Scientific Report of an ESF Exploratory Workshop on a Transdisciplinary review of a proposed Agenda for Social Science Research Related to Long-term Energy Options (ASRELEO) [EW06-237]

2007-08-10/tf

1. Executive summary

Long-term energy options (> 40 years) pose complex technical and societal problems as society and technologies develop with time. The inadequacy of technology introduction as a “technical” solution to these problems argues for a larger role for the social sciences. Non-technical aspects of energy systems have become highly relevant if not decisive in forging a sustainable energy future. Processes of technological innovation and institutional and societal decision making about energy futures are embedded within and shaped by a host of social, economic, and political factors. The need for greater engagement, reflection, and cooperation of the technical sciences with the wider social-science community was the driving force of the project Agenda for Social-Science Research on Long-term Energy Options (ASRELEO). The workshop (Exploratory Workshop, hence EW, in ASRELEO terms: Workshop II) was designed to review, in a discursive manner, a working paper on a 2-year project on the needs for social science to assess sustainable energy systems, which, in turn was partly based on the outcome of Workshop I held in October, 2006, where select researchers gave input presentations. The EW articulated them, raised and helped maintain corresponding awareness among social scientists, and supported decision makers in formulating respective research policies.

The following aims underlay the overall project (and, thus, the EW):

- Articulate the needs to assess (long-term) sustainable energy systems by social science;
- Raise and help maintain awareness among social scientists to address energy-related issues and challenges;
- Support decision makers in formulating respective research policies.

The two-year undertaking was ambitious. To avoid offhand and, from an individual social-science disciplinary viewpoint, incompetent work, it was decided to follow an open, discoursive, and process-based review approach, comprising six steps:

1. A broad-based and large (13-member) international Organising Committee (OC) was invited to discuss a first outline prepared by the ETH team (Core Team).
2. The OC proposed and contacted over 80 renowned social-science researchers of diverse professional and national backgrounds in the broader energy-environment field. Half of them submitted contributions on approaches, methods, results, and challenges on topics proposed by the OC.
3. A dozen key presentations from distinguished researchers were selected to stimulate discussion in a dedicated two-day workshop (Workshop I on 5–6 October 2006, with 24 participants from eleven countries). Its objective was to delineate research issues and ways to approach them.
4. Based on the outcome of this, the report team sketched a working paper.

5. The paper was reviewed at the EW (Workshop II) on 1–2 February 2007 by a broader audience, namely practitioners and research policy officers, the OC and invited participants of Workshop I.
6. The Core Team integrated the feedback and drew up a second draft, to be commented on by participants and invited reviewers, and wrote a final report under the auspices of the Organising Committee in July 2007.

Step 5, namely the EW, was a key link in the process as it involved policy bodies to discuss the various research needs with researchers themselves in a transdisciplinary way[1]. Being even called "exploratory" it suited the open meta-research approach of the overall project just ideally. It constituted a milestone in the overall project triggering the basis for a submission within the framework of the EUROCORES 2007 call (www.esf.org/activities/eurocores.html).

[1] "Transdisciplinarity aspires to make the change *from research for society to research with society* … mutual learning sessions ... should be regarded as a tool to establish an efficient transfer of knowledge both from science to society and from problem owners (i.e. from science, industry, politics etc.) to science" (R. W. Scholz (2000): Mutual learning as a basic principle of transdisciplinarity. In: ib. et al. (eds.): Transdisciplinarity: Joint problem-solving among science, technology and society. Proc. of the International Transdisciplinarity 2000 Conference, Zurich, Feb 27–Mar 1, 2000. Workbook II: Mutual learning sessions. Vol. 2. Haffmanns Sachbuch, Zürich, p. 13).

2. Scientific content of the event

With the Exploratory Workshop (EW) it was planned to achieve the following output:

- Trigger a discourse on societal aspects of long-term energy-environment options among diverse social science communities (in the workshop);
- Analyse the pertinent long-term research issues to be published in a final report (in the workshop);
- Based on the discourse, propose a mid-term research agenda (5 years) for social science focused on long-term energy options (up to 100 years) (with "validation" through the workshop).

As may be judged from the programme (section 4), the core of discussion was to scrutinise a "working paper" to be the basis of the final report of the overall project. The participants followed, and seemingly lived up to, the introductory "instructions" of the document:

> The status of this document is that of a working paper. It should correspond to the structure of the final report but invites the Workshop II participants to critical co-operation in each chapter (see Questions at the end of each). Such a procedure follows the process-oriented approach of this project. Each chapter represents an element of the R&D agenda to be formulated. So we put up for discussion not only the agenda itself but this structure. It should enable the addressees of this report to draw up an Agenda for Social Science on Long-term Energy Options for their own needs. It is true that this working paper (and, later on, the report) contains a draft agenda in its final chapter (Chapter 7) – but in actual fact, it is considered to be an initial substantive proposal and an incitement for further development, in the sense of a "learning agenda".

The participants succeeded in agreeing on the main directions (and structure) of the final report (see Appendix). This is remarkable taking into account that they hold different perspectives and half of them had hitherto not been engaged in the project (see sections 5/6).

The open approach and "learning" atmosphere of the EW is substantiated by two facts:

- a comparison of the working paper (called "draft report" in the Programme) and the actual final report (Appendices 1 and 2), and
- the revision of the EW Programme upon the dynamics of the debate (marked in section 4).

According to the EW discussion the following considerations should serve as operational guidelines when developing an R&D agenda:

- *Clearly specify target audience*
  It is insufficient to state overall issues. Statements or propositions are more productive if they are addressed to defined audiences, such as a determined research policy body or a defined research community.

- *Stick to challenges but address several different levels*
  The challenges must be broken down to various levels and scales (regional, national, global; short-term, mid-term, long-term).
- *Make the link between the challenges and social science explicit*
  This relates to specifying the audience. The researchers, including research communities, must be able to relate to the challenges with respect to their paradigms, ongoing research, and state of the art.
- *Show potential users what social science can contribute ("added value")*
  In turn, users such as politicians or government officials must recognise the research value in terms of their own needs.
- *Start with examples ("success/failure stories")*
  Ordinarily users are laypersons with respect to research and, consequently, not familiar with the respective thinking, framework, and terminology. If they are presented concrete examples, for example, in day-to-day applications of their "world", they find it easier to understand, and indeed accept, research findings.
- *Emphasise "learning by doing"*
  Working from externally induced challenges, and not topics defined by scientific disciplines, one finds the issues change over time and evolve, are subject to different framing and contexts, and are treated by different players. This fact implies considerable learning abilities by all involved and a lack of a one-size-fits-all approach.

3. Assessment of the results, contribution to the future direction of the field

The EW enabled a wide range of scholars and practitioners to exchange their views: from nine countries, three supranational institutions (including ESF) and two international companies. Since all of them were recommended by the Organising Committee they were not isolated but connected due to their record and activities while still independent, also of project dynamics (see composition in section 5). Very different scientific communities were invited, so it was seen to it that no harmful groupthink in research approach was encouraged.

Because the aim of the overall project was to set up a research agenda regarding long-term options, the focus was on shaping the development in science policy and on benefit for respective decision makers. The mix of researchers and managers both in industry and administration (2/3 vs. 1/3) opened up the spectrum of perspectives, enabled mutual learning and helped to facilitate partnership in future activities.

Future collaborative research activities indeed were stimulated, in particular the

- joint submission of a proposal within the EUROCORES Call for Themes 2007 in June 2007 (www.esf.org/activities/eurocores.html), and the
- book publication, a plan approved by a major scientific publishing house and to be carried out in the second half of 2007.

In addition, there are meta-level lessons, from the overall project but particularly from the EW: Every researcher, irrespective of scientific field, is socialised in his or her research community and school of thought, which makes it a challenge to overcome mental boundaries and reach out to researchers and users with different perspectives.

4. Final programme and course

Wednesday, January 31, 2007

From 19:00 Supper at the Restaurant Sento of Hotel Plattenhof, Plattenstr. 26, across the street from CEPE (optional) (www.sento.ch)

Day 1 (Thursday, February 1, 2007)

09.00	1	Welcome (Daniel Spreng)
09.05	1a	Presentation of European Science Foundation (Frank Kuhn, Social Sciences Unit, ESF)
09.20	1b	Workshop goals: 1. Discuss draft report, 2. Suggestions for follow-up
09.25	2	Introductory round: Who is who (see list below), why here (flashes)
10.00	3	Discussion and adoption of the agenda: Procedure (Daniel Spreng)
10.15	4	Reflection on Workshop I (Knut Sørensen)
10.25	5	Concise *presentation* of draft report *plus discussion* (according to report Chapters: various presenters in plenary; discussion/comments on questions in final boxes, led by designated participants):
	5a	Ch. 1 Introduction: Objectives, aim, and procedure (Thomas Flüeler)
10.35		Discussion
10.50		Key points of discussion on Ch. 1(GianCarlo Tosato)
11.00		Short break
11:10	5b	Ch. 2 Positions and responsibility of the social sciences (tf, for Gotthard Bechmann)
11.25		Discussion
11.40		Key points of discussion on Ch. 2 (Knut Sørensen)
11:50 – 13:20		Lunch
13.20	5c	Ch. 3 Challenges (Daniel Spreng)
13.40		Discussion
14.00		Key points of discussion on Ch. 3 (Urs Luterbacher)
14:10	5d	Ch. 4 Overview over the repertoire of the social sciences relating to energy research (Thomas Flüeler)
14.30		Discussion
15.20		Key points of discussion on Ch. 4 (Boelie Elzen)
15.30		Break
16.00	5e	Ch. 5 Issues already covered: The state of research (Thomas Flüeler)
16.20		Discussion
16.50		Key points of discussion on Ch. 5 (Harald Rohracher) Discussion ***(modified according to actual course)***
17.15	6	Comments on course of day (all)
17.30		Closing of Day 1
19.00		Joint supper in town at the Restaurant Neumarkt (www.wirtschaft-neumarkt.ch)

Day 2 (Friday, February 2, 2007) (modified according to actual course)

09.00	7	Wrap up of Day 1 (Daniel Spreng)
09.20		Discussion (basically on “Challenges” of energy policy)
09.40	5f	Ch. 6 – Presentation: Issues covered in ASRELEO (Jürg Minsch)
10.00		Discussion (basically on “Challenges”)
10.15		Break
10.45		Discussion cont’d. (basically on “Challenges”)
12.00 –13.15		Lunch
13.15		Discussion cont’d. (basically on “Challenges”)
14.40	5g	Ch. 7 Insights and conclusions for research agenda (Jürg Minsch)
15.00	8	Reflection on exploratory approach (Christian Pohl)
15.10	9	Further work (contributions by participants, all)
15.45	10	Final round: Feedback (chair, all)
16.00		Adjournment: End of workshop

5./6. Participants: Statistical information, affiliation

OC Member of Organising Committee, RP research policy professionals, "n" newcomers to project

No.	Name	Affiliation	Expertise/RP	Country
1.	Harald Rohracher	Res. Center for Technology, TU Graz (U)	Physics, sociology	Austria
2.	Ulrik Jørgensen	TU Denmark (U)	Engineering, economics	Denmark
3.	Christian Eherer	SES, EFDA, Garching (R)	Physics, RP, supranational	Germany/ EFDA
4. n	Jan-Peter Voss (Day 2)	Öko-Institut – Inst. for Applied Ecology, Berlin (NGO/R)	Political science, economics	Germany
5.	GianCarlo Tosato	ETSAP/IEA, Rome; OC (R)	Systems analysis, research processes	Italy/IEA
6. n	Boelie Elzen	U Twente (U)	Sociology (Science-Technology Studies, STS), engineering	Netherlands
7.	Knut H. Sørensen	NTNU, Trondheim; OC (U)	Sociology (STS)	Norway
8.	Thomas Flüeler	NSSI, ETH Zurich; OC, core team, co-author of draft report (U)	Env. sciences, long-term socio-technical systems, decision sc.	Switzerland
9. n	Lukas Gutzwiller	Swiss Federal Office of Energy (G)	R&D policy	Switzerland, government
10. n	Tony Kaiser	CORE, National Energy Research Commission (R)	Industry (Alstom), RP	Switzerland/ company
11.	Urs Luterbacher (Day 1)	Grad. Inst. Intern. Studies, Geneva (U)	Political science	Switzerland
12.	Jürg Minsch (Day 2)	former U Natl Res. BOKU, Vienna; OC, co-author of draft report (U)	Institutional economics, sustainability	Switzerland
13.	Daniel Spreng	CEPE, ETH Zurich; OC, core team, chair, co-author of draft report (U)	Energy analysis, energy economics	Switzerland
14. n	Ellen Wiegandt (Day 2)	Institut Universitaire Kurt Bösch (IUKB), Geneva (U)	Political science	Switzerland/ USA
15. n	Daniel Hersson	BP plc; Long Term Technology, Senior Strategy Advisor	Industry (BP), R&D, long-term technologies, RP	UK/company
16. n	Wesley K. Foell	Resource Management Associates, formerly with U Wisconsin ([U])	Resource economics and engineering	USA
+ n	Frank Kuhn	European Science Foundation, Strasbourg	Observer	Europe
+ n	Christian Pohl (Day 2)	td-net, Swiss Academy of Sciences (A)	STS, evaluation of transdisc. approach	Switzerland

Geographic origin: 9 countries, 3 supranational institutions, 2 international companies
Professional origin: 10 universities (U), 4 other research institutions (R), 1 government (G), 1 NGO, 1 national academy (A), 2 companies
Perspectives: 2/3 researchers, 1/3 research policy professionals [RP, shaded]
Project involvement: 1/2 previously involved, 1/2 "newcomers" to the project
Gender: 17 males, 1 female (original invitation to 41 persons, of which 7 were female)
Age: 35 to 70

Further information on participants

Organising Committee

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GianCarlo Tosato, IEA/ETSAP, gct@etsap.org, www.etsap.org/contactus.asp

Invitees

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Wesley K. Foell, Resource Management Associates. Madison, Wisconsin USA, formerly Professor at the University of Wisconsin, wfoell@rma.com, foell@wisc.edu

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Ulrik Jørgensen, TU Denmark, uj@ipl.dtu.dk, www.mek.dtu.dk/Publikationer/Publikationer-2005.aspx?lg=showcommon&id=1225&type=publications

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Guests

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Christian Pohl, Co-Director td-net, Swiss Academy of Sciences, pohl@scnat.ch, www.env.ethz.ch/environmental_philosophy/group/pohl/index, www.transdisciplinarity.ch/K_CP_e.html, www.proclim.ch/PCInfoSyst.acgi$Detail_Person?49012

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Appendix 1: Table of Contents of Working Paper for the EW (January 2007)

PART I

PART II (Separate document)

Contributions to Workshop I of October 2006

Appendix 2: Table of Contents of draft Final Report (July 2007)