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SET Plan Secretariat



SET-Plan - Declaration on Strategic Targets in the context of an Initiative for Global Leadership in Solar Thermal Electricity (CSP/STE)

Purpose of this document

This document¹ is intended to record the agreement reached between representatives of the European Commission services, representatives of the EU Member States, Iceland, Norway, Turkey and Switzerland (i.e. the SET-Plan Steering Group) and representatives of the SET-Plan stakeholders most directly involved in CSP/STE², on the implementation of the actions contained in the SET-Plan Communication³, and specifically the strategic targets for the priority "Number 1 in renewable energy" for what concerns CSP/STE.

This agreement follows consultations with industry represented by the European Solar Thermal Electricity Association (ESTELA) and the European Gas and Steam Turbine Manufacturers (EUTurbines), with the research community represented by the EERA Joint Programme on Concentrated Solar Power (EERA JP-CSP), and with academia via the European Platform of Universities in Energy Research and Education (EUA/EPUE), as well as a public consultation via the SETIS website⁴ on an Issues Paper prepared by the Commission services⁵. It takes into consideration the corresponding input papers and public comments available on SETIS (<https://setis.ec.europa.eu/towards-an-integrated-SET-Plan>) and discussions in the SET-Plan Steering Group on 9 December 2015 with the participation of the relevant SET-Plan stakeholders mentioned previously.

The stakeholders agree to highly ambitious targets in an endeavour to maintain global leadership in the sector, to put forward their best efforts in a coordinated way between public and private sectors, and to jointly address all relevant issues in order to attain the agreed targets.

Brussels, 20 January 2016

¹ This document has no legally binding character, and does not prejudice the process or final form of any future decisions by the European Commission.

² I.e. the European Solar Thermal Electricity Association (ESTELA), the EERA Joint Programme on Concentrated Solar Power (EERA JP-CSP) and the European Gas and Steam Turbine Manufacturers (EUTurbines).

³ Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation (C(2015)6317).

⁴ Strategic Energy Technology Information System website <https://setis.ec.europa.eu/>

⁵ https://setis.ec.europa.eu/system/files/SET_Plan_Issues_Paper_Solar_Thermal_Electricity.pdf

Introduction – Concentrated Solar Power/Solar Thermal Electricity (CSP/STE)

CSP/STE can make a significant contribution to the transformation of the European energy system by providing an important share of renewable electricity on demand (i.e. flexibility of dispatch) thanks to the incorporation of in-built storage in CSP/STE plants – which avoids additional grid integration costs. Moreover, by providing flexibility for grid services, CSP/STE can facilitate the integration of variable output renewables such as PV or wind into electricity systems, thereby contributing to the reliability of the transmission grid. Moreover, CSP/STE will significantly help meet the energy needs of other parts of the world – both creating a potentially very important export sector for the EU industry which can support jobs and growth, and supporting the development agenda after the Paris Climate Change Conference.

According to the International Energy Agency (IEA) forecasts, CSP/STE has a huge potential in the long term, ranging from the 357 TWh in the World Energy Outlook (edition 2014) central scenario by 2040 up to 4 350 TWh by 2050 according to the hi-Ren scenario (Energy Technology Perspectives 2014), meaning CSP/STE will account for 11% of the electricity generated worldwide and 4% in Europe. In any case, it represents a significant market potential that justifies the efforts to maintain the competitive advantage of the EU in this domain. The potential for deployment in Europe would be higher in an Energy Union scenario in which CSP/STE-generated power can be supplied in significant volumes from Southern Europe to other parts of the continent – provided the necessary inter-connections are in place.

The EU industry is global leader in CSP/STE, with EU entities involved in all projects developed so far worldwide. In order to maintain this global leadership, the EU industry needs to stay ahead with more advanced, competitive technologies. Moreover, innovation needs to happen in Europe, since in order to maintain the confidence of the international investors abroad, advanced technologies need to be demonstrated and commercialized in Europe first.

Targets

Building on the Integrated Roadmap of the SET-Plan, public (EC and Member States/Regions) and private investment must focus on targeted R&I actions to achieve the following goals in terms of performance and cost-reductions:

Agreed Strategic Targets in Solar Thermal Electricity

1. Short-term: > 40% cost reduction by 2020 (from 2013) translating into
 - **Supply price* < 10 c€/kWh** for a radiation of 2050 kWh/m²/year (conditions in Southern Europe)
2. Longer-term: develop the next generation of CSP/STE technology
 - **New cycles (including supercritical ones) with a first demonstrator by 2020**, with the aim to achieve additional cost reductions and opening new business opportunities.

** The supply price is meant to be the targeted price within Power Purchase Agreements (PPA) with a duration of 25 years*

The achievement of the targets will be not only the result of technological advance, but also of non-technological factors such as economies of scale (i.e. resulting from an increase in installed capacity), risk-finance for 1st-of-kind commercial-scale projects (to compensate for the costs of the initially higher commercial risk), the ability to take full advantage of the European "Single Market", regulation, standardization, skills, etc. In this context, international cooperation in energy research can also bring substantial benefits, including in terms of new CSP/STE cycles. Such non-technological issues will have to be specifically examined at the subsequent stage of defining how to achieve the agreed targets.

Next steps

The stakeholders agree to develop within 6 months a detailed implementation plan for the delivery of these targets, determine joint and/or coordinated actions, identify the ways in which the EU and national research and innovation programs could most usefully contribute, identify the contributions of the private sector, research organizations, and universities, identify all issues of a technological, socio-economic, regulatory or other nature that may be of relevance in achieving the targets, and report regularly on the progress with the purpose to monitor the realisation of the targets and take rectifying action where and whenever necessary.

The stakeholders intend to use the Declaration as the main vehicle for discussing and agreeing on the implementation plan.
