

Orientation Paper

For

*developing a comprehensive strategy for international
Scientific and Technological cooperation in the SET-Plan*

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1. Introduction

The European Strategic Energy Technology Plan (SET Plan) aims at accelerating the development of clean, efficient and low carbon technologies, leading to their widespread market take-up. It sets out a long-term energy research, demonstration and innovation agenda for Europe, including concrete strategic milestones to be achieved in the coming years. The main purpose of the SET-Plan is to employ available resources in a smarter way through joint strategic planning and more effective programming.

The development of the SET Plan main documents and the consultative and legislative process has involved all the stakeholders in the field from industry and financial entities to research community and academia, as well as the EU institutions and the different Member States (MS) and Associated countries (AC). References of the main documents can be found in section 6 of this paper.

On March 12th the EU Energy Council adopted its conclusions on the Commission Communication "*Investing in the Development of Low Carbon Technologies (SET Plan)*" and stressed the need to move without delay to the operational implementation of the technology roadmaps proposed in the Communication.

The Council conclusions also highlight the role of international cooperation (INCO) in the new SET Plan framework. In particular, the Council:

INVITES the Commission to take forward, in close coordination with Member States, existing and recently established forms of cooperation in order to ramp up international cooperation and to improve coordination of the EU actions with key strategic partners in both developed and developing countries, as well as with international organisations, such as the International Energy Agency (IEA) and International Renewable Energy Agency (IRENA).

This document presents a brief state of play of international S&T cooperation on energy in the EU and first initiatives taken so far in the framework of the SET Plan. It also raises particular issues and avenues relevant to open the first discussions in the coming SET plan conferences with the final objective to develop a comprehensive strategy for S&T international cooperation in the SET Plan in line with the Council recommendation above.

2. "State of play" of international S&T cooperation on energy in the EU

In Europe, S&T cooperation in the field of energy is implemented at EU and at MS level. So far there has been no systematic collection or exchange of information about S&T cooperation of the EU and MS with third countries. As a consequence, there is no European comprehensive strategy in this area and the potential risk of duplication and/or overlapping of activities is high. The result is a loss of efficiency and effectiveness at international level. The situation in nuclear energy is certainly an exception as provisions of the Euratom Treaty, art.103, provides to the members the obligation to communicate to the EC draft research agreements or contracts with any third country.

2.1 EU Level

The principles underlying the European framework for S&T cooperation in the EU are described in COM(2008)588 (Ref 6.4). This Communication of the Commission calls inter alia for greater coherence between research activities and other EU policies and for a better coordination of MS and EC resources for S&T cooperation, identifying energy and climate change as some of the key global challenges to be addressed. Responding to this Communication, the European Council called for the development of a European partnership for international S&T cooperation and asked for the set up of a Strategic Forum for International S&T Cooperation (SFIC) as a dedicated configuration of CREST.

Until now, a large part of international cooperation between the European Community and international partner countries takes place under the umbrella of bilateral/bi-regional S&T agreements. The EU Framework Programme (FP) is the main financial instrument for implementing and funding S&T international cooperation activities.

There are about twenty bilateral/bi-regional S&T agreements that provide a structured framework and forum to identify common interests, priorities, policy dialogue, and potential tools for S&T collaboration between the European Community and targeted third countries. However, they do not offer any funds or lay down rules for implementing cooperation activities. All of them include "non-nuclear energy" as a potential area for cooperation. There also exist a small number of specific agreements (or arrangement, or MoU) for non-nuclear energy S&T cooperation between the EC and some targeted countries such as US (DoE), China (MOST), Russia (formerly through FASI) and shortly Japan (METI/NEDO).

In addition there exist about twenty-three cooperation agreements specific to nuclear energy research in force between Euratom and fourteen different third countries. These agreements address a variety of issues including nuclear safety, waste disposal, radiological protection, etc., as well as wider activities such as peaceful uses of nuclear energy. They also include research on nuclear fusion.

Activities under FP7 are spread throughout all the different FP specific programmes, such as "*Cooperation*" where most of the collaborative research is undertaken. Although FP7 is not specifically designed for, or devoted to international cooperation, it is open to the participation of third countries and offers some instruments for implementation. In addition to the "general opening" of programmes and topics to third countries, the main mechanisms used for international cooperation include "Coordinated calls leading to joint research", "Specific International Cooperation Actions" (SICAs), "Targeted openings", "Twinning of projects" and "exchange of researchers". In the field of non nuclear energy, coordinated calls, SICAs and targeted opening have been experimented so far with overall success and with strategic partners to the EU such as US, Japan, Brazil, Russia, China or India, while in the field of nuclear (fission) energy under the Euratom FP, parallel projects (i.e. twinning) are the result of a policy of structured dialogue with key third countries.

The "*Cooperation*" Programme is complemented by the other FP7 specific programmes (Capacities, People, Ideas), which address cross-cutting aspects such as information exchange, identification of topics for collaboration under FP7, networking different

stakeholders, coordination between MS (ERA-NETs), and supporting researchers mobility and career development. Similarly, the Euratom FP addresses specific nuclear-related issues.

The EC is also member of several intergovernmental organisations (IEA, IAEA, NEA, IRENA, CSLF, IPHE, etc) which allow for multi-lateral cooperation mechanisms in the field of nuclear and non-nuclear energy.

2.2 Member State Level

In the field of energy S&T cooperation takes place at institutional level through bilateral agreements between MS and third countries and regions but also through agreements (arrangements or MoU) between public research centres or institutes. However, there is little information available about the existing national policies and activities of EU Member States and Associated Countries. For example, Sweden and Finland have active cooperation with the US in the area of biofuels; Sweden has also launched the 'One big thing' initiative with US (encouraging bilateral cooperation in alternative energy technology); the UK has launched joint projects with India in solar, and cooperates with US in CCS. It is clear that there are many other instances of such international cooperation activities. In nuclear energy research, there are several bilateral agreements between EU Member States (notably France, Germany, Spain and UK) with several third countries under the umbrella of the Euratom Treaty.

Recently the EC and the MS started to work in partnership in the Strategic Forum for International S&T Cooperation (SFIC) mentioned above which has as one of the priorities to get a more systematic and broader involvement of all the S&T stakeholders whenever strategic policy decisions are prepared, discussed and implemented. The Task Force II of SFIC has taken "energy" as a suitable topic to develop a pilot initiative with an industrialised country such as the US and is interacting closely with the SET Plan Steering Group.

3. SET Plan International Cooperation Overview

COM(2007) 723 final and COM(2009) 519 final (Ref 6.1 and 6.5) point out the need to ensure coherence and critical mass in European S&T international cooperation efforts to achieve the objectives of the SET Plan. Such cooperation should address the developed as well as the emerging/developing countries where appropriate. Therefore "the measures proposed in the SET-Plan (e.g. the Steering Group, European Industrial Initiatives and the European Energy Research Alliance) should bring about a reinforced international cooperation strategy" (Ref 6.5).

3.1 EIIs

Although the international dimension is recognised as a very important aspect of the SET Plan, it has not been the highest priority during the elaboration of either the EII roadmaps or the EII Implementation plans.

A first exchange of views between the Commission and representatives of the EIIs took place in December 2009. In view of this first discussion, industry recognises the added value of the SET Plan to give the "first mover advantage". The importance of international cooperation is recognised for 'public good' research such as public

acceptance or safety or for R&D of global nature such as to support standardisation. Knowledge sharing can also be the basis for future market entry and collaboration internationally. The developed nations, in particular the US, but also some emerging economies, such as China, figure among each of the EII's potential strategic partners. Regulatory and legal issues – including intellectual property are common issues. EIIs have different specificities, therefore specific actions should be treated case-by-case and for each international collaborative venture.

3.2 EERA

A number of EERA members have well established S&T cooperation agreements with research organisations in third countries and EERA has already started to pave the ways towards the development of a strategy for international cooperation. Representatives of EERA recently made technical visits to the US and Japan with the purpose to meet and seek to establish cooperation respectively with the US DOE Labs and Japanese Institutes/centres in the framework of EERA. During these visits first discussions were held with a view to identifying areas of potential common interest for research collaboration and contacts points were designated on each side.

4. General issues to be considered

In addition to the overall context outlined above, there a number of general issues which need to be borne in mind when considering how to define and implement the international cooperation (INCO) strategy of the SET Plan.

- The INCO strategy in the SET Plan must be global. It must "ensure that the EU increasingly speaks with one voice in international fora, where appropriate, to achieve a more coherent and stronger partnership effect" (Ref 6.5) and then also address specifically the EII technology roadmaps and EERA R&D joint programmes.
- The strategy should be designed to harmonise the interests and drivers of different stakeholders: industry (commercial), research community (knowledge), EC and MS (political), in other words, "to match the *top down* and the *bottom up* approaches". Indeed the SET Plan, which involves all the relevant stakeholders in the field, in its "light" governance structure should facilitate this process.
- With the exception of the Sustainable Nuclear EII (ESNII), the EIIs concentrate more on applied research, technological development and demonstrations than on breakthrough research. The focus of the respective EIIs in this sense could influence the choice of international partner.
- The different drivers or objectives for INCO with different 'categories' of third countries should be acknowledged. The form or aim may vary depending on the third country in question.
 - For example, with developed countries, cooperation may focus on 'public good' research, such as on safety and public acceptance, as well as on longer-term frontier research (Ref 6.5)
 - whereas with emerging economies or developing countries the aim of cooperation may lie more in helping those countries develop and grow in a

more sustainable manner, while building new market opportunities for EU industry and ensuring effective collaboration in accessing and developing resources (Ref 6.5), or in exploring options to enhance capacity building transfer of technology and experiences on implementation of regional sustainable energy policies.

- In addition, any limits to the scope of the INCO strategy should be clearly defined – for example will the strategy extend to the transfer of new technologies, outside of the R&DD phase?
- The EIIs have their own specificities and differences that may lead to different forms of public-private partnerships. The design and/or the rules of these partnerships should be such that they facilitate the development of their INCO strategy.
- There is a need to examine and clarify the role of existing institutional (EU or MS) MoUs, S&T Cooperation agreements, cooperation frameworks etc. in providing a basis for EII and EERA INCO strategies. Links need to be established in a manner which best facilitates the definition and implementation of the SET-Plan INCO strategy while benefiting from the established cooperation frameworks and activities already being implemented.
- Similarly, the role of existing multilateral cooperation frameworks should be considered.
- The interaction between EIIs and EERA INCO strategies also needs to be considered. While separate strategies, a certain degree of coherence/complementarity is nonetheless needed, not only between the EIIs and EERA joint programmes, but also between the EIIs themselves.
- The potential role of universities in the development of the INCO strategy for SET Plan should be considered. There may be scope for involvement depending on the activity and the third countries involved.

5. Basic orientations

- One objective of the INCO strategy should be to focus the use of existing European resources in a more targeted and focused manner. And, where necessary, increase investment considering the specific energy research needs and the specificities of the targeted third countries/regions. This approach would also enhance consistency and exploit the synergies among the various European activities including amongst MS.
- The final goal should be to develop an overall global strategy for INCO in the SET Plan main action lines, which could form an integral part of the EIIs Technology Roadmaps and joint RTD programmes of EERA and which would define specific actions and timelines and allocate budgets.
- The different characteristics of the SET Plan main action lines should lead to the development of distinct strategic approaches - notably towards collaborating with industrialised countries; emerging economies or developing countries. To date, the

EIIs have well defined technology roadmaps and short-term Implementation Plans and the EERA has agreed the content of its joint RTD programmes.

- Once the EIIs and joint programmes are launched with a sufficient base of activities, they should decide in a coordinated manner their individual strategy for INCO, particularly the preferred areas for collaboration, the priority third countries and regions and a timeline for implementation
- The strategy should be based as far as possible on existing cooperation frameworks and agreements as well as successful existing mechanisms/instruments. It should build on best practices at EU, MS and company/research centre levels. For instance FP7 coordinated calls, SICAS or exchange of researchers could be used as illustrative examples of model instruments.
- The EU-US Energy Council could be used as an example of an institutional structure for cooperating with developed countries.
- The strategy and its implementation mechanisms/instruments should be kept as simple and operational as possible without compromising the objectives and normal operation of the EIIs and the EERA.
- The selection of priority areas and third countries for international cooperation should be based on the general principles and practices of reciprocity, common interest and mutual benefit, fair treatment and adequate protection of intellectual property.
- The outcomes of the first discussions at the ES SET Plan conference should be used to define the next steps for the development of a comprehensive strategy for INCO in the SET Plan involving all relevant stakeholders and using existing governance structures to their full effect.
- The SET Plan Steering Group will be central in the discussion and development of the strategy, in collaboration with other involved stakeholders namely: MS through SFIC, industry (through the EII Team representatives) and research community (through EERA), and EU through the EC services (DG RTD and DG ENER).

- **References**

- 6.1 COM(2009) 519 final, Communication on *“Investing in the Development of Low Carbon Technologies (SET-Plan)”*
- 6.2 SEC(2009) 1297, Impact Assessment accompanying the Communication COM(2009) 519 final
- 6.3 SEC(2009) 1295, A Technology Roadmap, document accompanying the Communication COM(2009) 519 final
- 6.4 COM(2008)588, Communication on a *“Strategic Framework for International S&T Cooperation”*
- 6.5 COM(2007) 723, Communication on *"A European Strategic Energy Technology Plan (SET-Plan) – Towards a low carbon future"*