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European Strategic Energy Technology Plan (SET-Plan)

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Presentation of the SET-Plan and focus on the role of the universities

Less than 2 years after the adoption of the communication 'towards a low carbon future' in November 2007, the SET- Plan achieved very important progress: The rapid establishment of the European Energy Research Alliance (EERA) and the preparation of technology roadmaps for 2010-2020 for each European Industrial Initiative (EIIs) are certainly the most visible ones.

But, to achieve the SET-Plan and to definitively set its foundation we need the strong collaboration and close support of the European universities: University has thus a vital role to play within the SET Plan. Its role could be specifically envisaged through two dimensions: Bring expertise and resource to the SET-plan (and notably to the EERA) and also provide precious information for the identification of training needs to ensure its effective implementation.

The recent announcement of the creation of this European Platform of Universities engaged in Energy technologies (EPUE) to support the EERA activities is a strong signal of the vitality of the SET-Plan demonstrating the mobilisation of the Universities and the possibility to change things in a domain which is traditionally highly fragmented and for which a sector approach was always avoided.

(I) But before discussing the crucial role of universities within the SET Plan, I would like to briefly present the outcomes and progress of the SET-Plan:

(1) Let me remind you first that the SET-Plan offers today a blue print to develop a European world class portfolio of affordable, clean efficient and low emission energy technologies and outlines a process in which all have a vital role to play:

- The SET-Plan is anticipating the wider changes that we are moving towards in the context of the ERA: The SET-Plan is intended to bring about a paradigm shift from collaborating on projects to financing and implementing Joint programmes.

- As you know the goals of the SET-Plan are to accelerate the development and wide-scale application of low-carbon energy technologies for the achievement of the EU's set energy and climate goals for 2020, and to position the European industry in a leading position worldwide while contributing to the transition to a low-carbon economy by 2050.
- This will be done through an integrated approach seeking to address simultaneously the three pillars of the Community energy policy: security of supply, sustainability and competitiveness.
- The implementation of the SET-Plan will also evolve around a Strategic Planning (Steering Group, SETIS, 2009 Technology Summit); an Effective implementation (6 European Industrial Initiatives, Research Alliance, Networks of the future) and Resources (funding/financing/HR: a Communication on financing for low-carbon technologies is due in 2009.)

(2) Since the adoption of the Communication in November 2007 very concrete actions have been taken to stick to the strategic planning defined by the SET-Plan:

- **The European Industrial Initiatives (EIIs)**, which aim to strengthen industrial energy research and innovation by mobilising the necessary critical mass of activities and actors, are progressing well. As you know the SET-Plan proposes six EIIs (on wind, solar, bioenergy, electricity grids carbon capture and storage and nuclear fission) which are industry led initiatives. To make their programme operational, Technology Roadmaps for the period 2010-2020 are today under discussion. These Roadmaps will present technological objectives and activities, establish priorities and timelines for the different activities, identify concrete milestones and key performance indicators to monitor progress cost of the different activities:
 - For Solar the roadmaps (PV& CSP) should reflect a clear correlation between the activities, estimation of the costs, the progress towards the objectives and the results achieved in terms of competitiveness versus other measures that will support the sectors such as feed in tariffs.
 - For Wind the last Steering Group endorsed the main activities prioritised by the initiative and its Technology Roadmap.
 - For the European Industrial Initiative on nuclear fission which focuses on the long-term sustainability of Generation-IV, the last Steering Group underlined the relevance of this initiative as nuclear is a substantial contributing source to the EU energy mix.
 - For the European Electricity Grids Initiative, the aim is to enabling the uptake of 35% of electricity from dispersed and concentrated renewable sources by 2020, integrating further national networks into a pan-European network, guaranteeing a high quality of electricity supply to customers and engaging them as active participants in energy efficiency.
 - For bio-energy the route to achieve the 10% RES transport target is anchored to the sustainable criteria, in making the second generation biofuels commercially viable by 2020. To achieve this, an industry-led network of industrial scale demonstration plants for the production of advanced and sustainable biofuels is needed.

- Concerning the possible governance structure of the EIIs, it will depend from objectives, activities and MSs Participation of each individual EIIs. In any case a light and flexible form is favoured over a JTI like one to enable faster progress.
- **The European Energy Research Alliance (EERA)** which aims at tackling the fragmentation issue and enable the pooling of resources in the field of energy, is running very well. Since the launch of the structure dialogue between the National Research Organisations (NROs) in May 2008, important progress has been achieved:
 - On the 27th October in Paris a Declaration of Intent was signed, Ton Hoff from ECN was also nominated speaker of the EERA and a secretariat was created.
 - Since this major step, 12 specific research areas have been identified for future Joint Programmes (JPs) and several workshops have been organised to test the methodology, to explore the potential to work together and to define future JPs.
 - The difficulties linked to the definition of the EERA governance rules are now solved. A two layer structure has been adopted and will permit an interaction between a group of 15 members to drive the process and a Programme Level which would be open to any participant that could contribute real implementing capacity and own resources.
 - Therefore the EERA can now focus on its core business: the definition and implementation of JPs. The EERA still plans to launch 3 joint programmes in end 2009 and 3 more in 2010. Wind, PV, CCS (capture part), and CSP are today the most advanced topics for future JPs.
- **The Communication on financing low carbon technologies** will be launched in the coming days. Financing is a key issue. At present the Framework Programme is the only funding mechanism and it has insufficient resources. Depending on the outcome of the political debate, the Commission hopes to propose a substantial increase in EU resources for energy research:
 - Funding for research and development of low carbon technologies must be substantially increased. The Communication will address from an EU perspective how much, from which sources and best spent on what way in which way. The resources available for the implementation of the SET-Plan will be therefore identified as well as the total cost of implementation for each initiative.
 - Long-term R&D will require important public investment over next 10 years; Large-scale demonstration projects are necessary and will imply a significant public support to cover part of the additional risk. Early stage commercialisation phase will also need a very strong public support to overcome the difficulty to deploy new energy technologies. To this respect, the EC considers that an additional investment, public and private, of [50 b€] is required over the next 10 years to move forward the actions proposed in the SET plan. This represents an increase in investment intensity from the current 3 b€ per year to [8 b€ per year].
 - The Communication will also focus on the joint programming of public resources and on instruments for leveraging private investments. To maximise the incentive

and leverage effect of public financing and ensure the highest possible societal returns we need to spend the funding well by improving coordination of public programmes and mobilising the financial community.

- The INCO dimension of the SET-Plan should be also developed and built up as part of the EERA and EIIs:

- We are in the process of adapting our approach to international cooperation to changing needs. In a nutshell, we are seeking to move away from an ad hoc approach, which was dependent to an extent on the level of interest initiated from international partners – towards a more strategic approach, based on strategic partnerships with key global research players.
- We have established excellent relations with our interlocutors in these countries. With the US, we have created a Joint Action Plan with the Department of Energy, which sets out concrete actions to take in the fields of biofuels; hydrogen and fuel cells; carbon capture and storage and photovoltaics. As you know an EC/EERA delegation to the is planned in October in view of improving coordination between trans-Atlantic energy research agendas.
- Concerning Japan, we are also creating a Joint Plan of Activities, focusing on carbon capture and storage; power storage and photovoltaics.

(3) If important progress has thus been achieved, we still need more concrete and effective implementation:

- We need more focused mechanisms that can integrate public research intervention, leverage industry investment and expand the EU research base.
- We need to bring together and strengthen the involvement of all stakeholders in the entire innovation system, from industry to customers, as well as the financial community and our international partners.
- We also need to reflect on how to involve the MSs in the setting up of the initiatives, how to strongly link the initiatives and the Alliance, how to closely link the Industry with the Research community and university.

(4) I would like to close this short presentation of the SET-Plan issue by highlighting the very favourable political context:

- As you know, some important political developments affecting the implementation of the SET-Plan have occurred during this year:
 - The agreement on the Climate Change policy package at the European Council of 8-9 December 2008,
 - The adoption of the recovery package, which approved for 2009-10 the allocation of €3.98bn for energy projects which will help to achieve the following objectives: demonstrate solidarity between member states, meet the current challenges and help the economy to recover. The Commission will review the situation in 2010 and funding that is not used could be transferred to renewable energies and energy efficiency. The Commission will launch a call for tenders this month and hopes

that everything will be in place by the end of the year. Specifically, €3.98 billion will go to energy projects in the following fields: gas and electricity infrastructure (€2,365 million); offshore wind energy (€565 million); carbon capture and storage (€1,050 million). The recovery package has also led to the launch of 3 Public Private Partnerships for Factories of the Future (€1.2 billion for R&D); Energy-efficient Buildings (€1 billion for R&D) and Green Cars (€5 billion, of which €1 billion is for research activities).

- The New Entrants Reserve of the ETS Scheme will also be used to fund CCS demonstration projects and renewable energy projects. 300 million allowances which could amount to approximately €6- 9 billion are foreseen to fund these CCS and RES projects.
- The SET-Plan also received strong individual supports from Lord Nicholas Stern, in his report '**Towards a global green recovery**' submitted to the G20 London Summit on the 2 April. He is strongly supportive of the SET-Plan initiative while advocating a tripling for R&D: "*We recommend the development of a G20 Strategic Energy Technology Plan (SET Plan), modelled on the European example and building on the IEA Energy Technology Perspectives Report, which could serve to streamline R&D efforts globally. The G20 SET Plan would evaluate the potential for up-scaling joint energy research and identify those technologies for which it is essential that the G20 as a whole finds a more effective way of mobilising resources.*"
- All these developments create a very favourable wind to go further in the implementation of the SET-Plan, demonstrating that there is true commitment at EU level to move towards a low-carbon economy and up the ante for international partners to follow suit in tackling climate change.

(II) Universities have a crucial role to play in the building of the most valuable SET Plan

To ensure effective implementation of the SET plan, we need a strong support of the universities. The creation on the 15th January of the European Platform of Universities engaged in Energy technologies (EPUE) already brings us a strong support to the SET Plan and notably to the EERA Activities to mobilize new resources for future JPs. But we can also envisage a wider collaboration of the universities to upgrade the level of training.

(1) First, I would like to remind you the origins and the objectives of this new platform:

- European University Association Council (EUA) on the 15th January announced that a European Platform of European Universities engaged in Energy & Energy Technology Research would be established as a part of its role within EERA.
- The Platform will first identify leading European Universities in scientific areas for which EERA has already noted a strong potential to work together. National Rectors Conferences will appoint a prominent university scientist in energy technology research as “speaker” in their respective countries to help EUA in building this European Platform.

- The Platform will identify researchers who can transfer their expertise into the development of the EERA, its workshops and other activities. Universities will thus bring to the EERA their competences, infrastructures and financing.
- The Platform will also allow the national specificities of MSs research, which is decentralised and organised on a University basis to be taken into account.

(2) In this context the role of the EUA and Platform of universities within the EERA is crucial:

- This platform will help EERA in tackling the current fragmentation of programmes and efforts on level of the universities.
- The EUA will act as an observer in the steering committee of the EERA. This position will allow EUA to obtain strategic information concerning the scientific priorities chosen by the participating institutes, to launch workshops and to explore possible areas for Joint programmes. The EUA representative will report to the Platform;
- Thus the platform will identify the resources in terms of experts and infrastructures to be part of the future joint programmes of the EERA and will allow a matching between the EERA priorities and the research agenda of the universities.
- A first EPUE workshop was held on the 30th March to discuss EUA strategies and approaches to take forward the building of this new European Platform. The participants reached the unanimous view that the EUA should take up this important challenge of bringing university based research and training programmes (at the postgraduate level) into the EERA, particularly given its significance as a pilot for joint programming. Finally, it was agreed to establish a small Steering Group chaired by Professor Nazaré to provide her with expert advice and support in her role as the EUA member of the EERA Founding Group.

(3) But the universities should not be limited to the identification of resources to be brought to the EERA. The universities should also play an important role in the so called “training for Energy” initiative:

- The ambitious targets of the SET plan call for efforts going far beyond the current level: This is true also for the human resources. A skilled workforce of technicians, engineers, scientists, but also laymen will be needed.
- In the first stage the training for energy initiative will follow a dual approach. On the one hand we will take stock of the existing activities/ instruments relevant for energy related training; on the other hand stakeholders such as Technological platforms, Industrial Initiatives, etc will be consulted to identify training needs. Based on the outcome of this exercise a further training strategy should be developed and implemented. But it is important to note that this process is not a serial one. We intend to start with first measures as quickly as possible. .
- The University platform might be crucial in this respect. Who, if not universities is able to provide information on existing training activities in the energy field? And

it is without doubt that the researchers in universities with all their experience and knowledge of the European energy research activities can help to identify gaps and options for improvement. This may imply the amendment or optimisation of existing instruments but could also lead to innovative new approaches, if the existing schemes are not sufficient.

- The design and implementation of the training initiative will be a common endeavour of all SET plan stakeholders. EERA, EUA, EIIs, Member States, Associated States, the Knowledge and Innovation Communities of the EIT and the EC will work together to ensure the skilled man power we need to successfully implement the SET-Plan and achieve our energy and policy goals.

(4) We need also to introduce a better coherence between the University and the current initiatives in the field of energy (e.g. EIT, EERA, MC actions):

- Universities, EIT, EERA and Marie curie programme clearly share common objectives : The long term, durable integration of excellent but dispersed research capacities across the EU; the involvement of all stakeholders in the entire innovation system, from industry to customers; the successful dissemination of results into the market; and the development of adequate human resources: educators, skilled researchers & technicians;
- Marie Curie actions are also very close to the higher education part of the KIC initiative in terms of training and complementary skill acquisition (entrepreneurship, management..).
- We organised a joint meeting with our colleagues from EAC on the 26th of June between EIT board member and EERA representative. This meeting allowed to encourage mutual exchange of information on the KIC on sustainable energy and on the activities of the EERA, to explore how the KIC and the EERA could interact. The participants of the meeting agreed on the fact that efforts are necessary to introduce a better coherence between these different European initiatives and that further meetings will be organised.
- It is clear that we need to better articulate University, EIT, EERA activities to avoid duplication and overlaps.

CONCLUSION

In concluding, I would like to underline that the today's economic uncertainty should not deviate us from our energy and climate objectives and that developing new cutting edge energy technologies should be a solid response to our current difficulties: New generations of cost effective low carbon technologies will undoubtedly allow Europe to position its industry in a leading position in the worldwide competition. Universities have a central role to play in lowering costs, improving performance of existing energy technologies and proposing new trainings. We need to help them to help us succeed.