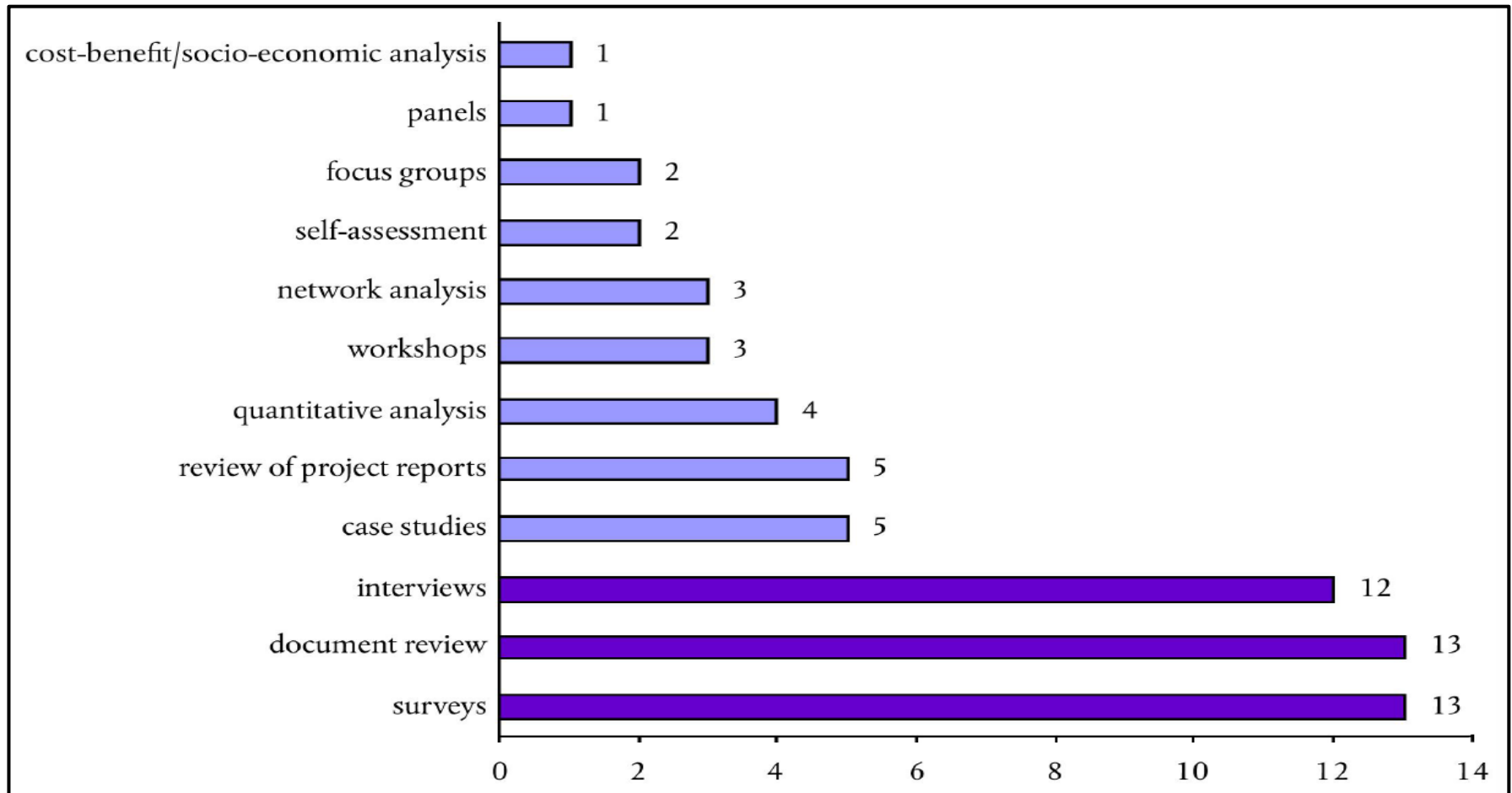
- **Quantitative Indicators** indicates a numerical variable. Quantitative indicators are very widely used as they give a very clear measure of things and are numerically comparable (*i.e. number of researchers, R&D expenditure, etc.*) . Most often, quantitative indicators are preferred as they do not need *judgment* to quantify them and they are normally more affordable than the qualitative indicators. On the other hand, the high complexity of the issues related to research and innovation activities are in most of the cases very difficult to assess only by quantitative indicators.
- **Qualitative Indicators** describe the status of something in more qualitative terms (*i.e. the scoring system used in peer review procedures to select projects or the grading system to assess the potential impact of a concrete project/programme*). They can be designed to assess specific issues of research and/or innovation activities but its quality depends on the quality of the *judgments* they are based. Furthermore, quantifiable *baselines* against which achievements could be measured, are not easily available.

**In practical terms, quantitative and qualitative information complement each other**

## Typical source of data/evidence used in research and innovation monitoring and evaluation

Method	Description	Quantitative vs Qualitative
<b>Peer review/expert judgments</b>	Opinions from experts specific to the field	Qualitative
<b>Surveys</b>	Questions to multiple stakeholders	Qualitative and Quantitative
<b>Bibliometrics/Scientometrics</b>	Analysis of research publications & patents	Quantitative
<b>Benchmarking/International comparison</b>	Comparison with other regions/countries	Qualitative and Quantitative
<b>Historical tracking</b>	Analysis of past records	Quantitative
<b>Case studies</b>	In-depth analysis of a sample of a specific issue	Qualitative and Quantitative
<b>Social analysis</b>	Identifying the social benefits of the R&I activities	Qualitative
<b>Economic analysis</b>	Identifying the economics benefits of the R&I activities	Quantitative

# Use of methodologies and techniques in EC Framework Programmes Evaluations (2000-2006)\*



\* The European Court of Auditors Special Report No. 9/2007 "Evaluating The EU Research and Technological Development (RTD) Framework Programmes - Could The Commission's Approach Be Improved?", Special Report No. 9/2007. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:026:0001:0038:EN:PDF>

# USEFUL CONSIDERATIONS FOR SELECTING INDICATORS FOR RESEARCH AND INNOVATION PROGRAMMES

- Indicators for M&E research and innovation interventions are normally **ad-hoc indicators** which need to be **customized for this very specific use**. Make sure that the indicators relate clearly to the achievement of the goals stated in the programme.
- They should be kept **as simple as possible** and existing indicators should be used where possible.
- There should **not be too many indicators**. They are meant to assist the understanding of how the programme is developing and achieving its expected outputs and results, not obscure them in an accumulation of unrelated data.
- For selecting them you should take into account and **try to balance these two normally opposite factors**:
  1. the workload/administrative burden required to obtain it, which includes the time and resources necessary for the data collection and for its subsequent analysis and,
  2. the need of measuring activities, outputs and results and evaluating performance required by the public spending accountability.
- **S.M.A.R.T. criteria** (*Specific, Measurable, Achievable, Relevant and Time-bound*) are very useful criteria to take into account when defining indicators.

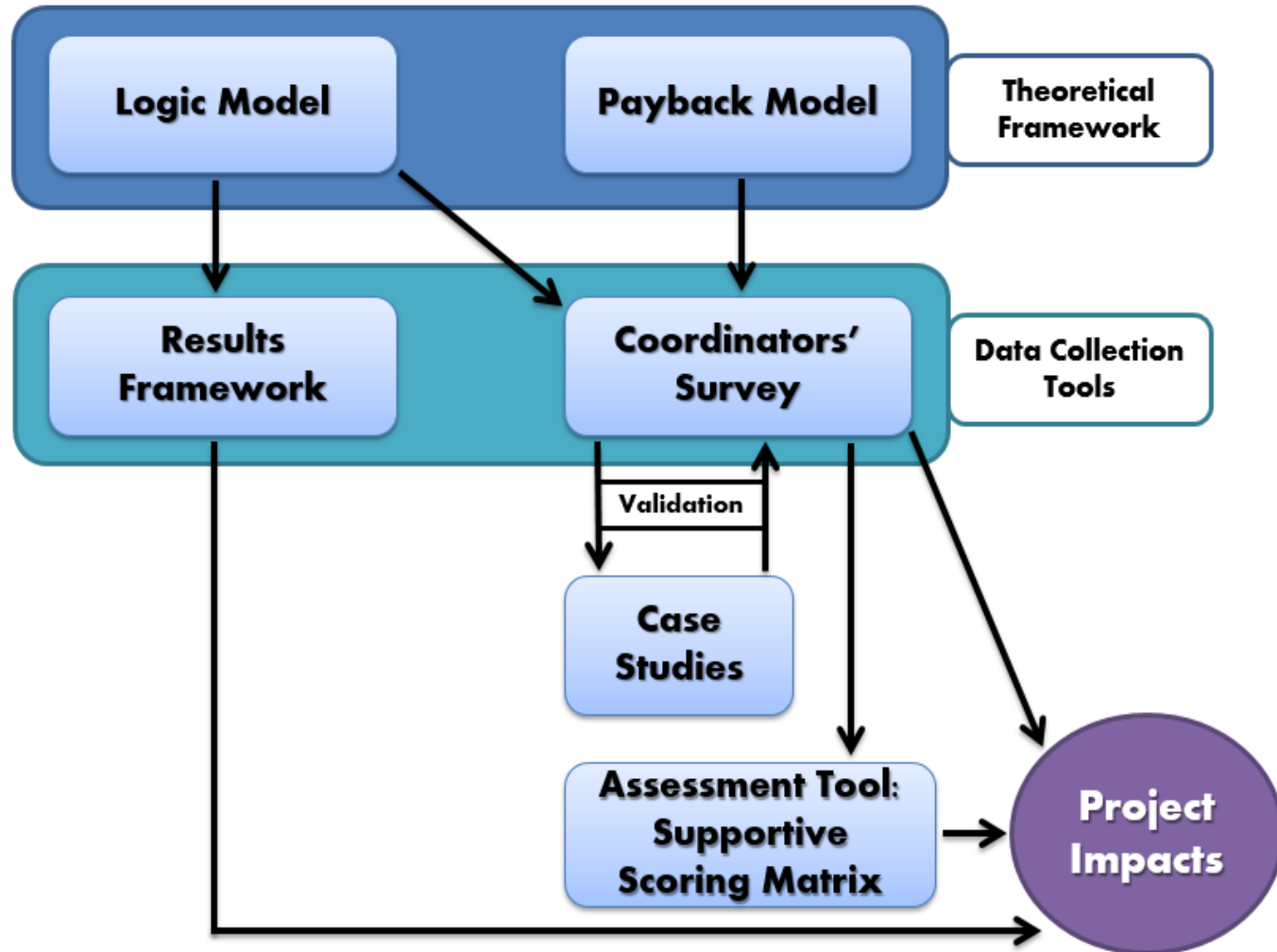
## STEP 4

# PREPARE A PLAN FOR DATA COLLECTION AND ANALYSIS

- Arrangements for routine collection of monitoring data, **based on the selected indicators** and including **how, when, and by whom** data will be collected, analyzed and reported should be put into operation.
- Both, **qualitative** data gathering tools (*interviews, case studies, surveys, desk research, etc.*) and **quantitative** data gathering tools (*bibliometrics, surveys, review of statistical data, etc.*) are expected to be used.
- As the main data collection tools for the indicators will probably be questionnaires, surveys and feedback forms filled by the participants/beneficiaries of the R&D innovation programmes/projects at different times, it would be very pragmatic and effective if this is included as a **reporting obligation from the very beginning** (i.e. in the calls).
- **Linking the monitoring to the reporting\*** and **designing an appropriate data management system** will facilitate data collection and analysis.

**\*reporting** : the formal requirement (normally mandatory) to periodically report specific information (financial, technical, etc.) obtained in the course of a project or programme

# IMPACT ORIENTED MONITORING (IOM) METHODOLOGY\*



\*Guinea J, Sela E, Gómez AJ, Mangwende T, Ambali A, Ngum N, Jaramillo H, Gallego JM, Patiño A, Latorre C, Srivanichakorn S, Thephtien B. (2015). Impact oriented monitoring: A new methodology for monitoring and evaluation of international public health research projects. *Research Evaluation* 24 (2): 131-145. <http://rev.oxfordjournals.org/content/early/2015/02/02/reseval.rvu034.full>



# Summary of the IOM tools

	PURPOSE	FORMAT	TIMING	FINAL USE
PROJECT RESULTS FRAMEWORK	<p>To help to structure the expected project results and impacts</p> <p>To help to assess specific short-term project impacts</p>	Online/ web tool	Prepared by the coordinator during Grant Agreement, completed at mid-term and final reporting of the project.	<ul style="list-style-type: none"> <li>•Project management</li> <li>•Project assessment</li> </ul>
COORDINATORS' SURVEY	Main data collection tool for capturing project results and evidence of the research impacts	Web-based questionnaire	<ul style="list-style-type: none"> <li>• Middle of the project (only for projects lasting 4 or more years)</li> <li>• End of the project</li> <li>• 3 years after the project</li> </ul>	<ul style="list-style-type: none"> <li>•Project management (monitoring)</li> <li>•Project assessment</li> <li>•Programme evaluation</li> </ul>
END USERS' OPINION SURVEY	Data collection tool to capture end users' opinion on the non-academic impact of projects	Web-based questionnaire	<ul style="list-style-type: none"> <li>• End of the project</li> </ul>	<ul style="list-style-type: none"> <li>•Support the assessment of non-academic impacts of individual projects.</li> <li>•Help in the identification of high impact projects</li> </ul>
ASSESSMENT TOOL (Scoring matrix)	To facilitate a quick estimate of the level of impact of individual projects on fixed domains	Spread sheet	<ul style="list-style-type: none"> <li>• End of the project</li> <li>• 3 years after the project</li> </ul>	<ul style="list-style-type: none"> <li>• Project assessment</li> <li>• Comparative analysis of funded projects</li> <li>• Programme evaluation</li> </ul>

## STEP 5

# DEFINE A PROCEDURE FOR USING AND DISSEMINATING THE M&E INFORMATION

- The information resulting from the different indicators **should be used to inform the regional authorities and other stakeholders** about the results of the Programme.
- From the very beginning of the Research or Innovation Programme, it is very important to determine **how the information resulting from the different indicators will be managed**:
  - how the information will be processed to get a more comprehensive picture of the Research or Innovation Programme progress;
  - how it fits into decision-making processes specifically related to the Research or Innovation Programme strategy and,
  - how it will be communicated to the regional or national authorities, funding institutions and to other stakeholders.
- It should be very important to **assess the progress of the Programme** towards the completion of the expected activities and the achievement of outputs, results and objectives in order to adjust and fine tune the Programme, in case of detection of deviations.
- This **dissemination strategy** should also guide the data collection and analysis.

## STEP 6

# DEVELOP AN IMPLEMENTATION PLAN FOR M&E INCLUDING THE ALLOCATION OF THE APPROPRIATE RESOURCES

At a minimum, the **IMPLEMENTATION PLAN** should include:

- **timetable for data gathering and review of data** (*including key dates and milestones*),
- **individual responsibilities**,
- **the dissemination strategy** planned in the **Step 5** and
- **a budget for M&E**: Data collection, processing, analysis and reporting, as well as capacity building and field support (*if needed*) must be budgeted in terms of time and resources.

To calculate the funding for these activities, it is considered helpful to define a proportion of the operational programme/project budget to spend on them [*for example in the case of International Aid/Cooperation Programmes the figure recommended is around 5% of the operational budget, for estimating the overall budget for Monitoring and Evaluation activities*]

# RESUME: KEY CONSIDERATIONS FOR ESTABLISHING A MONITORING & EVALUATION SYSTEM (1)

- **LINKING TO DECISION-MAKING AND PLANNING PROCESSES:** Part of the on-going work of the strategy process is to support better decision-making. M&E is a valuable tool in this effort—but only if M&E results are provided to decision-makers at all levels in a readily accessible form that meets the end users' needs
- **LINKING TO THE COMMUNICATION OF R&D INNOVATION PROGRAMME RESULTS TO GENERAL PUBLIC, MEDIA AND OTHER STAKEHOLDERS:** This issue is often neglected but it is a very useful side product of the monitoring activity
- **ALLOCATING THE APPROPRIATE HUMAN AND FINANCIAL RESOURCES** (*including capacity-building needs*) required for monitoring needs to be considered from the very beginning

# RESUME: KEY CONSIDERATIONS FOR ESTABLISHING A MONITORING & EVALUATION SYSTEM (2)

- **THE INDICATORS SHOULD BE CLEARLY RELATED TO THE OBJECTIVES, PLANNED ACTIVITIES AND EXPECTED RESULTS:** Indicators need to be defined and analyzed as part of a logical framework of relationships between resources, objectives, activities and the intended results
- **LINKING TO THE REPORTING AND DESIGNING AN APPROPRIATE DATA MANAGEMENT SYSTEM:** determining the frequency of reporting and monitoring should be based on how rapidly conditions are changing and the significance of change as well as on the resource requirements. Investment in developing a good data management system is normally money very well spent
- **BUILDING A SYSTEM THAT ENCOURAGES IMPROVEMENT AND ADAPTATION:** a good M&E system should support improvement at both the project management level and the strategy decision making level. The M&E system itself should also be subject to regular reviews

## OTHER USEFUL REFERENCES

- **Barca F., McCann P. (2011). Methodological note: Outcome Indicators and Targets.** [[http://ec.europa.eu/regional\\_policy/sources/docgener/evaluation/doc/performance/outcome\\_indicators\\_en.pdf](http://ec.europa.eu/regional_policy/sources/docgener/evaluation/doc/performance/outcome_indicators_en.pdf)].
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**MUCHAS GRACIAS**

**MOITAS GRAZAS**

**OBRIGADO**

**THANK YOU**



SISTEMAS DE SEGUIMIENTO PARA MEDIR EL IMPACTO  
DE RIS3 REGIONALES Y TRANSREGIONALES