

## RENEWABLE ENERGY—A GLOBAL PERSPECTIVE

By:

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Allow me to start off by saying something that would seem counter-intuitive: The year 2008 – the year of the collapse of Lehman Brothers, and seemingly the peak of the global financial crisis, was the best year yet for renewables. Of course, the global economic downturn affected renewables in many ways starting in late 2008, but the year was still one to remember. In just one year, all forms of grid-connected solar PV grew by 70%. Wind power grew by 29%, and solar hot water increased by 15%. Annual ethanol and biodiesel production both expanded by 34%. Heat and power from biomass and geothermal sources continued to grow and small hydro increased by 8%.

These are the findings of the REN21 Global Status Report 2009 Update, which was released this past summer. The Report shows that the fundamental transition of the world's energy markets continues.

One of the most remarkable milestones for 2008 was that businesses selling low-carbon goods and services now generate more revenue than the aerospace and defense sectors combined, making the sector one of the new lynchpins of the global economy, according to research by HSBC. Similarly, according to the Financial Times, more than 50% of total added power capacity in 2008 in both the U.S and Europe was renewable—more than new capacity for oil, gas, coal, and nuclear combined.

In terms of country leadership: by 2008, the top six countries by total amount of renewable power capacity were China, the US, Germany, Spain, India, and Japan.

The year 2008 was also remarkable for the changes in country leadership of particular markets. Germany, which had been the global wind power leader since the middle of the nineties, was surpassed by the United States. Germany stayed close behind in second place, followed by Spain, China, and India. China reached its 2010 wind target of 10 GW two years ahead of time. By 2008, more than 80 countries around the world had commercial wind power installations, most recently Mongolia and Pakistan.

With regard to investment in renewable energy, country leadership also changed. In 2006, Germany and China were the global leaders in new capacity investment, with the United States far behind. But a massive increase in wind power investment in the U.S. allowed it to become

the global leader in 2008. Spain, China, and Germany were not far behind. Spain moved up to second place thanks to its large investments in solar PV. Brazil was fifth, due to large investments in biofuels.

After the meteoric rise in investment in renewable energy from 2004 to 2008, “the great recession,” as some are calling it, has had interesting consequences for the renewable sector. The UNEP SEFI/New Energy Finance investment report 2009 showed that \$155 billion had been invested in renewables and efficiency in 2008. New Energy Finance now expects global investment in the sector this year to drop to \$105-115 billion. In this regard, according to a survey by New Energy Finance and Deutsche Bank, 75% of 106 institutional investors—including pension, banking, and insurance funds with \$1 trillion in assets under management—expect to increase their involvement in clean energy and other low carbon investments by 2012. Renewable energy was by far the most popular investment theme for respondents, with 97% expressing interest, while energy efficiency was the next popular theme with 64%. Not a single asset owner participating in the survey said that they were less likely to invest in clean energy now than they were 12 months ago.

The global recession might turn out to be a blessing in disguise for renewable energy, because as a result, governments of the world’s largest economies have for the first time provided direct financial support to the sector.

Governments did not do it just for energy security and climate change. They have recognized the economic benefits of clean energy. At the end of 2008 and in early 2009, a number of national governments announced plans to greatly increase public finance of renewables and other low-carbon technologies. Many of these announcements were directed at economic stimulus and job creation, with millions of new ‘green jobs’ targeted. Unfortunately, due to administrative obstacles and growing budget deficits, most of the stimulus money earmarked for renewables has yet to be disbursed. South Korea and the US have spent only 20 and 12 percent, respectively, of their funds. The EU seems to be doing better.

Nevertheless, projects have continued to progress, particularly those supported by policies such as feed-in tariffs. As the financial crisis has shown, government action and government policy are crucial to restoring economic order. Likewise, Government-led responses are crucial for investors, in terms of stability, predictability, and reliability.

According to REN21’s Global Status Report, by early 2009, at least 64 countries had some type of policy to promote renewable power generation. Feed-in tariffs are the most widely used policy, existing in at least 45 countries and 18 states, provinces, and territories around the world. Feed-in tariffs were adopted at the national level in at least five countries for the first time in 2008 and early 2009, including Kenya, the Philippines, Poland, South Africa, and the Ukraine. Following its earlier feed-in policies developed in the 1990s, India also adopted new

feed-in tariffs for solar PV and solar thermal power. Several more countries were engaged in developing feed-in policies, including Egypt, Israel, Japan, Nigeria, and the United Kingdom. Several countries also revised or supplemented their feed-in laws.

More and more developing countries are adopting capacity targets and supportive policies for renewable energies. Investment, while increasing from 26% in 2007 to 31% of total global investment in 2008, still was concentrated in China, India, and Brazil. In China renewable energy has played a major role in helping it meet its rising energy demand, improve its energy structure, reduce environmental pollution, stimulate economic growth, and create job opportunities. REN21 has just released a report on renewable energy in China, together with the Chinese Renewable Energy Industry Association. It notes that the Renewable Energy Law in 2005, and the Development Plan for Renewable Energy of 2007, resulted in China taking a leading position globally in wind power, solar water heating, and small hydropower. China is well on its way to achieving its strategic objective of a 10 percent renewables share of primary energy use by 2010. But the report identifies and addresses a number of challenges renewable energy development in China currently faces, including problems in policy enforcement, lack of R&D and technical expertise in wind technology, and strong dependence of the solar PV industry on foreign markets.

In India the government is under pressure to increase electricity production and has put strong incentives in place to spur investment in renewable energy. Wind dominates, but thanks to a supportive policy environment, investment in PV has increased. Thirteen states have renewable portfolio standards. India has a target of 20,000 megawatts from solar by 2020, the biggest target for solar energy anywhere in the world, and is constructing the largest solar power complex of 3,000 megawatts at \$10 billion in the state of Gujarat.

Brazil for decades has developed alternative energy as an issue of national security following severe energy shortages in the 1970s. It uses hydroelectric power for more than 80 percent of its energy needs, is the world's largest exporter of ethanol, and nine out of every 10 cars sold in Brazil can run on ethanol or a combination of ethanol and gasoline. The UNEP SEFI report found that in 2008, Brazil accounted for almost all of Latin America's renewable energy investment which was \$10.8 billion.

And there is the Mediterranean Solar Plan that promises to deliver 20, 000 megawatts of renewable energy from North Africa.

Overall, financing for clean energy in emerging market economies has grown with the participation of many public and private domestic banks, government funds, and rural micro-credit lenders. India's Renewable Energy Development Agency (IREDA) is a good example of a national public source of funds. Brazil's PROINFA, which started in 2002, saw major investments

come on-line during 2006 and 2007, mostly from domestic banks. In Thailand, small renewable power producers were financed by public funds, mostly for biomass and biogas projects. China is experiencing a solar cell manufacturing boom, helping to lower the price of this technology in order to bring modern energy to rural communities.

While all of these are encouraging developments despite of the financial crisis, we still are faced with the dual challenge of energy access on the one hand and clean energy for a low-carbon future on the other. World population will grow to over nine billion by 2050. Most of this growth will take place in developing countries. We are all familiar with the statistics: 1.6 billion people lack access to electricity and 2.5 billion rely on traditional fuels as their primary source of energy. And for the ones that do have access, blackouts cripple daily life and the economy as schools, hospitals, businesses are forced to shut down.

These conditions are one of the major obstacles to private investment which needs to be significantly scaled up, especially in developing countries. A high-level roundtable on “Enhancing Private Investment in Clean Energy in Developing Countries” was convened by the Global Leadership for Climate Action in September, concluded that there is no shortage of capital—the challenge is how to get large-scale private investment to flow to clean energy, especially in developing countries. Essential requirements include:

- An international framework for climate change that sends clear and long-term signals about future policy direction to ensure investor certainty and confidence.
- A price on carbon, by taxes or cap-and-trade, as well as regulations and standards. The CDM is a good example of international cooperation for dealing with climate change, but it needs to be reformed and strengthened.
- Policies and enabling frameworks that make private investment possible in developing countries—for example, property rights, accounting rules, transparency, healthy workforce, and policies that stimulate demand for clean energy such as national targets and standards for renewable energy and energy efficiency and phasing out subsidies for fossil fuels.
- Public funds from developed countries, both bi-lateral and multi-lateral, will be instrumental in leveraging and incentivizing large-scale private investment in developing countries through, for example, guarantees, risk sharing, buying down interest, etc. Public funds are also needed for building human capacity and for providing access by the poor to clean energy.

Let me close by citing the Financial Times’ energy report “Wind of Change,” which was published earlier this month. “The world is on a long slow journey away from fossil fuels, and

while the outcome of Copenhagen will undoubtedly influence the speed of that transition it will not change the direction of travel.”