SENSER

SYNERGIES BETWEEN EUROPEAN AND NATIONAL STRATEGIES FOR ENERGY RTD

EXECUTIVE SUMMARY

GENERAL SYNTHESIS REPORT

TOPIC REPORT

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1. Introduction

SENSER: Synergies between European and National Strategies for Energy RTD, a research project funded by the European Commission, started in March 1996, and is co-ordinated by Novem, the Netherlands. This project can be considered a follow up to the PANEL project, which reviewed national Energy R&D management in five European countries. The PANEL project recommended a full review for all European Member States.

The objective of SENSER was to provide a full review and comparison of energy RTD strategies in all the countries of the EU and to analyse the synergy between the national and EU-level RTD programmes. To accomplish this, a data and information base has been assembled, from which key indicators were developed to advise EU policy makers on four main topics, each related to a specific aspect of the national management of non-nuclear energy RTD:

- Evaluation and Monitoring of RTD;
- Technology Characterisation and Foresight;
- Analysis of Factors Driving Energy Markets;
- Targets for EU Intervention.

The SENSER project was carried out by members of the E^{n}R-network. Countries involved cover all European Member States with the exception of Luxembourg, but including Norway. Four topic area leaders, forming the core team of SENSER, were responsible for the analysis of the results. These topic leaders were respectively ADEME (FR), Novem (NL), ETSU (GB), and ENEA (IT). National teams were responsible for writing country reports following the four topics.

2. Method

The core team started the project by establishing instructions for the writing of country reports. On the basis of this specified instruction document, the national teams have produced country reports, in which relevant data on national energy RTD policies has been gathered and made available according to a standardised format. Next, with the establishment of the four topic reports, a rich information base on Member States' practices in the strategic management of energy RTD has been built up.
The results of the topic areas were discussed at a combined ATLAS/SENSER meeting with the Commission and the core team, and with national teams during a workshop.
Conclusions relevant to the four topics were drawn together by the core team in a general synthesis report. The topic reports and the synthesis report have been reviewed by representatives of the European Commission and industries in the successive Member States.

A final seminar will be organised together with the presentation of the THERMIE ATLAS project. This will be held after the completion of the ATLAS project, probably in the autumn of 1998.

3. Results and main conclusions

The objective of the project has been achieved. The main results and conclusions are summarised below.

- *SENSER: from 'indicators' to the process of strategic decision-making.*

The main results of the SENSER project are the country and topic reports, whereby a rich information base on Member States practices in the strategic management of energy RTD has been built up. In addition, SENSER raises highly relevant issues for European level strategic decision-making on energy RTD, which may contribute directly to the improvement of co-ordination between European and Member State energy RTD strategies. These issues are addressed below.

- *A general decrease in overall energy RTD budgets.*

Overall government and private sector energy RTD budgets are decreasing in most of the Member States, partly due to liberalisation of energy markets and privatisation of energy industries. Second, there is a decline in the perceived importance of energy security due to the present regime of low energy prices and increased international trade in energy.
Third, there seems to be a progression towards maturity for certain technologies, and an associated switch in focus away from basic R&D towards demonstration and market deployment measures.

- *Balances between short-term and long-term research.*

The decline in budgets mentioned above has an impact on how long-term research is funded. A decline in funding by national governments and private industry for long-term R&D was observed, whilst at EU level funding remains constant. There is no reason to think that this trend will change in the coming years .

- *Balances between nuclear and non-nuclear energy RTD.*

A key observation was that nuclear energy RTD, although declining in total volume, still holds a dominant position within the European energy RTD portfolio. This has been observed for EC budgets (76% in 1994), as well as for the total overall expenditures in the EU Member States, where the share of nuclear energy RTD ranged between 58% and 60% of total energy RTD in the period 1990-95. It is outside the scope of the SENSER project to address issues related to nuclear energy RTD. Nevertheless, it is impossible to neglect the fact that nuclear energy RTD absorbs a large part of EC energy research budgets compared to budgets devoted to RTD on non-nuclear technologies.

- *Complementarity in European and national research topics.*

It was clear that the programmes of the EU and the national governments are generally complementary. The issues covered by the EU are generally of interest to a reasonable number of Member States, and are in line with EU objectives, whereas topics which are of interest to only one or two Member States are usually supported by national governments. However, there is at least one area where the magnitude of research effort does not appear to match the importance of the topic for both EU and national government objectives – this is R&D for RUE in transport.

- *Integration of research and market implementation strategies.*

The ultimate aim of public funded energy research is to contribute to the (future) sustainability of the energy system. Successful penetrations of new technologies in the market are generally rare phenomena, since the majority of innovations fail in this decisive test of the 'battle for customer acceptance'. It is for this reason that the majority of Member States are trying to combine energy R&D priorities with specific market development measures.
Co-ordination between R&D and market implementation strategies at the EU level and co-ordination between these EU-level activities and the more integrated R&D and market strategies in the Member States should be looked upon as contributing to the improvement of market success of R&D initiatives.

- *Methodological support for strategic decision-making: toward a common vocabulary for past and future evolutions.*

A final important issue emerging from the SENSER project concerns the methodologies to support strategic decision-making. The different countries use very different mixtures of a variety of approaches, which are either more 'foresight', or more 'evaluation' oriented. Furthermore, it is striking that in most countries no explicit relations exist between 'technology characterisation and foresight' and 'evaluation of non-nuclear energy RTD'. This is regrettable since both aim to improve the quality of energy RTD strategies and could benefit from mutual learning.

4. More co-ordination of European energy RTD strategies

SENSER has proven that it is able to fulfil three complementary roles:

(1) As a **practical tool** the SENSER project has gathered and summarised a large amount of relevant information on energy RTD in the Member States in a relatively short period of time. A high level of detail was achieved by involving all national energy agencies and the E^nR network. SENSER thus constitutes a valuable source of information not only for national and European decision-makers in the area, but also for other bodies such as the IEA.

(2) As a means of **identifying** current market drivers, SENSER has fulfilled the role of interface between national developments on the one hand, and the European decision-makers on the other. The observations show that, over the years, policy objectives, market developments and technological promises driving energy RTD activities vary widely. Two conclusions about the approaches towards energy RTD strategy development can be drawn from this. Firstly, regular updating on actual technology and market developments should be carried out, and results should be widely exchanged and discussed with relevant decision-makers at both national and EU levels. Secondly, to prevent 'zigzagging' energy RTD strategies, attention should be paid to implementing assessments to identify promising (robust) technologies on which to focus energy RTD activities.

(3) Finally, the type of work conducted under the SENSER approach can typically provide the technical **support** needed to shape the political debate on energy RTD issues between Member States, and between Member States and European levels. The results from SENSER have shown that it becomes increasingly difficult in Europe to draw up national non-nuclear energy RTD policies without taking into account what happens in other countries, or at the EU level (the balance between long and short term being probably the most striking example). Both in Member States and in the EU choices are made which increasingly depend on, and influence, each other. The technical support lent by the work conducted under the JOULE-SENSER project is able to draw out the important issues for debate. It can thus contribute in a positive way to the improvement of co-ordination between the national and EU-level.