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## **A bright future for renewable electricity generation: if investment in grid and innovation is sustained**

**A series of "Renewable Energy Snapshots" published today by the European Commission's Joint Research Centre (JRC) provides a timely update on the potential of wind, solar and biomass energy to contribute to the EU's binding target of 20% electricity generation from renewable energy sources by 2020. Based on updated data from the European solar and wind industry, the latest Snapshots show that the currently installed capacity of both solar photovoltaic (PV) and wind energy already greatly exceeds the 2010 targets proposed in the EU White Paper on Renewable Sources of Energy (1997). However, the JRC concludes that the ambitious 2020 targets can be achieved only if the necessary investments are made to ensure that the system is able to absorb and distribute the additional electricity.**

The Renewable Energy Snapshots are produced by the JRC's Institute for Energy (IE). They provide a concise summary of key trends in renewable electricity for decision makers in industry and government who are currently formulating National Action Plans (NAPs) on renewable energy sources. Member States are to submit these Action Plans by 31 March 2010. The NAPs will incorporate binding targets for renewable electricity generation endorsed by the European Council in March 2007 and included in the EU Climate Change Package, which was backed by the European Parliament on 17 December 2008.

The use of hydropower is not expected to increase beyond its 2005 figure (310 TWh), as the majority of large hydro resources are already utilised in Europe. Furthermore, increasing demand for water, partly due to changing weather patterns, may reduce the amount available for electricity generation in the future.

Similar competition exists for biomass resources. Growth in electricity generation from biomass is expected to continue over the next decade, potentially rising to around 200 TWh in 2020, up from 90 TWh in 2006. However this will depend on the availability of sustainable feedstocks, which are also required by the heating and biofuels.

The EU Climate Change Package aims to achieve a 20% improvement in energy efficiency, a 20% contribution from renewable energies in industry and heating, and a 10% share from renewables in transport. On this basis, JRC-IE estimates that Member States will need to generate 35 - 40% of total electricity (3,200 – 3,500 TWh) from renewable energy sources by 2020. This amounts to 1120 – 1400 TWh from wind, hydropower, biomass and solar energy.

With more than 65 GW of cumulative installed capacity in 2008, wind energy exceeded its White Paper target of 40 GW by more than 50%. Similarly, by 2008, Solar Photovoltaic electricity generation had almost doubled its cumulative installed capacity in Europe to 9.1 GW - three times the original target for 2010. Drawing on this success, the European Photovoltaic Industry Association predicts that 12% of total European electricity demand (380 - 420 Twh) will, given current growth, be supplied by photovoltaic solar energy by 2020 (equivalent to an annual growth rate of 36%).

Despite the competition for resources, bioelectricity generation, especially via biogas or Combined Heat and Power (CHP), is still an attractive option as the energy is stored in the biomass and can be used on demand (unlike wind or solar energy).

The JRC Snapshot on Concentrated Solar Power (CSP) indicates that use of the technology is likely to accelerate following the successful development of demonstration plants in Spain.

Although the rapid development of solar and wind energy in the last decade has exceeded expectations, the JRC Institute of Energy cautions that increased investment and political support are still vital for renewable electricity generation to meet the 2020 targets. Fair grid access and new regulatory measures will need to be established to ensure the electricity system is capable of absorbing increased amounts of renewable electricity.

Substantial R&D support will also be essential over the next 11 years and beyond to enlarge the markets for electricity generation from wind, solar, biomass and other renewable sources, leading to the cost reductions that will enable increased production and rapid growth in installed capacity.

The complete report can be downloaded from: <http://re.jrc.ec.europa.eu/refsys/>

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