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European Union
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Benchmarking: Identifying good practices for innovation policy mix evaluation
Lessons learnt and examples

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Why, what and how

- **Objective of the benchmarking**: to learn from other experiences for the development of policy-mix evaluation.

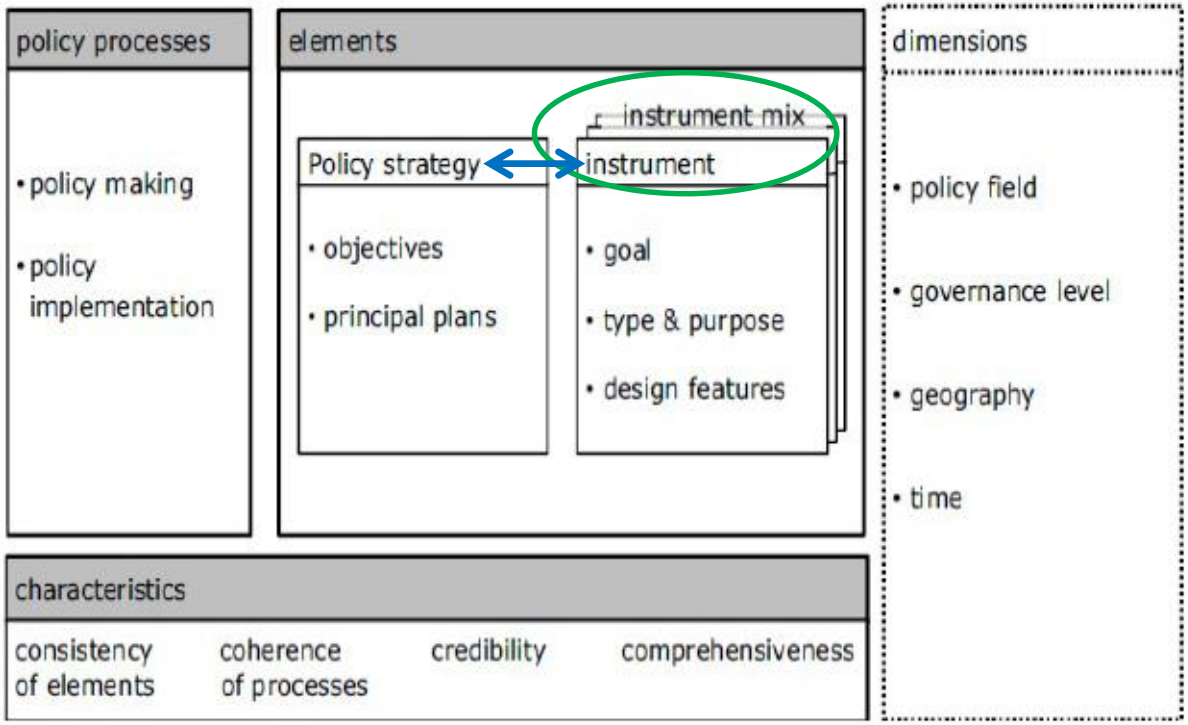
- **Methodology**: systematic analysis of grey literature and academic literature for finding cases and in-depth analysis of cases.

- **What it includes**: 4 cases
  - Mainly focused on innovation literature
  - Cases that cover qualitative/quantitative approaches and aimed at contribution to policy strategy/impact and interaction of policy-mixes

Important. Novel topic, thus examples of best practices in evaluating innovation policy-mixes are limited

Why, what and how

A general framework to understand selection of cases



Source: Rogge and Reichardt (2016)

Cases include:

- **2nd level consistency: interaction of policy instruments and their effects**
- **3rd level consistency: alignment between policy mixes and policy objectives**

Why, what and how

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The four cases:

	Objective	Main methodologies
(1) BERR	To determine the contribution of interventions from BERR both to the Department's strategic objectives	Qualitative, desk research
(2) ERDF Enterprise	To assess the effects of ERDF support to micro, small and medium enterprises (SMEs) and to outline the mechanisms and context features that explain why and how these effects were achieved	Multiple, quantitative and qualitative. Eg. network analysis, statistical analysis, focus groups, interviews, etc.
(3) Dynamix	To gain insights to inform the design of policy mixes that would constitute pathways to absolute decoupling	Qualitative and quantitative, ex-ante and ex-post. Desk research, expert evaluation
(4) Quantitative analyses based on control group approaches	To focus on the impact assessment of the interactions among different policy instruments, trying to conclude whether these interactions lead to complementary or overlapping/ contradictory effects	Counterfactual analysis

Lessons learnt

a) **Relevant steps for policy-mix evaluation**

b) **General lessons**

Relevant steps for a policy mix evaluation

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1. Definition of logical frameworks
2. Categorization of policy instruments
3. Literature review
4. Collecting and analysing data

Relevant steps for a policy mix evaluation

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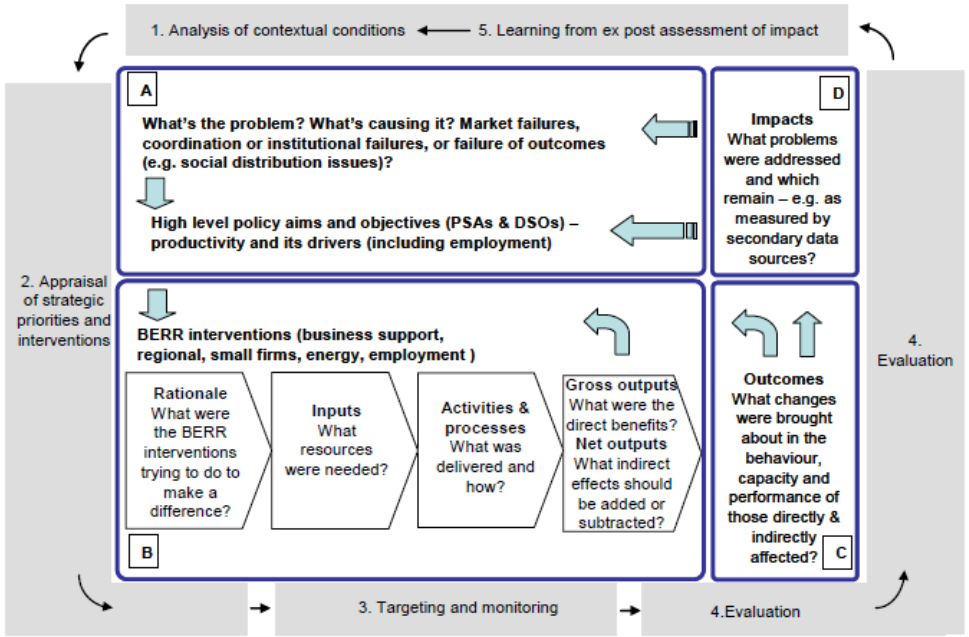
1. Definition of logical frameworks.

It allows outlining and understanding the logic behind the interventions, their relationship with strategic goals and the specific outputs and impacts that instruments are expected to have.

Example.
Case 1:

Figure 1-2: A logic framework for BERR interventions



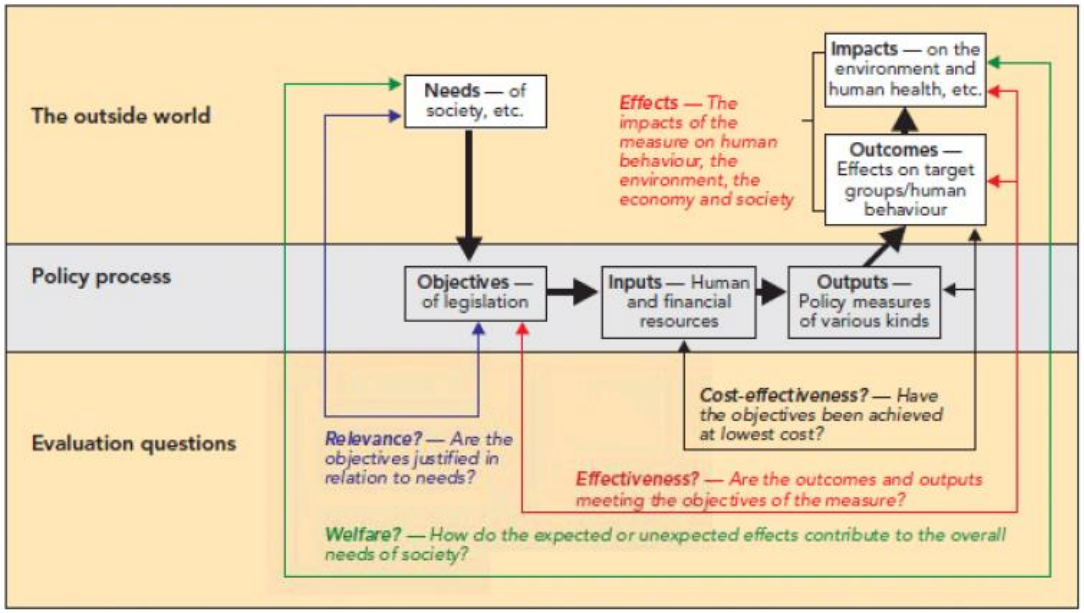
Source: SQW Consulting

Relevant steps for a policy-mix evaluation

1. Definition of logical frameworks.

Example.
Case 3:

Policy evaluation framework used in DYNAMIX



Source: Mazza et al. (2013, p.8)

Impacts and effects in holistic view:

- social, economic, environmental;
- direct and indirect

Relevant steps for a policy-mix evaluation

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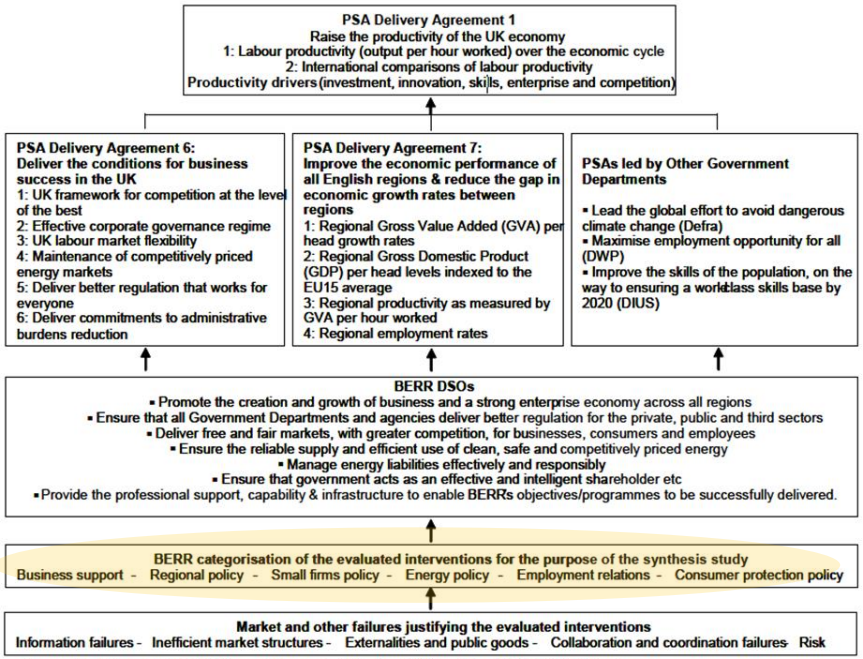
2. Categorisation of policy instruments.

As a previous step of the evaluation exercise since different instruments behave differently.

Examples

Case 1:



Source: SQW from the PSA Delivery Agreements (October 2007) and the BERR CSR/PSA web page

Case 2:

The following main categories of policy instruments were found.

Business creation and development: instruments for the promotion of business creation, early development, modernisation, structural change, financing e.g. building construction or modernisation, purchase of tangible and intangible assets, employment.

Support for R&D projects: instruments supporting research and applied development activities (which may, in some cases, include the commercialisation of innovation) of enterprises individually or in collaboration with the research centres of other firms.

Development of technological or non-technological innovation: support to innovation only, without any activity regarding research and experimental development. It includes, for example, instruments supporting a technology upgrade in already existing enterprises, as a way of increasing innovation, managerial and organisational innovation, and the commercialisation of innovative products.

Access and diffusion of ICT: instruments supporting the access to and diffusion of ICT services and solutions for SMEs or enterprises in general. ICT solutions can be used, for example, for e-commerce, business-to-business communication, or for increasing the efficiency of the productive system.

Infrastructures and related services: instruments that only indirectly benefit both SMEs and all enterprises, via the provision of infrastructures aimed at improving the conditions for doing business and the introduction of new services targeting the business sector, such as technology parks, logistic centres, and the creation or strengthening of networks of business support organisations.

Generic access to finance: different tools to provide SMEs (or enterprises in general) with capital for their activities, without any indication of the conditions for the use of this capital.

Creation of innovative companies: specific support for the creation or development of new enterprises with a strong innovative base, oriented towards the commercialisation of innovative products (e.g. innovative spin-offs).

Internationalisation and visibility: instruments supporting SMEs (or all enterprises) in going international, mainly by means of support for participation in fairs, partner search, incoming missions; support for promotional and visibility actions.

Knowledge and technology transfer: instruments supporting knowledge and technology transfer from research centres/universities to enterprises, for the adoption of innovative products and processes.

Support for improving capacities: instruments aimed at promoting the development of skills and capabilities of SMEs or enterprises in general, so as to promote an entrepreneurship culture and capacities in general, or to provide knowledge on specific issues, such as the development of a business plan, ICT and green energy opportunities.

Networking: instruments specifically designed to support the establishment of partnerships, networking and clustering among enterprises and the formation of cooperation platforms.

Eco-innovation: instruments meant to introduce environmentally-friendly products, processes and technologies into enterprises.

Source: CSIL.

Relevant steps for a policy-mix evaluation

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3. Literature review.

Theoretical and empirical evidence from previous studies can be used in policy-mix evaluation with different purposes. For example, as a **substitute source of information when other type of primary data does not exist**.

Example. Case 1:

- Objective: to asses the contribution of BERR* instruments to higher level objectives.
- Approach: meta-evaluation. Synthesis method:
  1. Template for collecting information about evaluation evidence
  2. Asses which evaluations to include in the analysis
  3. Analysis of robustness of evaluations of selected intervention
  4. Analysis of types of interventions and its relationship with higher level objectives
  5. **Assessment of the contribution to higher level objectives**
  6. Analysing association between performance score components and relationship between intervention characteristics and potential contribution to higher level objective

Assessment of the contribution to objectives:

- The meta-evaluation concluded that it was not possible to asses quantitatively the contribution of each intervention to high level objectives (data gaps).
- **How to asses then contribution**?: **Definition of a performance score, based on literature review**, to define characteristics more likely to be conducive of higher contribution to objectives.

* BERR: Department for Business Enterprise and Regulatory Reform (UK)

Relevant steps for a policy-mix evaluation

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3. Literature review.

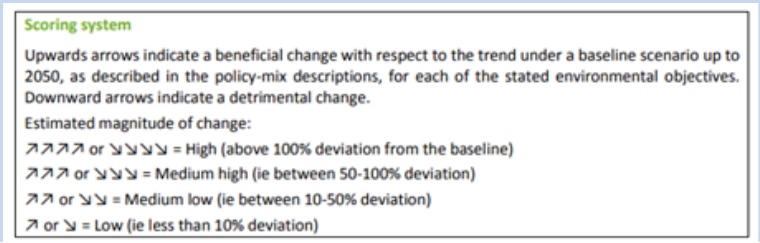
Example. Case 3:

- Objective: to identify ideal policy mixes for absolute decoupling
- Approach: several ex-ante and ex-post qualitative and quantitative analysis.

1. Setting a common framework for the assessment of the efficiency, effectiveness, sustainability and cost-efficiency of policy mixes aimed at achieving decoupling
2. Identifying sources of resource inefficiency from literature and empirical studies (as input for identifying potential policy mixes in Step 4).
3. Assessment of existing policies and policy mixes, through 15 case studies.
4. Based on drivers and barriers for resource efficiency (step 3) and results from the case studies of policy mixes (step 3) 3 promising policy mixes for absolute decoupling were identified.
5. **Ex-ante assessment of the identified 3 promising policy mixes.**

Ex-ante assessment of the identifies 3 policy mixes:

- Several studies were developed to asses potential impacts.
- Among others: social impact and environmental impact
- Scores are given to the instruments and the policy mixes by the expert team of the project, who based their scores on a literature review


Scoring system

Upwards arrows indicate a beneficial change with respect to the trend under a baseline scenario up to 2050, as described in the policy-mix descriptions, for each of the stated environmental objectives. Downward arrows indicate a detrimental change.

Estimated magnitude of change:

↗↗↗↗ or ↘↘↘↘ = High (above 100% deviation from the baseline)
↗↗↗ or ↘↘↘ = Medium high (ie between 50-100% deviation)
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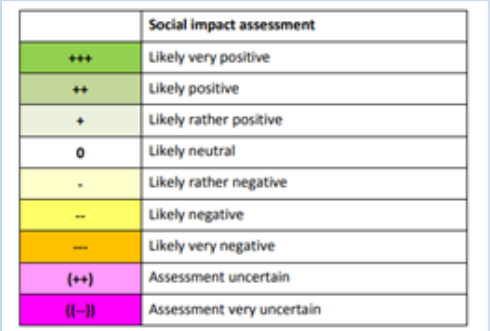

	Social impact assessment
+++	Likely very positive
++	Likely positive
+	Likely rather positive
0	Likely neutral
-	Likely rather negative
--	Likely negative
---	Likely very negative
(++)	Assessment uncertain
((--))	Assessment very uncertain

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

- Relevance of **collecting data systematically**: designing the data collection carefully from the very beginning is a key issue for evaluating policy-mixes

Example.
Case 1. Qualitative evidence collection template

Table 3-1: The evaluation synthesis template

A. **Coverage:** Intervention title and period

B. **Rationale and objectives:** Interventions aligned with the relevant market failures, PSA targets, DSOs, productivity drivers and BERR categories[33] and described in terms of their target beneficiaries, spatial areas, sectors and/or technologies

C. **Methodological approach:** Nature of the evaluation and period covered, research methods used and their assessed robustness

D. **Spend and outputs:**
   - **Expenditure:** Total spend on the intervention – by the main spending department, other public sector sources and private sector – both for the period covered by the evaluation and the intervention as a whole
   - **Gross outputs:** Nature of gross outputs and their quantification
   - **Net outputs:** Nature of adjustments to gross outputs and their quantification – deadweight, displacement, substitution, multipliers, leakage, unforeseen effects, institutional and infrastructure effects – and quantification of the resultant net outputs

E. **Outcomes:** Categories of primary outcomes generated (economic, human, social and environmental capital) and specific nature of the outcomes, their expected duration and their quantification

F. **Impacts:** Extent to which the evaluations assessed:
   - the impacts of the intervention on contextual conditions and the form of any quantification of the impacts
   - effectiveness against objectives and provided estimates of cost-effectiveness and cost-benefit ratios

G. **Competition or complementarity:** Extent to which the evaluated interventions were strategically and/or operationally competing with or complementary to other interventions

H. **Generalising from the evaluation:** Methods and/or results that could have applications to other interventions

I. **Evaluation recommendations:** The continuing rationale for the intervention and its delivery methods

J. **Commentary:** Any other observations on the evaluations and their relevance to the synthesis study.

Source: SQW Consulting

Extract of the template

G. Competition and complementarity		
G. Competition and complementarity		
G: Does the evaluation itself consider competition and complementarity between this and other interventions	*Ga: Please select one of the coded options* *. Yes* *2. No* *3. Unclear*	*Gb: Please provide further details*
G2. Does the evaluation provide information on beneficiaries progression to another scheme as a result of increased awareness?	*G2a: Please select one of the coded options* *. Yes* *2. No* *3. Unclear*	*G2b: Please provide further details*
G3. Does the evaluation provide information on progression as a result of the intervention increasing the beneficiaries capacity to participate in other schemes or programmes?	*G3a: Please select one of the coded options* *. Yes* *2. No* *3. Unclear*	*G.3b: Please provide further details*
G4. Does the evaluation provide information on the whether participation in the intervention has displaced/prevented participation in another intervention?	*G4a: Please select one of the coded options* *. Yes* *2. No* *3. Unclear*	*G4b: Please provide further details*
G5. Does the evaluation provide information on whether the intervention complements or displaces	*G5a: Please select one of the coded options* *. Yes*	*G5b: Please provide further details*

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

➢ **Counterfactual analysis**

- **Quantitative data** is the main input for counterfactual analysis -> data might be the main constraint of this method
- Important to count with **data from the same indicators for several years** (before and after the interventions).
    - •might be difficult in recent implemented instruments or for analysing policy-mixes when the instruments implementation differs in timeframe.
- The **definition of the control groups is the most important** step as results will be conditioned by that definition.
    - •This also depends on the data…

Relevant steps for a policy-mix evaluation

4. Collecting and analysing data.

- **Counterfactual analysis**

Example. Case 4:

Policy mix: Innovative Public procurement/ R&D subsidies to firms

Data: Survey conducted to European firms (2006-2008)

Distinction of three types of companies:

- Beneficiaries ONLY of R&D grants
- Beneficiaries ONLY of PPI
- Beneficiaries of BOTH programmes

Treatment	Number of firms
R&D subsidies	1140
Innovative Procurement	573
R&D subsidies only	500
Innovative procurement only	341
Innovative Procurement and R&D subsidies	183

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

➢ Counterfactual analysis

Example. Case 4

Control groups

Description	N. treated firms	N. of firms in control group
Firms receiving subsidies	1108	3723
Firms receiving innovative public procurement contracts	551	4277
Firms receiving tax credits	1082	3655
Firms receiving only subsidies	462	2708
Firms receiving only innovative public procurement contracts	273	2708
Firms receiving only tax credits	483	2708
Firms receiving subsidies and tax credits	403	2708
Firms receiving subsidies and innovative public procurement	85	2708
Firms receiving innovative public procurement and tax credits	75	2708
Firms receiving all policies	84	2708

Once defined the treated groups, control groups and pool of firms allocated to each group:

- the technique matches every firm from the control group with one of the treated group with similar characteristics (through **Propensity Score Matching**): calculating the probability of being treated within the units in the control group, according to a set of characteristics.
    - Useful for **identifying non-participants with the same probability of being beneficiaries** of the instruments than the treated group.
- difficult to find two firms with same characteristics -> use **of estimators, eg: NNM (*Nearest Neighbour Matching*).** It matches each treated unit with the most similar unit in the control group according to their propensity score.

Control variables: Size, age, domestic or international company, sector, country.

Variables for measuring impacts in behaviour : R&D expenditure

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

- **Meta-evaluation**
  - Good approach when counterfactual not possible
  - It is useful **to stablish quality criteria to assess robustness** of previous evaluations

Example Case 1:

Components for analysing robustness of evaluations:

1. Scope: Does the evaluation cover all the issues?
2. Design: Is the evaluation method well designed?
3. Data: Does it generate and use reliable data?
4. Analysis: Does it use reliable techniques to assess causality?
5. Robustness: Are the judgements transparent and justifiable and the limitations clear?
6. Impartiality: Are conclusions and recommendations based on the evidence and adequate benchmarks?

- **Desk research and expert evaluation**.
  - Scoring system, useful for analysis and providing simplicity to results.

Example. Case 3:

Scoring system

Upwards arrows indicate a beneficial change with respect to the trend under a baseline scenario up to 2050, as described in the policy-mix descriptions, for each of the stated environmental objectives. Downward arrows indicate a detrimental change.

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Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

- **Desk research and expert evaluation**.
  - Relevance of stablishing **guidelines and templates** to ensure same assessment criteria.

Case 3. Guidelines for case studies.

Evaluation of policy mix: effectiveness (environmental sustainability)
• Does/did the policy mix result in a positive environmental outcome? • Were its stated objective(s) met? Were the instruments used sufficient to meet the objectives? • Did other, unforeseen/unintended positive outcomes or impacts (environmental, social, economic) result? Did other such negative outcomes or impacts result? • Were these objectives set at a level to meet environmental needs (e.g. avoid crossing environmental thresholds/tipping points or achieve more sustainable levels of resource use/extraction (e.g. maximum sustainable yield (MSY) in fisheries)? • Which sectors/actors were identified as having key impacts/influences on the problem/issue? (e.g. specific industrial/ business sectors, consumers, economy as a whole?) Did any of the instruments specifically target these key sectors/actors? Was there significant take-up/implementation of (voluntary) instruments by these sectors? • Was the policy mix applied to a sector previously not targeted by policies on the issue under question, or in a new area/issue – thereby aiming to stimulate change? • What were the anticipated and actual outcomes, impacts and effects of the policy mix on the behaviour of sectors and actors targeted? (e.g. reductions in emissions from industry, increased recycling rates, increase/decrease in certain product purchases, etc.). • Relationships between the instruments, identifying positive/negative influences on the overall policy mix or on key instruments in the mix, as well as any positive or negative impacts from changes to the mix (introduction or termination of instrument(s), increase or decrease in tax/levy/charge, etc.). Level of 'connectivity' (strong, weak) between each instrument and the primary one(s). • Are there any indicators, monitoring systems, review processes or other monitoring mechanisms in place to track progress?
Evaluation of policy mix: efficiency (economic sustainability)
• Is/was the policy mix considered cost-effective? • What has been the level of impact on resource use of the policy mix (the effect)? • What have been the costs of implementing the policy mix for target audience (e.g. business, households, etc.)? • What are the costs (financial, human) of implementing the policy mix for the implementing authority – i.e. the administrative/transaction costs? • Were sufficient resources made available to ensure an effective implementation of the policy-mix? • Was anything foreseen in the policy-mix to address competitiveness concerns (e.g. use of exemptions) or minimise transaction costs (e.g. thresholds below which monitoring wasn't required)? • Did the policy mix involve providing financial support (e.g. subsidies, low interest loans, tax breaks etc.) to key actors (e.g. sector, households, etc.)? • Did the measures generate revenues (e.g. in the case of taxes) and if so, was revenue recycled/re-

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

- **Seminars, surveys and interviews**:
  - a means to incorporate different voices in the evaluation process
  - Useful for assessing behavioural additionality

Example - Case 2

Level of analysis	EU level: 50 OPs	Programme level: 8 OPs	Policy instrument level: 3 instruments
Evidence base	- Statistics at national and regional level - Literature - Programming and implementation documents - Interviews with almost 190 policymakers, implementing bodies and experts - Monitoring indicators - Previous evaluations and studies	- Programming and implementation documents - About 230 interviews with policymakers, implementing bodies, experts, SMEs and other stakeholders - Monitoring indicators - Previous evaluations and studies	- Programming and implementation documents - Interviews with policymakers, implementing bodies and experts - Surveys of about 700 beneficiary SMEs - Data on projects and beneficiaries
Methods of data collection and elaboration	- Almost 40 country experts were in charge of collecting the relevant information - The huge amount of information collected was summarised in a concise and structured way - Quality and consistency checks were carried out by the Core Team on a continuous basis	- Eight case studies were produced in a narrative and mostly qualitative form - A stakeholder seminar was organised to discuss the findings emerging from the case studies	- Three online and telephone surveys - Statistical analysis through regression models - Bayesian Networks Analysis
Outputs of the analysis	- Stylised facts explaining SMEs' growth and innovation - Taxonomy of ERDF policy instruments - Identification of patterns in the use of policy instruments - Preliminary propositions on intervention logics - Collection of available evidence on performance - Identification and clustering of beneficiary SMEs	- Analysis of the rationale and relevance of the policy mix impacting SMEs in relation to the context - Assessment of the appropriateness, effectiveness and efficiency of the instruments funded by the OPs - Identification of examples of good practice in the use of policy instruments	- Detailed reconstruction of the intervention logic, structured according to combinations of Context variables-Mechanisms-Outcomes - Test of the causal chain of the theory of intervention - Test of an innovative methodological tool
Deliverables	- First Intermediate Report Vol. I: summary report - First Intermediate Report Vol. II: 50 OP summary fiches	Second Intermediate Report	Third Intermediate Report

Source: CSIL.

Relevant steps for a policy-mix evaluation

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4. Collecting and analysing data.

- When data not available, **research evidence and secondary data** from statistical sources can be used as **proxies**

- Creation of **composed indicators**, a good practice for analysing the contribution of instruments to policy goals.

Example - Case 1.

Performance score defined by four factors (critical of interventions that improve productivity in a cost effective way)

- low public expenditure per beneficiary
- high number of assisted beneficiaries
- high net/gross output % (=high additionality)
- high contribution to productivity drivers.

Table 3-3: Variation in performance components scores across the evaluated interventions

Scores	Public expenditure per beneficiary	Number of evaluations	Number of beneficiaries	Number of evaluations	Net/gross output %	Number of evaluations	Contribution to productivity drivers	Number of evaluations
5	Less than £2,000	5	Over 100,000	2	More than 80%	1	Very high (>75%)	8
4	£2,000-£5,000	6	10,000-100,000	5	60-80%	17	High (51-75%)	18
Scores	**Public expenditure per beneficiary**	**Number of evaluations**	**Number of beneficiaries**	**Number of evaluations**	**Net/gross output %**	**Number of evaluations**	**Contribution to productivity drivers**	**Number of evaluations**
3	£5,000-£50,000	9	5,000-10,000	3	50-60%	9	Moderate (25-50%)	15
2	£50,000-£200,000	10	1,000-5,000	10	40-50%	10	Low (<25%)	8
1	Over £200,000	10	Less than 1,000	24	Less than 40%	12	Very low (none or negative)	3

General lessons

For analysis of consistency of policy instruments…

- **To define which are the types of interactions that we want to analyse**. What exactly are we going to evaluate? What do we mean by the different concepts?

Example. Case 1.

Complementarity interventions	*Those that reinforce each other and, by doing so, increase the likelihood that policy objectives will be met.*
Competitive interventions	*They pursue mixed objectives with the same group of stakeholders and/or in the same policy domain and at the same time (…) or (…) they provide apparently duplicate or competing services.*

General lessons

For analysis of consistency of policy instruments…

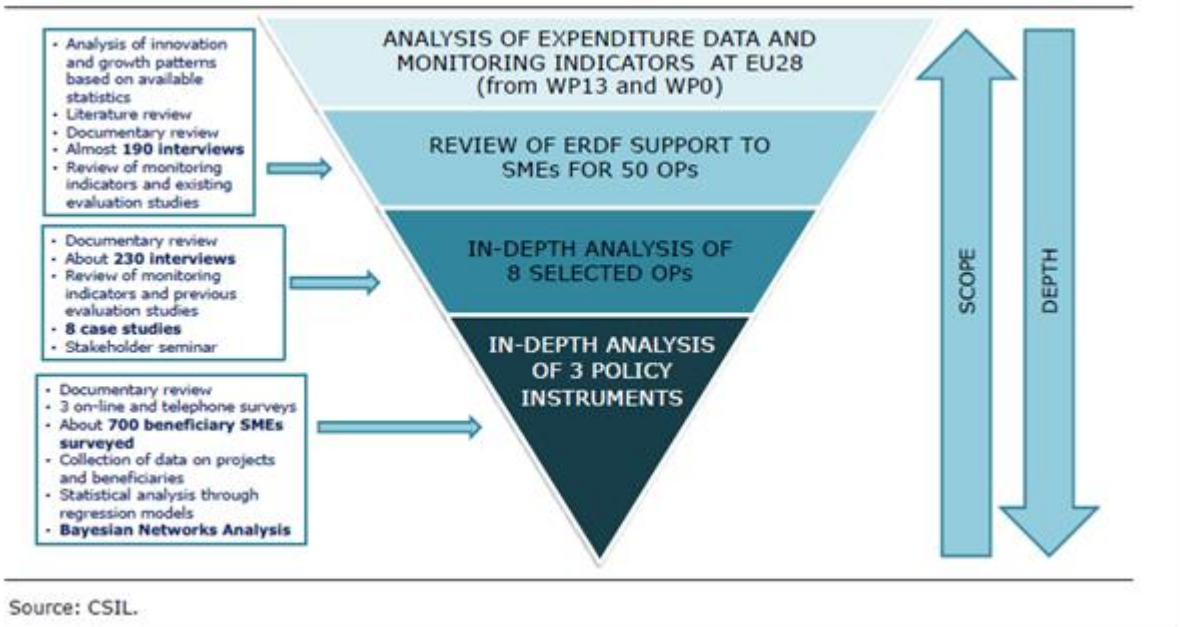
- **Different methodological options**:
  - Most common approach: expert desk research
  - Counterfactual analysis, suitable approach to identify causal effect of instruments and their combinations, but:
    - When beneficiaries are firms (large number of beneficiaries)
    - Not applicable when low number of beneficiaries (e.g. universities)
    - It requires specific knowledge on quantitative tecniques

Lessons learnt: general lessons

For analysis of consistency of policy instruments with strategic goals…

- It can be useful to take a **level approach (funnel-tunnel)**

Example. Case 2.



Source: European Commission (2016, p.9)

General lessons

For analysis of consistency of policy instruments with strategic goals…

- **Meta-evaluation**:
  - a viable option for analysing contribution to strategic goals, also from a multi-level approach (e.g. contribution to national goals)
  - A good exercise for assessing monitoring systems (data needs)
  - Difficult to apply exclusively quantitative methodologies, due to usual data gaps - > complement with qualitative methods

- **Ex-ante / ex-post?**

- Ex post for assessing interactions and contribution of existing instruments,
- ex-ante can be useful to assess potential impacts and analyse different combinations (like seen in Case 3)

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Questions/Comments welcome

Project smedia