Press Release

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Solar thermal electricity (STE) reaches marketability – generation costs can be reduced by more than 50 percent by 2025

A joint study by A.T. Kearney and the European Solar Thermal Electricity Association, ESTELA, shows the growing mid-term potential of STE to progressively substitute conventional energy sources and complement the renewable energy sources portfolio with a cost-competitive dispatchable solution – In a best-case scenario industry roadmap involves creation of 100,000 to 130,000 jobs by 2025

Solar thermal electricity (STE) is now entering the commercial ramp-up phase and will soon be viable as a renewable energy source with a relevant positioning in the utilities portfolio. Within the next 10 years STE will be able to run with a profitable business model – challenging conventional and other renewable energy sources without any subsidies. In a best case scenario and with the proper support, STE could reach a global installed capacity of up to 100 gigawatts (GW) by 2025. This would involve the creation of a maximum of 130,000 jobs of which 45,000 would be permanent full-time jobs in operation and maintenance. This is one of the main findings of a joint study of global management consulting firm A.T. Kearney and the European Solar Thermal Electricity Association, ESTELA. The objective of the study was to derive a comprehensive industry roadmap assessing the cost and technology development potential for STE. Moreover, the study reveals that electricity generation costs of this technology could be reduced by up to 30 percent by 2015 and more than 50 percent by 2025. STE is thus an attractive tool that can make a considerable contribution to the achievement of energy and environmental targets such as the European Union 20-20-20 goal.

After a pioneering and demonstration period starting as far back as the 80s, STE is now entering a commercial ramp-up phase with 3,000 megawatts (MW) of generation capacity and new large-scale projects of over 50 MW being deployed around the world – currently mainly in Spain and the USA. STE technologies convert a renewable energy source, radiation from the sun, to produce electricity. This is achieved through the concentration of solar radiation using mirrors and receivers to heat up fluids which are used to generate electricity in power blocks.

“The STE industry’s innovation efforts from the past decades are now yielding fruit. What we see today is a proven and ever more attractive industry that is right

on track to soon seriously challenge conventional and other renewable energy sources. According to the study, in a best-case scenario and with the proper support STE could reach a global installed capacity of up to 100 gigawatts (GW) by 2025", says José Alfonso Nebrera, President of ESTELA.

Assuming fulfillment of the industry roadmap as outlined in the study, STE penetration is expected to reach 12 GW of installed capacity by 2015, 30 GW by 2020 and between 60 and 100 GW by 2025.

Already by 2015, when most of the STE ramp-up phase improvements currently underway are expected to be implemented in new plants, energy production can be expected to be boosted by more than 10 percent and plant CAPEX reduced by 20 percent. Furthermore, economies of scale resulting from increases in plant size will additionally contribute to reducing plant CAPEX per produced energy unit.

According to the study, all these levers, which the industry is committed to pursue and develop, can lead to the materialization of very important cost savings for the generation of STE. Dr. Martin Sonnenschein, Head of A.T. Kearney Central Europe explains: "The potential is tremendous. Depending on the STE technology used and the dispatchability of the plant, a cost reduction up to 30 percent can be expected by 2015. Therefore between 2015 and 2020 tariffs for STE can be reduced by as much as 50 percent. In areas of high irradiation, for example in MENA, additional cost reductions for electricity generation of up to 25 percent are feasible. Together those cost reductions can result in tariffs of 10-12 euro cents per kWh."

STE – a job creator

Design, manufacturing of components and construction of a 1,000 MW plant requires roughly 10,000 direct man/year full-time jobs. Moreover, for countries where STE is a suitable option, deployment of STE plants can drive domestic economic development via local manufacturing and operation, with further job creation.

Jan Stenger, Head of High Tech A.T. Kearney Central Europe and author of this clean tech study explains the job creation potential of STE: "A best-case scenario of up to 100 gigawatts (GW) of global installed capacity in 2025 involves the potential creation of 100,000 to 130,000 new jobs as a result of the STE industry roadmap. Of these, 45,000 would be permanent full-time jobs in operation and maintenance."

Drivers for growth

Growth drivers for STE include increasing demand for renewable energy sources as well as several unique value propositions when compared with other energy sources. More precisely:

1. STE is cost-competitive compared to other renewable energy sources and its production is not only predictable but also reliable. Furthermore STE provides long-term supply security and independence from oil and gas prices.
2. Another major advantage and growth driver lies in the dispatchability due to proven and highly cost-efficient storage.

3. An attractive share of local content creates high interest within emerging markets.
4. Large-scale deployment of this kind of "energy on demand" is a key result of these growth drivers.

Regulatory support needed

Solar thermal electricity is at the top of utilities', governments' and decision-makers' agendas. To achieve the targets pursued by the industry it is critical that governments foster the deployment of STE technology by addressing the essential energy policy enablers. The creation and maintenance of legal frameworks such as feed-in tariffs, for instance, is absolutely pivotal and not only mitigates initial investment risks but also encourages future investments and fosters innovation. Moreover, energy legislation should be reviewed so that it does not hinder adequate STE plant development, as happened in Spain where plant sizes were limited to 50 MW, thereby restricting the achievement of economies of scale.

In addition, in the long term high-voltage direct-current (HVDC) connections should be deployed to enable large-scale energy distribution from countries where STE can achieve very competitive cost levels, leveraging on high radiation (e.g. Southern Europe and MENA), to countries which do not possess sufficient solar resources (e.g. Central Europe). This facilitates the development of both supply and demand drivers for STE. Finally it is important to establish national and cross-national cooperation and market mechanisms to foster STE deployment and to support the exchange of green electricity in order to create further outlets for STE-produced power.

About A.T. Kearney

A.T. Kearney is a global management consulting firm that uses strategic insight, tailored solutions and a collaborative working style to help clients achieve sustainable results. Since 1926, we have been trusted advisors on CEO-agenda issues to the world's leading corporations across all major industries. A.T. Kearney's offices are located in major business centers in 36 countries. Further information can be found at www.atkearney.com

About ESTELA

The European Solar Thermal Electricity Association was created in 2007. Today it represents the main actors in the sector with 60 members, among them the Spanish association Protermosolar and its 100 members. ESTELA promotes innovative technologies and industry in the field of STE, supports its members' efforts in disseminating and raising awareness of STE advantages and benefits, and cooperates with EU, national and regional authorities in paving the way to a sustainable energy future. ESTELA has contributed with its proposals for the Mediterranean Solar Plan and the European Solar Industry Initiative. The political implications of STE development further highlight the relevance of this technology for energy policy. STE can significantly contribute to the security of energy supply and to the achievement of energy and environmental targets such as the European Union 20-20-20 goal (20 percent lower CO2 emissions and 20 percent renewable energies in the energy mix by 2020).

For further information please contact:

A.T. Kearney GmbH
Meike Fuhlrott
Marketing & Communications
Kaistraße 16A
D-40221 Düsseldorf
Tel: +49-211-1377 2275
Fax: +49-211-1377 2990
e-mail: meike.fuhlrott@atkearney.com
www.atkearney.de

ESTELA
Mariàngels Pérez Latorre
Renewable Energy House
Rue d'Arlon, 63-67
B - 1040 – Brussels
Tel.: +32-2-4001090
Fax: +32-2-4001091
e-mail: estela@estelasolar.eu
www.estelasolar.eu