# EVALUATING R&D

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European Commission, Conference Centre Albert Borschette, Rue Froissart 36
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Rationale

Government budgets for energy technology research have declined significantly in real terms since 1980. Yet across the globe government leaders have underlined the need to take action to accelerate deployment of energy technologies. As a result, many governments have increased expenditure, and in a few cases quite substantially, in order to add impetus to existing RD&D programmes and projects, or to explore new, and in some cases, frontier technologies.
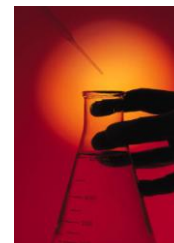
An entirely different trend can be seen in the private sector, where R&D expenditures have increased consistently since 1980. However, given the recent worldwide economic downturn, multinational companies are more mindful of reducing costs. And R&D budgets are often one of the first allocations to be reduced.

In both public and private organisations, raising awareness, setting priorities, allocating funding, and designing programmes are all necessary ingredients for technology breakthroughs. However, what ensures that moneys allocated are well-managed or that programmes are successful? Programme evaluation, whether before, during or after project completion, is essential. Whether carried out systematically or on an ad-hoc basis, evaluations provide key information that enables more balanced, informed decision-making. And, as a result, save precious resources.

This event is the last topic in the three-year work programme 2008-2011 of the IEA Committee on Energy Research and Technology (CERT) Experts' Group on R&D Priority Setting and Evaluation.

Scope

This event will focus on identifying effective processes for evaluating R&D programmes and the mechanisms for feeding these evaluations back into priority-setting and policy making. Overall questions to explore include:

➢ What types of evaluations are the most successful? What are the keys to that success?

➢ What tools and methods are used? Are they well-defined and transparent?

➢ In which cases are quantitative assessments more valuable than qualitative evaluations (e.g. peer review)?

➢ Which criteria or metrics have been shown to be the most representative?

➢ Depending on the stakeholder or end-user, which type of evaluation is most valuable?

➢ What are the respective roles of researchers and management in evaluations?

➢ What is the scale of stakeholder involvement (laboratories, clients, tax-payers) that reaps the most rewards?

➢ Are best-practices from one programme or project shared with another programme or project?

➢ Is there a correlation between funding modalities (frequency, length, disbursement mechanisms) and programme success? How do evaluation results feed into planning and portfolio decision making?

➢ What are the limitations of evaluations?

➢ Which programmes have successfully integrated performance measurement?

The discussion will be organised in two sessions. First the timing and mechanisms of evaluation, notably:

➢ **Ex-ante:** justifying the choices for future priorities and setting programmes and projects in place

➢ **In-process:** regular reviews of programme and project advancement

➢ **Ex-post:** backward-looking review of how and why a programme was a success or failure

The second session will focus on the ways in which evaluations feed into priority-setting and policy-making. A round-table among participants to share significant policy decisions that were made based on evaluations, and the key elements in that process that were found to be the most effective will close the event.

Target Group

In addition to national experts, the EGRD is seeking input from academia, multinational enterprises, as well as those sectors with the largest share of civilian R&D – pharmaceuticals, electronics and biotechnology. If you wish to participate, please contact Carrie.Pottinger@iea.org.

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TIMING AND MECHANISMS OF EVALUATION

1. <u>**Ex-ante: Synchronizing the Clocks**</u>

   Due the time lag between investment and return, the outcomes of R&D are difficult to evaluate in advance. In addition, decisions on which projects to fund or which strategic competence to pursue must be made under considerable market uncertainty and technology uncertainty. Yet priorities must be set and decisions made. This session aims to focus on the elements of the selection process.

   Questions for discussion:

   ➢ *What types of information are the most useful when assessing R&D needs and opportunities?*

   ➢ *What are the most efficient ways to evaluate project proposals and performers?*

   ➢ *What is the role of institutional frameworks in the selection process?*

2. <u>**In-process: Keeping Pace in the Race**</u>

   Though evaluations carried out in-process are by far the most labour-intensive, they have the capacity to ensure that projects stay focussed, within budget and are able to keep to deadlines. This is important when a project has several phases, as funding allocation for subsequent phases may depend on the success of the first phase. In addition, in-process evaluations are the most convenient for managing input from multiple stakeholders.

   Government Performance and Results Act (GRPA) requires that when budgets are proposed (ex-ante) that metrics be established for performance and then as you submit your next budget you have to go back and prove what progress you've made as a programme rather than a project. It is imposed on all kinds of other research programmes not only energy R&D (e.g. feeding children at schools in poor neighbourhoods).

   Questions for discussion:

   ➢ *Which types of information are the most appropriate for in-process review (quantitative or qualitative)?*

   ➢ *What are the tools and methods used? Are they well-defined and transparent?*

   ➢ *Which programmes have successfully integrated performance measurement?*

   ➢ *What is the role of input from multiple stakeholders in the review process?*

3. <u>**Ex-post: Back to the Future**</u>

   Whether ad-hoc or systematic, ex-post evaluations are the most widespread, particularly as the success of a particular programme or project is a reflection on those that agreed to provide the funding. But the success or failure of a programme is dependent on a myriad of factors. Reflecting back over the lifetime of a project provides key information that enables managers to realign processes and reporting methods to either avoid a similar fate or to replicate best-practice for other projects.

   Questions for discussion:

   ➢ *Is there a correlation between funding modalities (frequency, length, disbursement mechanisms) and programme success?*

   ➢ *Is evaluation of programme success or failure more pertinent on a project or portfolio level?*

   ➢ *What are the most efficient structures to measure success? Failure?*

   ➢ *How are programme benefits quantified?*

THE ROLE OF EVALUATION IN PRIORITY-SETTING AND POLICY MAKING

R&D evaluation in all its forms affects priority-setting. Carrying out the evaluations is fundamental. But it is also essential is that the evaluation results are used by R&D planners when designing programmes or investing in technologies, and by policy makers when setting targets. Many technologies have very ambitious cost goals. Knowing which mechanisms of feeding evaluations into priority setting are the most successful will play a role in driving down costs and raising performance.

Questions for discussion:

➢ *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?*

ROUNDTABLE: KEY OUTCOMES

Participants are invited to share those significant policy decisions in their organisations that were made based on evaluations, and the key elements in that process that were found to be the most effective.