Photovoltaics among fastest growing industries in the world

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The tenth edition of the JRC PV Status Report indicates that in 2010, the photovoltaic (PV) industry production more than doubled and reached a world-wide production volume of 23.5 gigawatt (GW) of photovoltaic modules.

Since 1990, photovoltaic module production has increased more than 500-fold from 46 megawatts (MW) to 23.5 GW in 2010, which makes photovoltaics one of the fastest-growing industries at present.

Photovoltaics is a method of generating electrical power by converting solar radiation into direct current electricity. It is one of the most promising technological options to realise the shift to a decarbonised energy supply.

Current solar cell technologies are well established with sufficient efficiency and energy output for at least 25 years of lifetime. This reliability, in addition to the increasing potential of electricity interruption from grid overloads, and the rise of electricity prices from conventional energy sources, add to the attractiveness of photovoltaic systems.

In 2010, the world-wide photovoltaic production more than doubled, driven by major increases in Europe. For 2010 the annual market volume of newly-installed solar photovoltaic electricity systems varies between 17 and 19 GW, depending on estimates. This represents mostly the grid-connected photovoltaic market, as there are no reliable

estimates available for the non grid-connected market. The report, published by the European Commission's Joint Research Centre (JRC) shows that with a cumulative installed capacity of over 29 GW, the European Union is leading in PV installations. By the end of 2010, European photovoltaic installations provided more than 70% of the total world-wide solar photovoltaic electricity generation capacity.

The photovoltaic industry has changed dramatically over the last few years. China has become the major manufacturing centre for solar cells and modules followed by Taiwan, Germany and Japan. Amongst the twenty biggest photovoltaic manufacturers in 2010, only four had production facilities in Europe, namely First Solar (USA, Germany, Malaysia, Vietnam), Q-Cells (Germany and Malaysia), REC (Norway and Singapore) and Solarworld (Germany and USA).

A special feature is the dramatic price reduction for solar modules by almost 50% over the last three years. This can be explained by the evolution from a supply to a demand-driven market and the resulting over-capacity for solar modules. Business analysts predict that investments in PV technology could double from € 35-40 billion in 2010 to over € 70 billion in 2015, while they expect prices for consumers to continuously decrease.

Even with current economic difficulties, the number of market implementation programmes is still increasing world-wide. Examples of such measures to promote the use of PV technology include renewable portfolio standards, and feed-in tariff tax incentives. Coupled with the overall rising energy prices and pressure to reduce greenhouse gas emissions, this will continue to keep demand for solar systems high.

In the long-term, growth rates for photovoltaics are expected to remain high. The study concludes that in order to maintain the high growth rate of the photovoltaic industry, different pathways have to be pursued.

There is a need to reduce the material consumption per silicon solar cell because the cost of silicon is one of the main price factors of such solar cells. In parallel, the manufacturing of thin-film solar cells should be increased and the introduction of concentrated photovoltaics (CPVs) should be accelerated. Concentrated photovoltaics (CPVs) is a new technology which substitutes semi-conductor material with cheaper concentrating lenses, typically of plastics.

More information: The report is online available at: re.jrc.ec.europa.eu/refsys/

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