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THE ROLE OF EVALUATION IN PRIORITY-SETTING AND POLICY MAKING

Experts' group on R&D priority setting and evaluation

Meeting EIA - *Evaluating R&D*

November 10th, Brussels

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Technopolis

- Spin-off from SPRU, Sussex University, 1989
- Focus on research and innovation policy, with a strong evaluation component
- About 85 people
- 1500 projects
- 9 countries
- Largest organisation in the field in Europe - probably the world

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Content

- Technopolis and the evaluation of energy R&D policy and programme
- Introduction (context and definitions)
- Key question and key message
- Priority-setting and evaluation methodology (relevance and effectiveness)
- Ex ante evaluation and priority setting
- Limitation of the link between evaluation and priority setting
- Conclusions : added value and best practices of tailored-made evaluation for priority-setting

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# Previous experiences in the field of R&D programme evaluation and studies

- Evaluations of FP5 and FP6 energy research programme (ex post), FP6 Environment (ex post), FP6 ICT in Transport (ex post), FP7 transport (interim)
- Evaluation of the doctoral programme of the French energy agency
- Ex post evaluation of the French national advanced transport research programme (PREDIT 2 and 3)
- Ex post evaluation of the French green building research programme (PREBAT)
- Mid-term evaluation of the Centre for renewable electric energy conversion

- Fuel cell roadmap for French ministry of industry
- Support to the building and promotion of a "French FP7 strategy"
- Support to INNER Eranet
- …

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Introduction
Context

- On the energy side, the imperative for new energy solutions (technology, use,...)
  - *the rise of environmental concerns*
  - *the end of the oil paradigm*
  - *global competition for new energy solutions*

➡ Need for more effective and ambitious energy R&D policy

- On the policy side, the decision process become increasingly complex
  - *more participative (more actors involved, from different horizons)*
  - *increasing number of layers (decentralisation, agencification,...)*
 - *need to do more with less, decreasing resources*

➡ Need for better informed and more effective priority-setting

Introduction
concepts and methods

- Evaluation
  - *The systematic application of social research procedures for assessing the conceptualisation, design, implementation, effects of public actions in order to improve its relevance, effectiveness, efficiency, coherence, sustainability,...*

- *Overall conceptual framework based on the intervention logic*
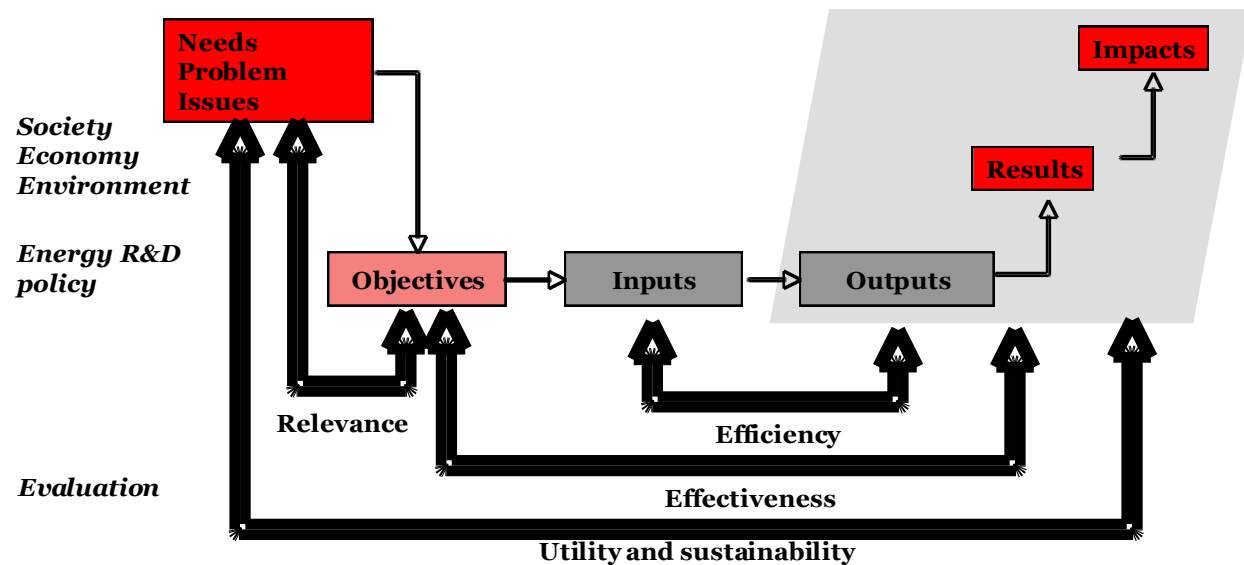
Introduction

concepts and methods

- Priority-setting
  - *Different types of priority-setting*
    - Thematic
    - Functional
  - *Different levels of priority-setting*
  - *Different types of priority setting processes*
    - Top-down / bottom up
    - Expert-based / participatory
    - …

Key questions and messages
key questions

Evaluation of energy R&D policy	**?**	Priority-setting in energy R&D policy

- **Which evaluations?**
- **When?**

- **How ?**
- **What barriers?**
- **What good practices?**
- **What?**
- **To what extent?**

- **Which priorities ?**

- **What other sources?**

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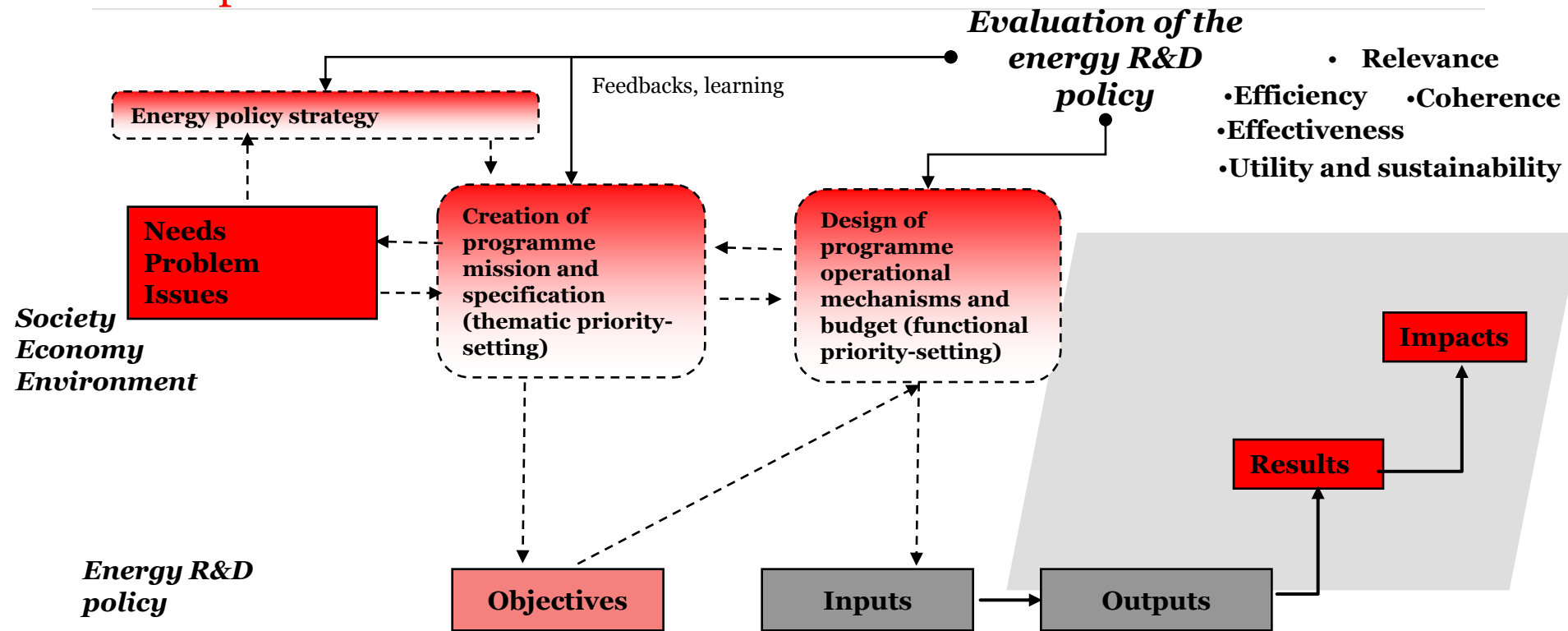# Key questions and messages
key messages

- Evaluation is an essential component of the strategic policy intelligence that (should) support priority-setting...
    - *but it is not the only one*
    - *it should be used in combination with others (roadmapping, foresight, needs assessment consultation, market survey...)*
- Evaluation can play different roles in thematic and functional priority-setting
    - *in most cases, evaluation should not be used alone to make radical choice among technologies / thematic objectives*
    - *evaluation is essential to functional priority-setting*
    - *ex ante evaluations can provide essential elements to priority-setting*

Priority-setting in the evaluation methodology
concepts and methods

Evaluation of the energy R&D policy

- Relevance
- Efficiency
- Coherence
- Effectiveness
- Utility and sustainability

Feedbacks, learning

Energy policy strategy

Needs Problem Issues

Society Economy Environment

Creation of programme mission and specification (thematic priority-setting)

Design of programme operational mechanisms and budget (functional priority-setting)

Impacts

Results

Energy R&D policy

Objectives

Inputs

Outputs

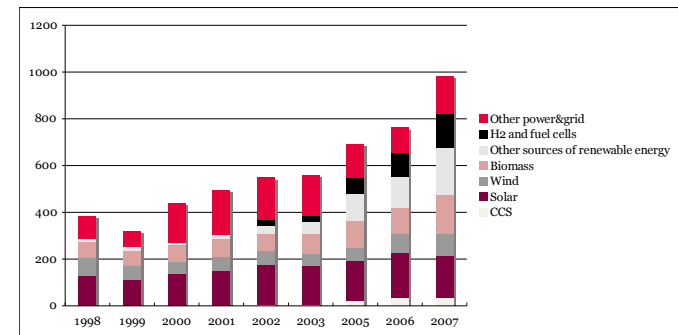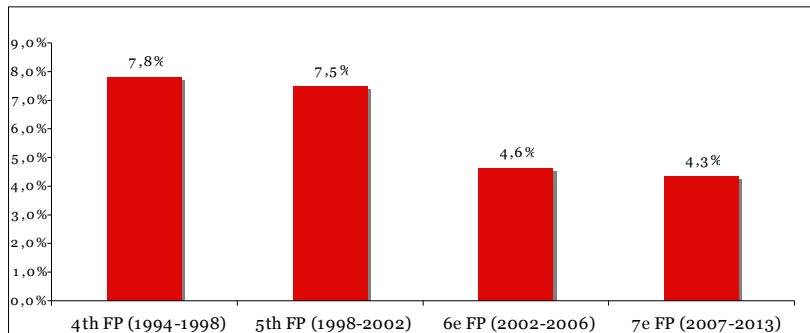# Priority-setting in the evaluation methodology
Relevance

- Definition
  - *The extent to which the objectives of the intervention are in line with the needs of the beneficiaries and/or the social, economic and environmental problems the intervention aimed to address*
- Methodology
  - *Interviews with experts, programme owners, policy makers,*
  - *Needs assessment and challenge analysis*
- Strong link to priority-setting issues, 2 main components to be evaluated
  - *Content : assessment of the fit between (initial and current) needs and objectives*
  - *Process : assessment of governance mechanisms and procedures that allow objectives design and adaptation*

Priority-setting in the evaluation methodology

Relevance example of the evaluation of the FP5 and FP6 energy research programme

- Content
  - *Objectives were in line with the main challenges (key issues addressed, FP6 more focused than FP5)*
  - *Decrease of the budget for NNE research in FP6 diminished in both relative and absolute terms, despite the policy intentions (White paper on energy for the future, Kyoto protocol,…)*
  - *Decrease of relative importance of EC supported research in the NNE area relatively to overall EU effort (from approximately 25% to approximately 15 to 10% according to areas)*
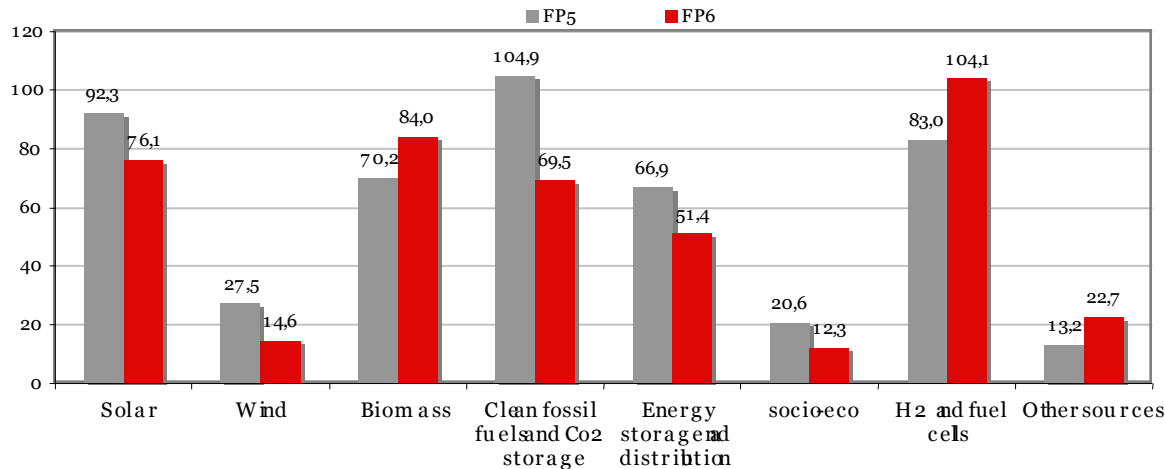
Priority-setting in the evaluation methodology
Relevance example of the evaluation of the FP5 and FP6 energy research programme

- Process
  - *Some areas have benefited from the expertise / advises of Technology Platforms in order to inform work programme on research opportunities (better targeting), however the link could be improved*
  - *Decision process over allocation of budget among technology areas not clear (down : wind and clean fossil fuel research; up : H2/fuel cells, biomass)*

Bar chart comparing FP5 and FP6 across energy technology areas:

Area	FP5	FP6
Solar	92,3	76,1
Wind	27,5	14,6
Biomass	70,2	84,0
Clean fossil fuels and Co2 storage	104,9	69,5
Energy storage and distribution	66,9	51,4
socio-eco	20,6	12,3
H2 and fuel cells	83,0	104,1
Other sources	13,2	22,7

Relevance

- Process
  - *apparent determinants of priority-setting: maturity of technology, existence of a market for this technology and anticipated progress*
  - *the rationales of the maturity of the technology and existence of early markets can be misleading*

	Technology maturity	State of market deployment	Medium-term Potential	Budget size	FP5-FP6 budget trend
Solar	– Embryonic (new generations)	– 1st generations	– High	– High	Down
Wind	– Intermediate	– 1st generations	– High	Low	Down
Biomass	– Embryonic (new generations)	– 1st generations	– High	– High	– Up
Other sources	– Embryonic (Ocean, high T geothermal)	– No market	Low	Low	– Up
	Mature (Hydropower, Low T geothermal)	Mature market for traditional technologies	– Medium/High	Low	–
Clean Fossil fuels	– Embryonic (CCS)	– No	– Medium	– High	– Up
	Mature (other)	Mature market for traditional technologies	Low	– Low (FP6)/Intermediate (FP5)	Down
Storage & distribution	– Embryonic (new generations)	Mature market for traditional technologies	– High	– Intermediate	Down
Hydrogen & Fuel cells	– Embryonic	– 1st generations on market	– Medium	– High	– Up

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Priority-setting in the evaluation methodology
Effectiveness

- Definition
  - *The extent the intervention's activities/ outputs/ outcomes/ long-term impacts correspond with its objectives*
- The link between the evaluation of effectiveness and priority setting is complex
  - *Thematic priority-setting: a low effectiveness in one area should not lead to discontinue support to this area since research has the right to / should sometimes fail*
  - *Functional priority-setting: evaluation can provide essential information to better target beneficiairies (based on the measurement of additionality for instance) and better design instruments (large projects in FP6...)*
- Methodology
  - *Survey, interviews, peer review, scientometrics,...*

Priority-setting in the evaluation methodology

Effectiveness
example of the evaluation of the FP5 and FP6 fuel cell projects

- Lowest level of outputs produced

- Lowest level of economic results on the organisation of the respondents

- Lowest level of impacts of projects on energy and the environment

Outputs produced by the respondents or its organisation as a direct result of their project

Outputs Produced	Hydrogen and fuel cells	All NNE areas
Conferences, seminars and other events	85%	88%
New or improved tools, methods or techniques	82%	83%
Other publications	63%	78%
Newly qualified personnel (e.g. MSc, PhD, etc)	62%	67%
Publications in refereed journals or books	60%	77%
New or improved models and simulations	59%	67%
New R&D strategy	52%	63%
New or improved processes	53%	56%
New or improved demonstrators, prototypes or pilots	43%	55%
New or improved products	37%	45%
New or improved services	34%	42%
Software or codes	27%	31%
New or improved norms or standards	23%	25%
Patent applications	18%	24%
Copyrights	10%	20%
Licenses sold	2%	7%
Other outputs	28%	30%
Number of respondents	104	462

- In FP7, the level of funding dedicated to fuel cells was reduced...
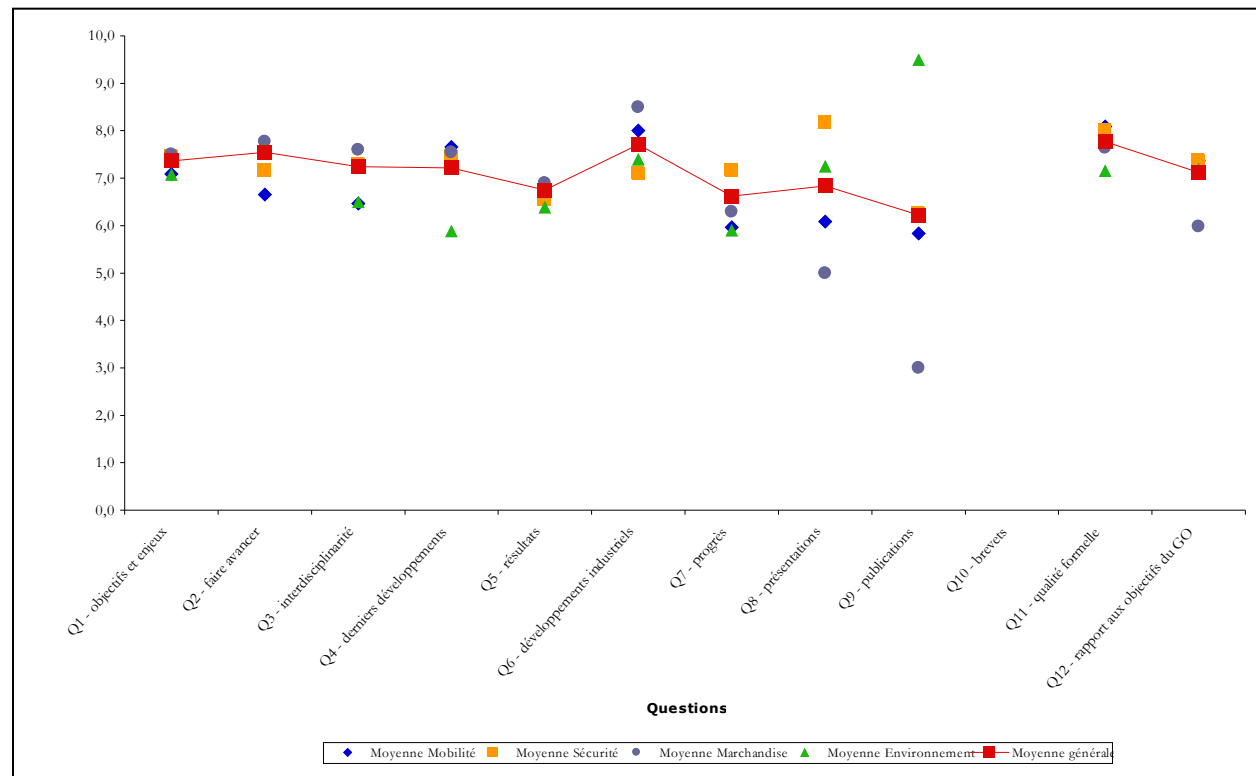- ... as did the national authorities (in Europe and the US) earlier

Priority-setting in the evaluation methodology

Effectiveness
example of the evaluation of PREDIT 3

- Peer review of 54 projects

- Three themes : environment (green), freight (blue), safety (yellow)
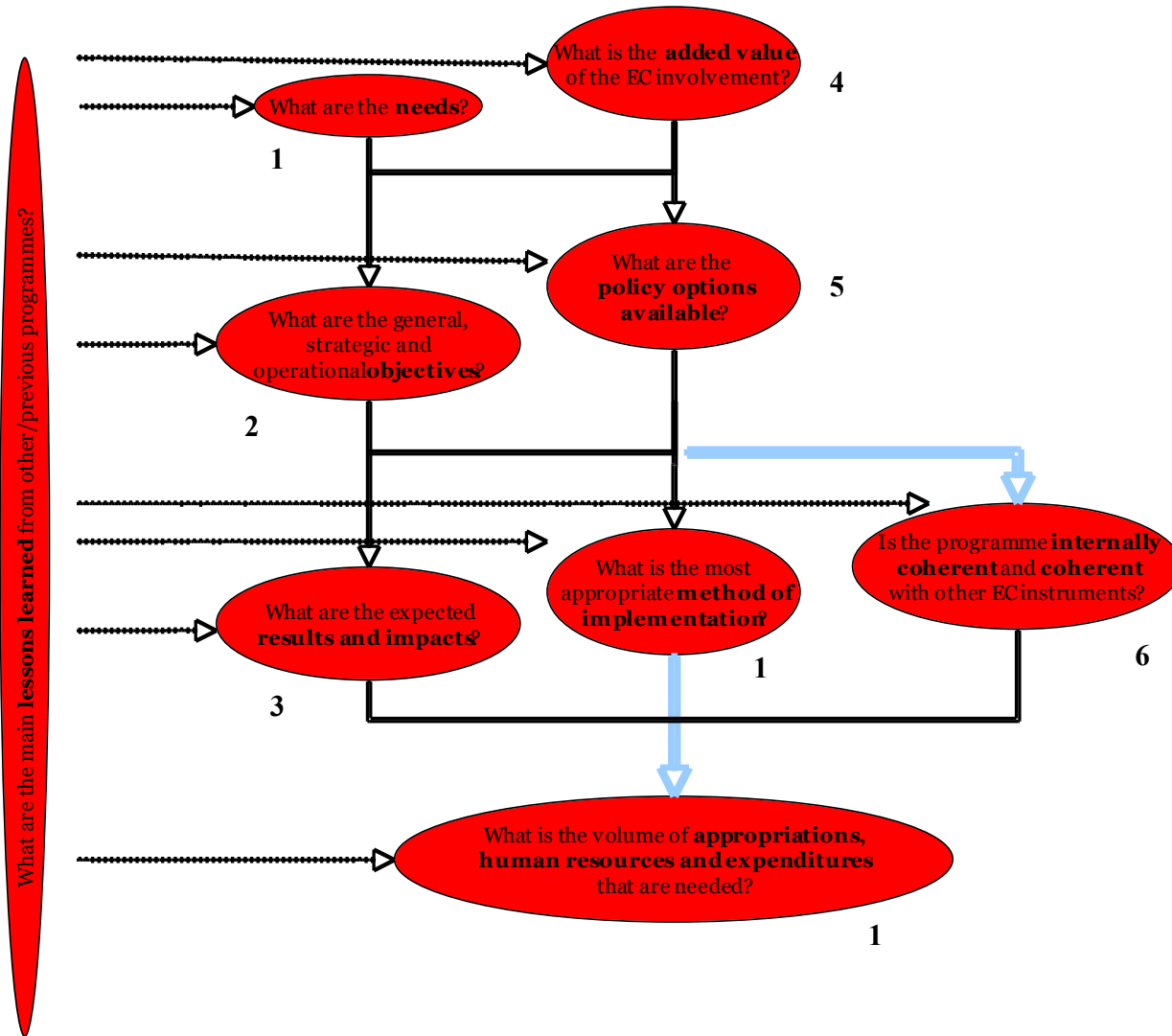
- Comparison to the average (red)

- Objectives
  - *gather information and carry out analyses that help to define objectives, to ensure that these objectives can be met, that the instruments used are cost-effective and that reliable later evaluation will be possible*

For instance: the ex ante evaluation of Intelligent energy- Europe II

Ex ante evaluation and priority-setting

- Support to
  - *implementation,*
  - *fine tuning of the intervention,*
  - *scaling and scoping,*
  - *legitimation,*
  - *link with other programmes*

- Can provide very useful insights to priority setting
  - *If not too formal*
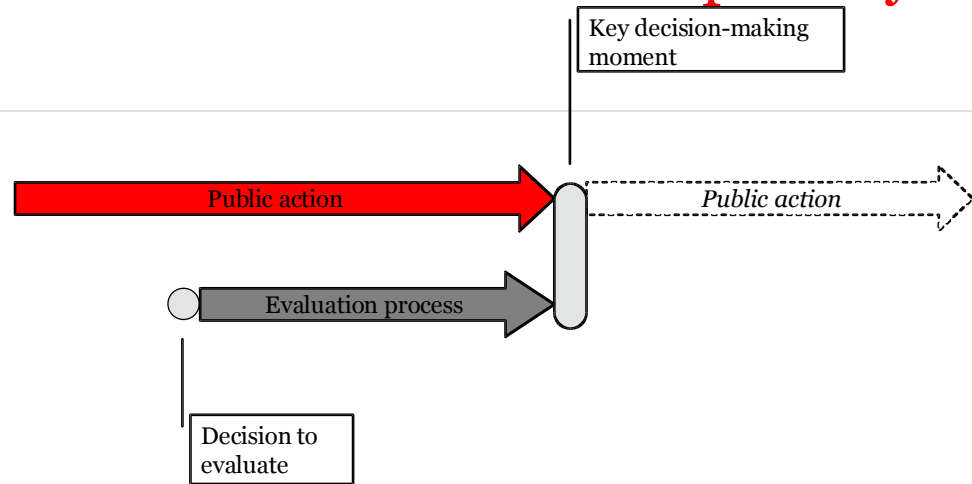 - *if not too close from the programme owners*

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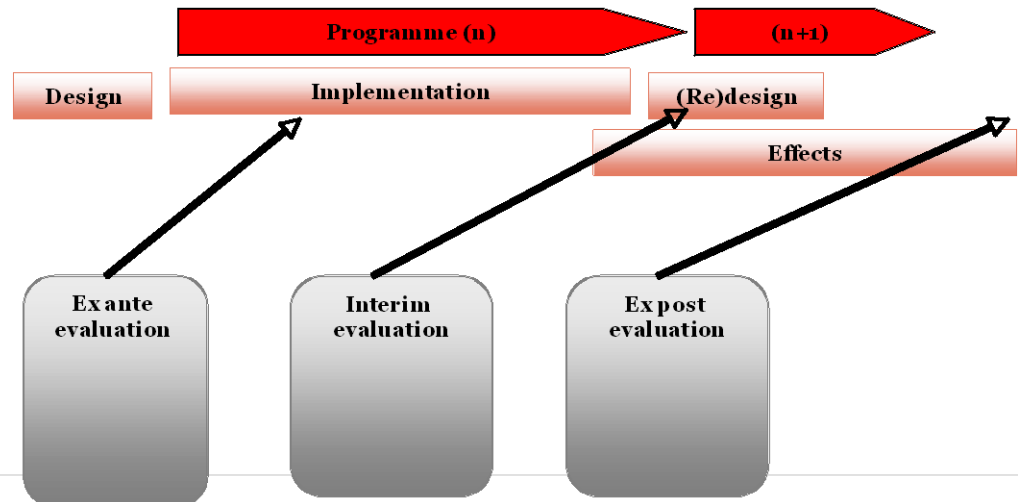# Limitations of the link between evaluation and priority-setting

- Several factors limit the added value of evaluation for priority-setting
  - *Path-dependency in policy formulation (budgetary procedures, indivisibility, cumulativeness of knowledge, technology trajectories, capture of policy makers,…)*
    - Framework programmes : (Vinnova report)

  - *Different perimeter of evaluation and priority-setting*
    - evaluation most often act within a given policy or programme, not between them

  - *Different timing of evaluation and priority-setting*
    - Evaluation results must be available at key decision making moment
    - Evaluation provides better results after the end of a given intervention…

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Limitations of the link between evaluation and priority-setting

- Synchronising evaluation and key decision-making moments is essential

- But unfortunately not often the case, time gap
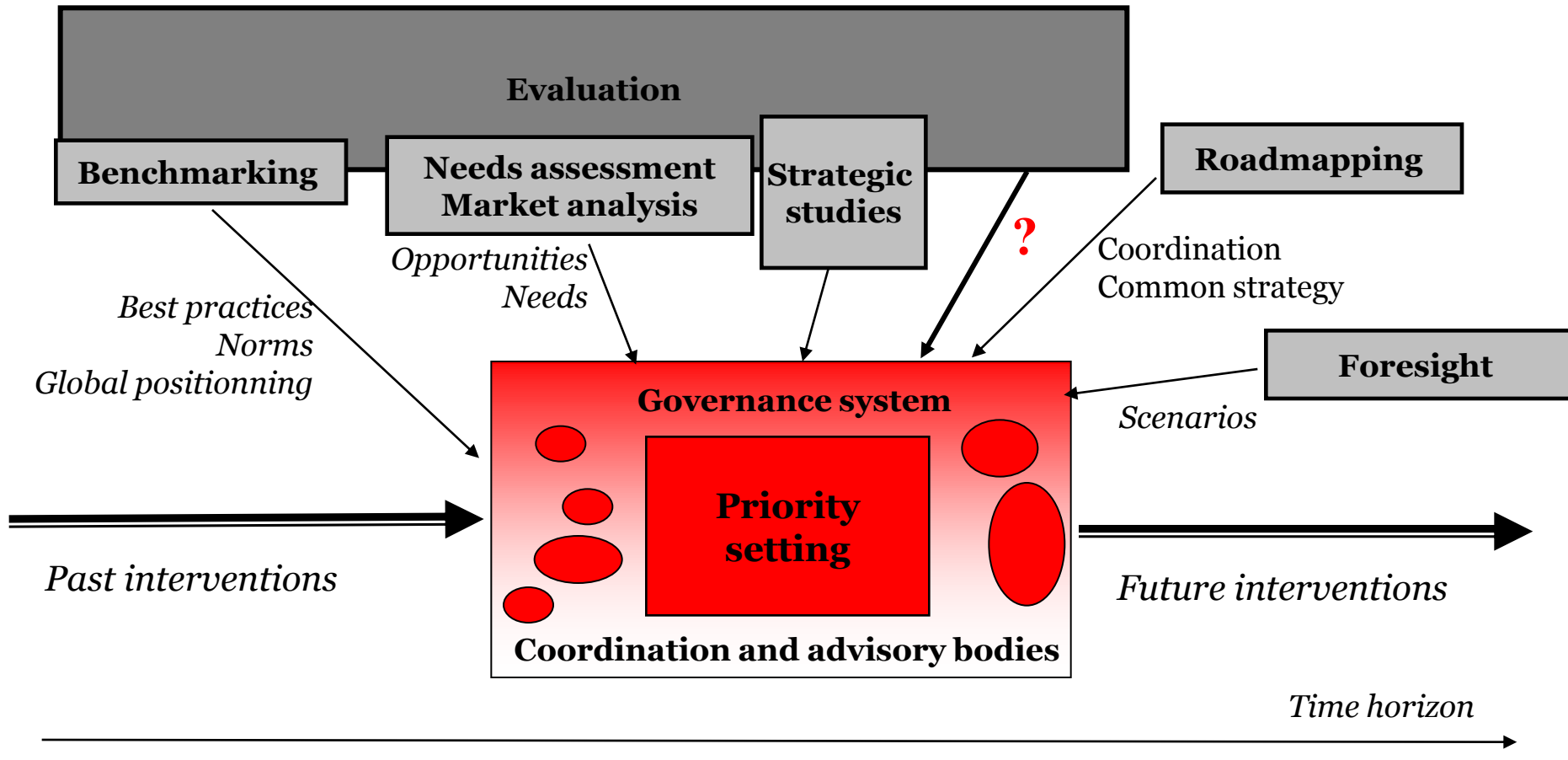

Key decision-making moment

Public action

Public action

Evaluation process

Decision to evaluate

Programme (n)   (n+1)

Design   Implementation   (Re)design

Effects

Ex ante evaluation   Interim evaluation   Ex post evaluation

Limitations of the link between evaluation and priority-setting
example of FP evaluation
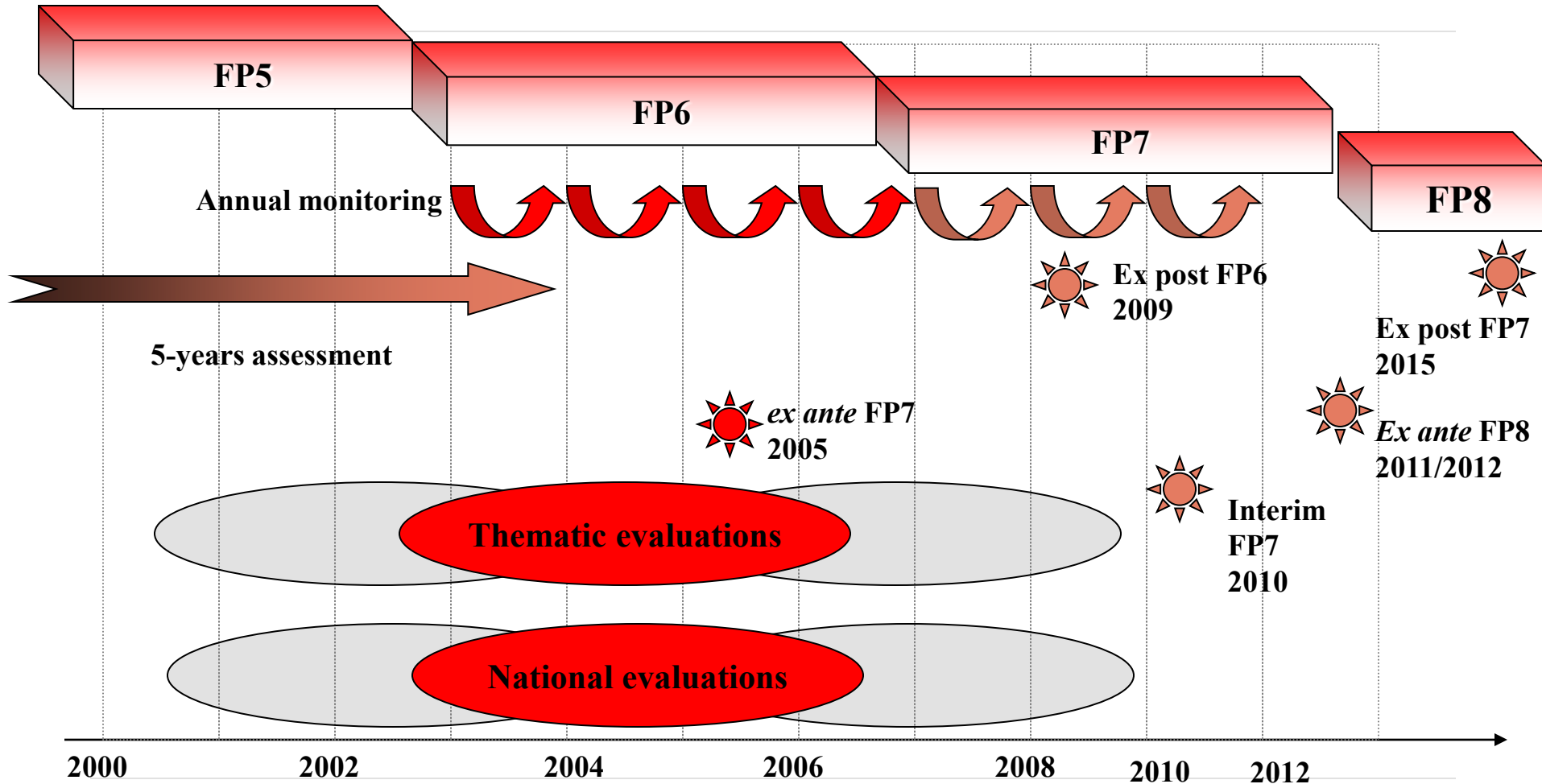
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FP5

FP6

FP7

FP8

Annual monitoring

5-years assessment

Ex post FP6 2009

ex ante FP7 2005

Ex post FP7 2015

Ex ante FP8 2011/2012

Interim FP7 2010

Thematic evaluations

National evaluations

2000   2002   2004   2006   2008   2010   2012

22

Source: EC DG Recherche - Neville Reeve

Conclusions
The added-value of evaluation for priority-setting

| Evaluation of energy R&D policy | ? | Priority-setting in energy R&D policy |

- **Summative evaluation** feeds into priority-setting information on
  - *current and future needs (challenge analysis, survey, interviews with potential beneficiaries…)*
  - *the relevance of objectives to needs*
  - *the capacity of the policy/programme to identify needs*
  - *the decision-making process that allows / impede priority-setting*
  - *the real (sometimes hidden or unknown) de facto priorities*
  - *the extent to which the objectives have been met*

Conclusions
The added-value of evaluation for priority-setting

| Evaluation of energy R&D policy | **?** ---→ | Priority-setting in energy R&D policy |

- **Formative evaluation**
    - *provides incentives for policy makers to actually set and focus upon clear priorities*
    - *provides analytical tools for more sound priority-setting*
    - *provides an information system (indicators,...) for more effective « priority accountability »*

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Conclusions
Best practices for feeding evaluation into priority-setting

- Maximising the utility and use of evaluation findings depends on the implementation of a deliberate strategy aimed at <u>ensuring that evaluations are focused on user needs</u> :
  - *Anticipating the timing of the information needs of users*
  - *Focusing an evaluation on precise information needs through the use of evaluation questions*
  - *Involving key stakeholders (inc. Owners) in the evaluation process, including the drawing up of the evaluation questions*
  - *Keeping a regular check on the progress (schedule and relevance) of the evaluation through the intermediate deliverables and subjecting the draft final report to a thorough quality control*
  - *Tailoring evaluation outputs to users and implementing a diffusion strategy that is user focused*

  - *Setting evaluation also at policy level, not only programme level*

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Conclusions
best practices for feeding evaluation into priority-setting

- Maximising the utility and use of evaluation findings depends on the implementation of a deliberate strategy aimed at <u>ensuring that evaluations results will reach decision-making and will be used</u> :
    - *Enlist the political level when possible (e.g. regional policy level)*
    - *Always try to deliver the results of the evaluation at a higher hierarchical level that the one that actually ordered the evaluation*
    - *When possible, set up a two step evaluations process with an evaluation team and a formal (high-level) evaluation committee*
    - *Recommend the setting of a formal process for reviewing the recommendations (incl. action plan)*

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Thank you

technopolis |group| has offices in Amsterdam, Ankara, Brighton, Brussels, Frankfurt/Main, Paris, Stockholm, Tallinn and Vienna

Key questions

- Which evaluations are more appropriate for particular technologies or distribution systems?
- Which mechanisms are the most successful in feeding evaluations into priority-setting and budget allocations?
- What role do evaluations play in ad hoc, across-the-board, top-down budget restrictions?
- Which significant policy decisions have been made based on evaluations?
- What are the key elements in that decision-making process?
- How can these lessons be replicated?