



**Executive summary of the  
“Integration of Renewable Energies by distributed Energy Storage  
Systems”  
Workshop, 18<sup>th</sup> -19<sup>th</sup> September 2012, Paris, France**

**Scope of the Workshop**

The contribution of renewable energy to overall global energy production is expected to grow worldwide. Most renewable energy sources, like wind, PV, and solar-thermal are fluctuating resources. Significant storage capacity is needed to smooth out these fluctuations for reliable future energy systems. At the moment the focus is on large, central energy storage technologies like pumped hydro or the conversion of surplus electricity into fuels such as hydrogen or methane. The potential for small, distributed energy storage technologies remains mostly unexplored.

The Implementing Agreement “Energy Conservation through Energy Storage” (ECES) is planning to start a new Annex on the “Integration of Renewable Energies by distributed Energy Storage Systems”. This Annex should focus on the overall storage properties and their impact on the integration of renewable energy rather than the specific challenges of each energy storage technology. Collaboration with other Implementing Agreements (IA) within the IEA Technology Network and other institutions active in the field of distributed energy storage is crucial for this Annex.

ECES organized this workshop in order to discuss the objectives, the scope, and the title of this Annex with all interested parties. At the same time the invited IAs and organizations were asked to present their activities in this context. The goal of the workshop was a better understanding of the ongoing R&D activities and the actual expertise both inside and outside of the IEA technology network. The participants should get a clear view on the defined topics focused on within this Annex. Finally a structure of the Annex that enables all interested parties to contribute should be discussed and decided at the workshop.

**Participation**

The organisation of the workshop was supported by the Committee for Energy Research & Technologies CERT. Peter Cunz, Chair of CERT, and Halime Paksoy, Chair of ECES, attended the meeting.

The following Implementing Agreements sent representatives to the workshop:

- Energy Conservation for Buildings and Community Systems (ECBCS)
- Heat Pumping Technologies

- ISGAN (Smart Grid IA)
- Solar heating & Cooling (SHC)
- District heating and Cooling (DHC)
- Energy Conservation through Energy storage (ECES)
- Energy Technology System Analysis Program (ETSAP)

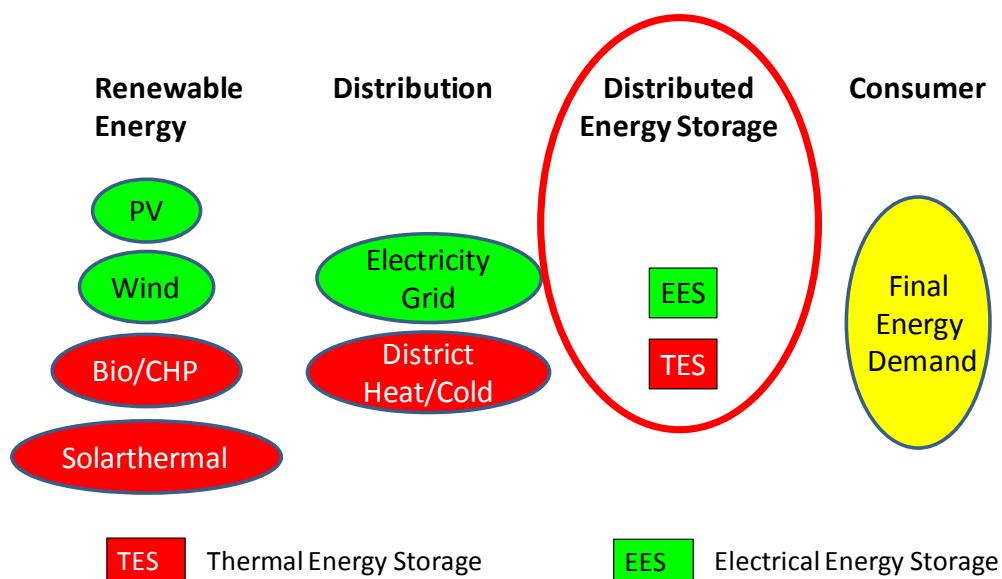
In addition the European Association for Storage of Energy, EASE, gave a presentation of their view on distributed energy storage systems and two national activities from Denmark (Aalborg University) and Belgium (VITO) were presented at the workshop.

Representatives from the IEA and the OECD were present at the meeting. In total about 30 participants attended the workshop.

All presentations as well as the agenda of the workshop are available on the ECES webpage.

### Summary of Workshop

The definition of the scope – distributed energy storage, DES – and in this context especially the wording, including “distributed” and “decentralized” was discussed. The participants agreed to keep the original title, however the fact that those storage systems must have the ability to interact with the distribution grid (electrical or thermal) was also emphasized. Following this definition DES are able to store renewable energy produced locally as well as contribute toward a “virtual collective storage”. In this context the importance of communication for these systems was stressed.



The presentations given by the participants included the topics of energy storage in buildings and communities, energy storage in combination with heat pumps and chillers, communication among the different components in smart grids, requirements for storages in connection to solar-thermal input and within district heating and cooling systems, and the possibilities to implement storage technologies in system analysis activities. Actual projects in Denmark (more in rural areas) and Belgium (in cities) were presented as well as the views of industry and utilities on the topic of DES. The lively discussion brought up points like who

will pay for the installation of DES, who will have the benefit, and the question of social acceptance.

For the structure of the planned Annex, it was decided to have one of the two annual expert meetings and workshops as an open workshop for all interested parties (like this one). These annual workshops should take place at the IEA in Paris in order to involve the IEA secretariat and other interested person from IEA and OECD in this activity. Implementing Agreements and other parties will be invited to these workshops, where information about related activities will be exchanged and findings of the Annex will be discussed.

### **Next Steps**

The Annex proposal will be revised now and the results of this meeting will be integrated. The ECES Executive Committee will decide to start this new Annex at its fall 2012 meeting. After a first internal task definition meeting of the participating countries within the ECES, the next open workshop could be organised for fall 2013. The participants will be informed about the developments.

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