EUREC Agency E.E.I.G. College of Members (41)

Tuesday 6th and Wednesday 7th December 2011
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MINUTES

Tuesday 6th December 2011

Welcome and introduction of the day

EUREC Agency, with the support of the European Photovoltaic Technology Platform, organised a workshop to discuss the main research priorities for the PV sector to be put forward in the next European research programme (Horizon 2020), published at the end of November 2011.

The day was organised in such a way to enable presentations from different European initiatives on their work done so far, and on their expectations for the next research priorities in the PV sector.

EUREC Agency President, Keith Melton, introduced the day by welcoming all participants and presenting the meeting objectives. Various initiatives have been launched at European level in the field of PV since the European Photovoltaic Technology Platform (www.eupvplatform.org), created in 2005 with the aim of bringing together industry, research, academia, and other stakeholders to define common research priorities for the PV sector.

Since the adoption of the Strategic Energy Technology Plan (SET-Plan), more initiatives have been launched in the area of PV: the European Energy Research Alliance (EERA), and its related joint programme dedicated to PV (http://www.eera-set.eu/index.php?index=24), as well as the Solar Europe Industrial Initiative (SEII- PV component) (http://setis.ec.europa.eu/about-setis/technology-roadmap/european-industrial-initiative-on-solar-energy-photovoltaic-energy).

The objective of the workshop is to present and discuss these different initiatives and how they interact, in order to evaluate synergies and overlapping, and to present a coherent set of research priorities for the PV community.

HORIZON 2020: overview of the European Commission's proposal with a focus on the energy component

In order to set the scene, Greg Arrowsmith (Policy Officer at EUREC Agency) presented the main features of HORIZON 2020, which is structured around three parts:

- Societal challenges (linked to policy priorities and societal challenges identified in Europe 2020 strategy)
- Industrial leadership (including enabling and industrial technologies, access to risk finance and support to SMEs)
- Excellent science (including European Research Council, Marie Curie actions, Future Emerging Technologies and research infrastructures)

The overall budget is over 80 billion€, representing roughly a 45% increase in real terms with respect to the previous EU research, development and innovation programmes.
General features of the programme were presented and discussed:

- Horizon 2020 aims at reducing the time to grant by 100 days (externalisation of projects management to external Agencies would help)

- Horizon 2020 is said to have been designed to facilitate the involvement of big companies. However, SMEs are also an important target for the programme, since they should receive at least 15% of the total budget
- Possibility to introduce a "first-exploitation-in-Europe clause" for projects with a specifically strategic value for Europe. No further details are currently available on this point
- The same participating rules will apply for all components of Horizon 2020
- Selection criteria are: scientific excellence; impact; quality and efficiency of the implementation
- Horizon2020 wants to get away from a logic by Work Packages (no more management and dissemination Work Packages) as well as from a logic of instruments. Such an approach, introduced to simplify the rules for participation, devolves decisions on the how to define calls to the Work Programme and/or to proposers:
    - Freedom to propose deviations from eligibility and evaluation criteria
    - Freedom for a "consortium" to be composed of only one partner from one Member or associated State
    - Freedom for the work programme/grant agreement to specify the "first-exploitation-in Europe clause"

  Greg remarked that freedom does not necessarily equate to simplification.
- Funding rates:
    - Maximum 100% for research activities
    - Maximum 70% for demonstration activities
    - 20% flat rate for indirect costs (abandonment of the possibility to identify actual indirect costs)

The proposed budget for energy is **6.3 billion€** (nominal values)**.** This represents more than a doubling with respect to the previous energy research programme + IEE. However, when considering other European Commission-controlled funds, additionally made available for energy innovation that appeared in the 2007-2013 period, the increase for energy is much smaller: 30% if one includes EEPR, 10% if one includes EEPR and the first call of NER300.

The specific objective of the "***Secure, Clean and Efficient Energy***" topic is to make a transition to a reliable, sustainable and competitive energy system in the face of increasingly scarce resources, increasing energy needs, and climate change. The goal is to produce efficient energy technologies and services that can be taken up widely on European and international markets and to establish intelligent demand-side management based on an open and transparent energy trade market and intelligent energy efficiency management systems.

The broad lines of activities of the Energy component of HORIZON 2020 are:

- *Reducing energy consumption and carbon footprint by smart and sustainable use* (near zero-emission buildings, renewable heating and cooling, highly efficient industries, and mass take up of energy efficiency solutions by companies, individuals, communities and cities):
    - Bring to mass market technologies and services for a smart and efficient energy use
    - Unlock the potential of efficient and renewable heating-cooling systems
    - Foster European Smart Cities and Communities
- *Low-cost, low-carbon electricity supply* (innovative renewables and carbon capture and storage technologies):
    - Develop the full potential of wind energy
    - **Develop efficient, reliable and cost-competitive solar energy systems**. The cost of solar energy, covering photovoltaics (PV) and concentrating solar power (CSP), should be halved by 2020 compared to 2010, "if it is to gain share of the electricity market". PV is the only energy technology mentioned in this section of the Specific Programme to receive an explicit reference to long-term research.
    - Develop competitive and environmentally-safe technologies for CO2 capture, transportand storage
    - Develop geothermal, hydro, marine, and other renewable energy options
- *Alternative fuels and mobile energy sources* (biofuels, hydrogen and fuel cells, and new options):

  - Make bioenergy competitive and sustainable
  - Reducing time to market for hydrogen and fuel cell technologies
  - New alternative fuels
- *A single, smart European electricity grid*
- *New knowledge and technologies* (multi-disciplinary research for energy technologies)
- *Robust decision making and public engagement* (former Intelligent Energy Europe)
- *Market uptake of energy innovation* (former Intelligent Energy Europe)

The SET-Plan roadmaps and implementation plans will provide a valuable input for the formulation of the work programmes.

The HORIZON 2020 documents are available on: http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020-documents

European Photovoltaics Technology Platform

Nicola Pearsall (Northumbria Photovoltaic Application Centre), Chair of the WG3 "Science, technology, and applications" of the European Photovoltaic Technology Platform, presented the second edition of the Strategic Research Agenda (SRA), and related research priorities in the selected areas:

- Wafer based Crystalline Silicon
- Thin Film Technologies
- Concentrator PV
- Novel Technologies
- PV systems and integration
- Enabling research, in terms of: standards, quality assurance, safety and environmental aspects; socio-economic aspects

The European Photovoltaic Technology Platform (EU PVTP) was launched in 2005 to bring together stakeholders from industry, research, academia, and other relevant organisations, and to identify common research priorities in the area of PV. EU PVTP has been successful in defining common research priorities, presented in different documents (first version of the SRA- 2007 and updated version in 2011), and in defining a related implementation plan (2009). The research priorities, as mentioned in the SRA, represent the basis to provide input to the European Commission for the preparation of annual Work Programmes. Assuming that PV's share of the energy research budget does not change between FP7 and Horizon 2020 and that the Council and Parliament accept the EC's proposals for the budget of Horizon 2020, PV could expect 80 million € annually from HORIZON2020.

The revision of the SRA supports the objective of the Solar Europe Industrial Initiative, where short-term research should be dedicated to EU industry competitiveness (the SEII is not just about short-term research, though).

The updated version of the SRA can be downloaded here:
http://www.eupvplatform.org/publications/strategic-research-agenda-implementation-plan.html

The European Energy Research Alliance for PV

Philippe Malbranche (CEA-INES) presented the Joint Research Programme of the European Energy Research Alliance (EERA), dedicated to Photovoltaic Solar Energy. The objective of this initiative is to accelerate the development of PV solar energy through the alignment of national RD&D programmes (***applied research*** phase) by:

- Conducting joint research
- Sharing infrastructure
- Exchanging scientists
- Complementing FP7 (and FP8) programmes

The research programme of EERA-PV is divided into five sub-programmes:

- Silicon materials
- Thin film PV

- Organic PV
- Module Technologies
- Education, training and infrastructures

Si cell technology was not included, although it's a highly active area of research, because R&D centres felt their relationships with industry in this highly competitive field would be damaged by too much sharing of information and resources.)

Participation to EERA-PV is limited to research organisations that are willing to commit a certain number of human resources for the development of the joint programme. Its focus is on reducing PV electricity generation cost, which represents the first pillar of the Solar Europe Industrial Initiative (SEII).

More information on this Joint Programme can be downloaded here: http://www.eera-set.eu/index.php?index=24

The European Institute of Innovation and Technology and the KIC-InnoEnergy

Susana Maure-Perez presented the Knowledge and Innovation Community InnoEnergy (KIC-InnoEnergy), an initiative launched by the European Institute of Innovation and Technology (EIT). KIC-InnoEnergy is a legal entity, composed of 29 European partners (companies, research institutes and universities), active in the field of energy (who pay a cash contribution for the privilege) and 60 associated and network partners (who pay nothing).

The objectives of a KIC are:

- To address long-term challenges in strategic domains for Europe, and to tackle new innovation opportunities for Europe
- To transfer higher education, research and innovation activities to the business context
- To nurture entrepreneurial spirit

KIC-InnoEnergy is delivering three types of products:

- In the field of education: MSc, PhD and long-life learning specialised in energy, entrepreneurship and management
- In the field of innovation: innovation projects, marketable technology products and services
- In the field of business creation: start-up business

KIC-funded projects, although they involve both research centres and industry like FP-funded projects, differ from these projects because they aim to end in a new or improved commercial product. As such, Susana asserted, they differ from the kind of projects that EERA joint programme members would tend to undertake with each other.

The 2012 call for projects should open in March 2012.
More information on this initiative is available on: http://eit.europa.eu/kics1/kic-innoenergy.html

The SOPHIA project

The SOPHIA project, launched in February 2011, is a FP7 Research Infrastructure project in the field of PV whose objective is to increase coordination between different PV research facilities in Europe, if possible to the point where, to the outside world, they appear to operate as one, with an aligned strategy, approachable to third parties through a single access point.

This project provides support to the EERA-PV. Its activities cover three categories:

- *Networking activities* for coordination and joint development of the research infrastructure
- *Joint Research Activities* addressing four topics:

- Quicker lifetime prediction of PV modules through accelerated ageing tests, and improved failure analysis procedures
- Greater accuracy of rated power and energy output prediction of PV modules and systems
- Improved material characterisation procedures dedicated to: silicon, thin films and TCOs, organic solar cells
- Improvement and validation of software infrastructure for materials, cells, modules, and system modelling

- *Transnational access activities* to provide free of charge and open access to 48 European infrastructures. An online application form is available to express interest in accessing these facilities. The deadline is 25th January 2012. A selection committee will meet directly afterwards to evaluate the received applications.

More information on this project is available on: www.sophia-ri.eu

Solar Europe Industrial Initiative

Manoël Rekinger, Technology Officer at the European Photovoltaic Industry Association (EPIA) presented the Solar Europe Industrial Initiative (SEII), which is one of the initiatives launched by the SET-Plan to foster technological deployment.

The SEII covers both PV and CSP. The PV component addresses three priority areas for the period 2012-2012:

- Cost reduction
- System integration
- Preparing for cost and penetration levels beyond 2020 levels

The SEII team is composed of representatives of industry, EU PVTP, Member States and the European Commission. The objective is to come up with ***development projects***, in line with the SEII Implementation Plan, to be funded by industry, Member States, and the European Commission.

More information is available on: http://setis.ec.europa.eu/activities/initiatives

EMIRI: Energy Materials Research Initiative

Peter Rigby (UMICORE) presented the Energy Materials Research Initiative. EMIRI is an industry-driven initiative to coordinate pan-European strategic research, development, and deployment of ***advanced materials*** designed to enable ***sustainable energy applications***. It is based on the SET-Plan Materials Roadmap, which addresses the material needs of SET Plan technologies.

The first step was to create a consortium (so far forty-three partners have signed), and to prepare a position paper to demonstrate the importance of advanced materials for all SET-Plan related technologies. The second EMIRI partners' meeting is going to take place on 27th January 2012.

EMIRI is, therefore, focusing on the whole innovation chain for the development of energy materials projects.

Solliance: a regional initiative for the development of PV

Solliance is the alliance of TNO, Technical University of Eindhoven, Holst Centre, ECN and IMEC for research and development in the field of thin film photovoltaic solar energy (PV) in the ELAT-region (Eindhoven-Leuven-Aachen triangle). Solliance's ambition is to strengthen the position of the region as a world player in ***thin film PV***, by creating synergies among more than 250 researchers. Solliance aims to realise this ambition by the joint use of state-of-the-art infrastructure, alignment of research programs, and close cooperation with the solar business community.

More information is available on: http://www.solliance.eu/

Conclusions

Philippe Malbranche from CEA-INES gave a brief summary of the workshop:

- EERA-PV (whose work is co-financed by the SOPHIA project) is focusing on the development of applied research projects
- SEII focuses on development projects
- KIC-INNOERGY is addressing issues related to market deployment of energy technologies (including PV)
- The European Photovoltaic Technology Platform covers the whole value chain, and ensures that all initiatives coherently address the identified research priorities
- Solliance also covers the whole innovation cycle for thin film PV, in the ELAT region
- EMIRI covers the whole value chain for advanced materials for energy

Two main points were highlighted during the discussion:

- The PV community needs the right budgets on the right priorities
- There is a need for coherence between all instruments available at European level