



UNEP PRESENTATION - RENEWABLE ENERGY RESOURCE ASSESSMENT

Washington, DC April 2004 by Scott Sklar

Global use of renewable energy is on track with becoming the dominant global energy source. "The World Energy Outlook 2004", which was released by the International Energy Agency (IEA), estimates in a reference scenario that electricity generated from renewable energy will increase by a factor of six by 2030. Platts Research, however, has stated that the potential residential demand within three to four years in markets where green energy is offered could reach 6 percent of generation capacity - provided that renewables are marketed effectively. Currently, non-hydro renewable sources make up about 2 percent of the United States' generating portfolio of 770,000 MW.

The global wind power industry installed nearly 8,000 MW of new wind turbines in 2004, according to the Global Wind Energy Council (GWEC). Europe continued to dominate the world wind power market and installed 5,774 MW in 2004, which accounted for 72.4 percent of global wind growth that year. Total world wind capacity is now at 47,317 MW, with 16,629 MW in Germany, 8,263 MW in Spain, and 6,740 MW in the United States.

Worldwide solar cell production reached 1,256 MW last year, which was a 67 percent increase over the 750 MW output in 2003. Concentrating solar power systems have been in operation in California since the mid-1980s, providing 354 MW of power. Another 51 MW of concentrated solar power is scheduled for installation in the U.S. energy mix between 2005 and 2007, with a 50 MW power purchase agreement announced in Boulder City, Nevada. Included in that 50 MW is a 1 MW solar trough plant being built for Arizona Public Service and 1 MW worth of solar-driven Stirling engines also being erected in Nevada.

The U.S. Energy Information Administration predicts that biomass will generate 0.3 percent of all generation by 2020. If renewable portfolio standards (RPS) are enacted that mandate 20 percent of all generation offered comes from green, renewable sources, biomass projects could increase substantially. Among non-hydro renewable sources, biomass plays a key role today with 7,000 MW of installed capacity and produces 37 billion kWh of electricity each year. By 2060, Shell Renewables forecasts that traditional and new forms of biomass will provide 30 to 40 percent of the worldwide energy demand. That includes fueling everything from power generation to automobiles to industrial facilities.

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Geothermal power can produce another 9,000 MW, and some of the world leaders for geothermal electric generation (rated in MW) are: Iceland, 170; Indonesia, 589.5; Italy, 785; Japan, 546.9; Mexico, 755; New Zealand, 437; Philippines, 1909; and the U.S., 2228; for a global total of 7974.06 MW.

Twenty percent of the world's electricity comes from hydropower. Norway produces more than 99 percent of its electricity with hydropower. New Zealand uses hydropower for 75 percent of its electricity. In the U.S., hydropower produces enough electricity to serve the needs of 28 million residential customers. And my own prediction is that waterpower, including free-flow hydropower, wave and tidal power, will meet another 10 percent of the world's energy over the next 50 years.

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