

Renewed Commitment and New Directions Necessary for Sustainability

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Proposals for discussion within the UN Conference on Sustainable Development (UNCSD, or Rio+20) Preparatory Committee continue to flow in, the question will soon turn to which proposals could be highlighted in a consensus outcome from the June 2010 event.

Recently three events were organised that sought to influence the UNCSD policy dialogue:

- The Tenth Rights and Resources Initiative (RRI) Dialogue, which convened in The Hague, the Netherlands, focused on common approaches to dealing with the challenges of food security and climate change.
- The Latin America and Caribbean Regional Preparatory Meeting for the UNCSD assessed progress since the 1992 Earth Summit, discussed the themes for Rio+20 and adopted a set of conclusions to be submitted to the Rio+20 Preparatory Committee.
- The “International Conference on Green Economy and Sustainable Mountain Development: Opportunities and Challenges in View of Rio+20” contributed to the “Kathmandu Declaration on Green Economy and Sustainable Mountain Development,” which recommends, inter alia, a green economy in mountains based on equity.

In the coming weeks, many other inputs will add to the options presented at these meetings. One of them will be the Asia and Pacific Regional Preparatory Meeting for the UNCSD assessed progress since 1992 Earth Summit. I will be representing the scientific and engineering fraternity and putting forth their view point. The task will then fall to the Preparatory Committee to develop a consensus outcome that represents the interests and needs of the international community, while providing the international community with enough details to create a blueprint along which it can align its actions. Andrey Vasilyev, Deputy Executive Secretary for the UN Economic Commission for Europe, commenting on his experience with the 1992 UN Conference on Environment and Development, stated that what matters for the outcome is renewed political commitment to sustainable development and identifying practical solutions.

Climate negotiators too are focusing on deliverables and concrete results, as illustrated by recent additions to Climate Change Policy and practices. The environmental ministers and negotiators gathered in Pretoria, South Africa, for informal consultations focused on their key expectations for the 17th session of the Conference of the Parties (COP 17) to the UNFCCC. Similarly, progress made at the Third Meeting of the Transitional Committee tasked with designing the UNFCCC’s New Green Climate

Fund was welcomed by UNFCCC Executive Secretary, Christiana Figueres, who underscored that the Transitional Committee of the Fund is now “fully on track to conclude the design of the Fund” for approval by parties in Durban. Figueres also promptly reminded the climate community of the other areas where the Cancun outcomes should be operationalized, namely the Technology Mechanism and the Adaptation Framework, thereby implicitly drawing up the (non-exhaustive) list of what should constitute an acceptable outcome in Durban.

Phase Out of Fossil Fuel Subsidy that Undermine Sustainable Development

Rio+20 Conference is being looked at as an important opportunity for countries to undertake pledge to:

- i) Phase out fossil fuel subsidy that undermine sustainable development
- ii) Assist other countries to phase out fossil fuel subsidies that undermine sustainable development.

The submission from Global Subsidies Initiative (GSI) proposes that, at the UN Conference on Sustainable Development on January 4-6, 2012, countries adopt a pledge to phase out fossil fuel subsidies and provide the necessary technical and financial support to assist developing countries reform their subsidies.

Fossil fuel subsidy reform has become an international priority. Already, 53 countries in the G-20 and APEC Forums have committed to phasing out fossil fuel subsidies over the medium term. The United Nations Conference on Sustainable Development, Rio+20, is an opportunity to expand that commitment, and to broaden the pledge beyond the G-20 and APEC countries.

Sustainable development perspective indicates that there is a strong argument for reforming fossil fuel subsidies. If the goal of sustainable development is the balancing of economic, environmental and social considerations, then fossil fuel subsidy reform delivers on all three fronts:

- i) Fossil fuel subsidies are costly: Global fossil fuel consumption subsidies amounted to UD\$ 312 billion in 2009 and US\$ 558 billion in 2008 (International Energy Agency, IEA, 2010). Global producer subsidies are estimated by Global Subsidies Initiative, GSI, to be at least US\$ 100 billion annually, (GSI, 2010).
- ii) Fossil fuel subsidies increase pollution: Fossil fuel subsidies create incentives for higher level of consumption, which in turn produce more local and global pollutants on behalf of both industries and consumers.
- iii) Fossil fuel subsidies are socially regressive: While fossil fuel subsidies are often designed for the interest of poorer population, they typically benefit medium to high income household. Subsidy reform should be complemented with measures to protect poor and vulnerable groups in society.

The G-20 and APEC commitments have helped to raise the political importance of subsidy reform and have led to increased international activity on the issue. Building on that foundation, it is necessary to encourage United Nations Member States to use Rio+20 to widen the country coverage of the reform commitments and endorse a comprehensive strategy for fossil fuel subsidy reform, including technical and financial assistance for developing countries.

Some of the measures to phase out subsidies will include the following:

Reporting and Review.

Countries commit to annual reporting of:

- a. Prices they charge each consumer group for each energy product. These reports should be delivered to an international organisation such as the IEA, a UN Agency or another organisation experienced in collecting data.
- b. Subsidies they grant to fossil-fuel consumers and producers. Existing reporting mechanisms, such as the World Trade Organisation's Agreement on Subsidies and Countervailing Measures (ASCM) of UNFCCC National Communications, are recommended for this process. More specific formats for reporting could also be used, such as those developed by the IEA (energy consumers) and OECD (energy producers and consumers)
- c. Subsidy reform. Detailing the subsidies under reform, progress towards reform and the expected outcomes.

Countries will have to review progress against the commitment annually, using a peer review process or delegating to the third party such as an international organisation. All reports and reviews will have to be made public. Databases of energy prices, subsidies and subsidy reform will have to be developed and maintained. This is more or less what is defined under financial disclosures in good governance practices.

Technical and Financial Assistance for Developing Countries

Technical and financial assistance may be needed to help governments improve their reporting of subsidies or to assist industries or consumers transition away from fossil-fuel subsidies. For example, assistance may be needed to establish a transparent pricing mechanism, design social safety nets (such as a cash transfer), finance cash transfers or restructure investment incentives. Technical and financial assistance can be provided directly or through organisations such as inter-governmental organisations and development banks.

Common Research and Analysis:

While country's specific considerations are important, common problems are faced across the world, and solutions in one country can have generic application in many others. Setting up a common research and analysis programme to support the pledge initiative will also be necessary.

If the above pledge is adopted at Rio+20 that will contribute to both the themes of the Conference, particularly:

- (i) green economy in the context of sustainable development; and
- (ii) poverty eradication.

Fossil fuel reform frees up valuable fiscal resources that can be redirected to fund sustainable development priorities, providing the opportunity to introduce more targeted measures to support low income households, and it reduces green house gas emissions and help incentivise investments in renewable energy.

Policy and Market Push Lead to Growth of Renewable Energy Supply

Renewable energy applications have seen resurgence during 2010 after an overall downturn in 2009. It has continued to grow significantly in all end-use sectors – power, heat and transport – and supplied an estimated 16% of global final energy consumption. More significantly, it has accounted for approximately half of the estimated 194 GW of new electric capacity added globally during the year. Renewables deliver close to 20% global electricity supply in 2010, and by early 2011, they comprised one-quarter of global power capacity from all sources.

A few examples will be of significance:

- In the United States, renewable energy accounted for about 10.9% of domestic primary production (compared with nuclear's 11.3%), an increase of 5.6% relative to 2009.
- China added an estimated 29 GW of grid connected renewable capacity, for a total of 263 GW, an increase of 12% compared with 2009. Renewables accounted for about 26% of China's total installed electric capacity, 18% of generation and more than 9% of final energy consumption in 2010.
- Germany met 11% of its total final energy consumption with renewable sources, which accounted for 16.8% of electricity consumption, 9.8% of heat production (mostly from biomass), and 5.8% of transport fuel consumption. Wind power accounted for nearly 36% of renewable generation, followed by biomass, hydropower and solar photovoltaic (PV)
- Several countries met higher shares of their electricity demand with wind power in 2010, including Denmark (22%), Portugal (21%), Spain (15.4%) and Ireland (10.1%).
- Across most technologies, 2010 saw further growth in equipment manufacturing, sales, and installation. Technology cost reduction in solar PV in particular meant high growth rate in manufacturing. Cost reduction in wind turbines and biofuel processing technologies also contributed to growth. At the same time there were further industry consolidations, notably in the biomass and biofuel industries, as traditional energy companies moved more

strongly into the renewable energy space, as manufacturing firms continued to move into project development.

By early 2011 at least 180 countries had some type of policy targets or renewable support policy at a national level, up from 55 countries in early 2005. As policies spread to more and more countries the geography of renewable energy use is also changing. For example, commercial wind power existed just in a handful of countries in the 1990s, but now exist in at least 83 countries. Solar PV capacity was added in more than 100 countries during 2010. Outside of Europe and the United States, developed countries like Australia, Canada and Japan are experiencing gains and broader diversification, while collectively developing countries have more than half of global renewable power capacity.

China now leads in several indicators of market growth: In 2010, it was the top installer of wind turbines and solar thermal systems and was the top hydropower producer. India is fifth worldwide in total existing wind power capacity and is rapidly expanding many forms of rural renewables, such as biogas and solar PV. Brazil produces virtually all of the world's sugar derived ethanol and has been adding new hydropower, biomass and wind power plants, as well as solar heating systems. \

At least 20 countries in the Middle East, North Africa, and sub-Sahara Africa have active renewable energy market, Manufacturing leadership continue to shift from Europe to Asia as countries like China, India, and South Korea increased their commitments to renewable energy. The increasing shift in geography in markets and manufacturing is boosting confidence that renewables are less vulnerable to policy or market dislocations in any specific country.

One of the forces propelling renewable energy policies and development is the potential to create more new industries and generate new jobs. Jobs from renewable energy number in the hundreds of thousands in several countries. Globally, there are more than 3.5 million direct jobs in renewable energy industry, about half of them in the bio-fuels industry, with additional indirect jobs well beyond this figure.

Total investment in renewable energy reached US \$ 211 billion in 2010 up from US\$ 160 billion in 2009, continuing the steady annual increase seen since tracking first began in 2004. Including the unreported US\$ 15 billion estimated invested in solar hot water collectors, total investment exceeded US\$ 226 billion. An additional US\$ 40-45 billion was invested in large hydropower.

Asset finance of new utility scale projects (wind farms, solar parks, and biofuel and solar thermal plant) accounted to almost 60% of the total and was the largest investment asset class. Investment in small scale distributed generation projects (mainly solar PV) amounted to US\$ 60 billion and accounted for more than 25% of total investment in renewable energy. For the first time, investment in renewable energy companies and utility scale generation and biofuel projects in developing countries

surpassed that in developed economies. China attracted more than a third of global investment during 2010, making it the leader for the second year in a row.

The Two Major Challenges for Sustainable Growth of Renewable Energy Systems

Rare Earth minerals and PV recycling are seen as the two major challenges.

Rare Earth Minerals: As renewable energy markets and industries continue to expand, so does their use of raw materials. The U.S. Department of Energy estimates that clean energy technologies (which include PV cells, wind turbines, electric vehicles, and fluorescent lighting) now account for approximately 20% of the global consumption of “critical materials,” including the rare-earth elements and other key elements such as indium, gallium, tellurium, cobalt and lithium.

Rising demand has exposed uncertainties in the supply chains of these materials, which are critical in the manufacturing of both PV films as well as the permanent magnets and batteries used in wind turbines and electric vehicles.

China, which possesses roughly 36% of the world’s rare-earth deposits, currently produces around 97% of the global supply. It is projected to fall short of meeting the annual 10-15% growth in rare-earth demand within two to three years.

China is now implementing more stringent controls over the formerly under-regulated rare-earth industries affecting or introducing uncertainties in global supplies. China had reduced rare-earth exports 72% in early 2010 and further 11% in the first half of 2011. It also introduced pollution control in late 2010 that are likely to further restrict rare-earth extraction and processing. As a result 2010 saw price increases of 300 to 700% for various rare-earth elements. Japan and Canada have promoted exploration for rare-earth to develop their own reserves. Also rare-earth mines are expected to come online soon in Australia, USA, Canada, South Africa and Kazakhstan.

US government has allocated US\$15 million for R&D on rare earth elements and for the development of substitutes for rare earth magnets. These efforts are also being followed by EU, South Korea and Japan, as well as in private industry, where a number of firms are developing ferrite magnets to replace magnets based on rare-earths, such as neodymium. In addition, the US is investing US\$ 35 million in the development of batteries free of rare-earth elements. Similar programmes are underway in Japan, the EU and South Korea. In the long term, public and private nano-technology research programmes are looking to use nano-composites to reduce the rarer earth contents of permanent magnets.

PV Recycling: At the other end, the PV life-cycle production, operation and decommissioning processes have highlighted growing environmental and materials issues. In the solar PV sector in particular, questions about material and energy flows, environmental impacts, and the reprocessing of used components have become increasingly central. With total installed global solar PV capacity increasing by 7 times

between 2005 and 2010, these practices have come under greater scrutiny, driving innovation in efficient manufacturing, new production equipment, recycling of process water and other resources, and on-site generation of renewable process energy. Of growing importance is the re-cycling of solar panels that have reached the end of their service life, while current quantities of disused PV modules remains too small to fully support an extensive recycling operation, it is predicted that around 130,000 tonnes of end of life PV panels will be ready for disposal in Europe by 2030.

SELECTED INDICATORS AND TOP FIVE COUNTRIES

Selected Indicators		2008	2009	2010
Global new investment in renewable energy (annual)	<i>billion USD</i>	130	160	211
Renewables power capacity (existing, not including hydro)	<i>GW</i>	200	250	312
Renewables power capacity (existing, including hydro)	<i>GW</i>	1,150	1,230	1,320
Hydropower capacity (existing)	<i>GW</i>	950	980	1,010
Wind power capacity (existing)	<i>GW</i>	121	159	198
Solar PV capacity (existing)	<i>GW</i>	16	23	40
Solar PV cell production (annual)	<i>GW</i>	6.9	11	24
Solar hot water capacity (existing)	<i>GWth</i>	130	160	185
Ethanol production (annual)	<i>billion liters</i>	67	76	86
Biodiesel production (annual)	<i>billion liters</i>	12	17	19
Countries with policy targets	#	79	89	96
States/provinces/countries with feed-in policies ¹	#	71	82	87
States/provinces/countries with RPS/quota policies	#	60	61	63
States/provinces/countries with biofuels mandates	#	55	57	60

Conclusion

Climate Change Summit, at Durban, in December 2011; and the Rio+20 Conference, at Rio, in June 2012 will both focus on deliverables and concrete results. Whereas the environmental ministers and negotiators are now focusing on their key expectations from these two conferences, the global leaders will have to show extraordinary leadership initiative to achieve results leading to sustainability on this planet. Although the leaders have always shown their commitment for sustainable development but this will have to be renewed with greater vigour; and new directions for development will have to be identified that will create a win-win situation for all. As the global economies are passing through a turmoil, it is but appropriate that unnecessary and unwanted subsidies on environment polluting fossil-fuels are withdrawn or avoided and the funds so saved are made available for promotion of environment friendly renewable sources of energy by creating a framework for new sustainable development scenario. This approach will promote sustainability.