

Renewed Commitment Necessary for Sustainability through Cleaner Development

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Introduction

There have been divergent views on outcome from the Copenhagen Conference and the subsequent Cancun Conference. Wild statements forecasting doom at the Durban Conference are afloat. Whatever be the perception amongst different groups, it is undeniable that the businesses and the civil society have launched initiatives world wide to bring down GHG intensity in socio-economic development in developed as well as developing countries. The results in developing countries, mainly those projected as the future polluters, have been extremely encouraging.

The Rio Conference on Environment and Development in 1992 set in motion a global drive towards cleaner production and consumption patterns worldwide. Developed and developing countries realised the importance of renewable energy and environmental protection. In preparation for the Rio Conference in 1992 a number of countries enacted several laws and introduced financial incentives to encourage investments in this sector. The subsequent period say up to 2006, saw investors rush in, encouraged by the market potential and preferential policies. Sectors such as solar panels, bio fuels and wind energy encouraged entry of a number of large, medium and small domestic and foreign producers worldwide. Many of these countries lacked sustainable competitive advantages, but recognised a near-term profit opportunities. Many of these entrants are pure low cost export players.

Future Development will be Different

The World Bank organised a brainstorming session on climate change in Washington, July 2011, inviting about 70 of the world's sharpest mind on climate change to find ways to best support the exploding demand from countries for a low carbon future. They included Nicholas Stern, Professor of Economics from the London School of Economics Christiana Figueres, Secretary General of the UN Framework Convention on Climate Change, Todd Stern, Special Envoy for Climate Change for the US Government, and Kandeh Yumkella, Director General of UN Energy.

The participants emphasised that there is a direct link between climate change and poverty and that these are the two defining challenges of this century. The war on poverty cannot be won without addressing climate change impact and that there is risk of reversing any gains on poverty if climate change is not addressed. Climatising investment plans is fundamental to development and growth. With Asia yet to construct much of its infrastructure over the next two decades, now is the time to incorporate climate change considerations into planning.

The scale of the risks from climate change is so large that there is a need of no less than a "new industrial revolution" to deal with it.

Nicholas Stern emphasised, "With some climate scientists predicting that the world could be 5⁰C warmer by the end of the century, we may be returning to a scenario not seen in the last 30 million years. This redefines where we live, possibly billions of people will have to move, and this will inevitably lead to extended and severe conflict."

Emissions need to be cut from nearly 50 billion tonnes of carbon equivalent to below 20 billion tonnes by 2050, and if the world economy grows by a factor of three, emissions per unit of output need to be cut by a factor of eight to keep to a 2 degree C world. There has to be a new industrial revolution that would need to take place across all sectors and all economies.”

Transformation through Cleaner Technologies: “We also need a new narrative around climate change”, he said, “that not only brings home the extent of the risks but also tells the positive story that emerges through transformation. That is a story of development done differently, in which adaptation to climate change, mitigation and development are interwoven. Under this second industrial revolution, “growth is cleaner, quieter, safer, more bio-diverse, inclusive and altogether more attractive,” he said. “Tell that story and why this goal is worth pursuing. We then need good leaders with this ammunition.”

Reasons to be optimistic – Denial to Action: Speaking on reflections since his 2006 Stern Review on the Economics of Climate Change, Stern said, “there is much to be hopeful about. Since 2006, the attitude of world leaders to the urgency of climate change has shifted dramatically from the ‘denial’ towards ‘action.’ At the country, region, city and private sector levels, efforts to reduce emissions and grow differently are taking hold. One of the boldest of these comes from China through its latest 5-Year Plan which focuses on ambitious emission reduction targets through industrial transformation”.

“Perhaps the most important quantitatively and in radical-ness is China’s 5-year plan... its of extraordinary importance where key drivers of change are consumption, clean growth and innovation, radically different from high carbon, high investment and externally – oriented manufacturing.”

And even at the climate change negotiation level – which has been labeled as complex and slow-moving-countries are showing through their reporting that they can pursue low-carbon pathways and potentially reduce emissions much further.

Clean Technology – What Does That Mean

The term clean technology refers to a diverse range of products, services and processes that harness renewable materials and energy sources, dramatically reduce the use of natural resources and cut or eliminate emissions and wastes. Clean technology includes not only renewable energy sources (solar power, wind power, biological power etc), but also renewable fuels (biomass, bio-diesel, hydrogen fuel, and coal gasification), environmental technology end controls (technologies to remove pollutants from the air, water and soil), materials and resource efficiency, sustainable transportation (including hybrid vehicles), agriculture and water and wastes management.

Thus, clean technologies cover not only the technologies that are dealing with the environmentally benign sources but also the technologies that convert the environmentally polluting sources into environment friendly products and services. This provides an opportunity to make the existing polluting systems cleaner through clean technologies and ensuring that the new systems coming in future are inherently clean.

Resource Efficiency

Until recently, sustainability and greening the supply chain largely meant keeping up with regional, national, and global regulations on carbon emissions, hazardous materials and

recycle. Experts are now seeing a major shift away from regulator driven sustainability models to total energy efficiency priority. Gartner incorporated research analysts have spot lighted 9 trends changing the corporate greening many of which will involve goal reassessment and follow-up action from supply chain, operations and manufacturing professionals.

As companies and consumers have become more knowledgeable about green issues and more demanding about what they expect from next generation products and processes, companies today have to go after something other than the low hanging fruits that appeased initial legislative requirements. Additionally, while laws forced green conversations to take place corporate wide, other long term implications have surfaced.

UNEP recognises that investment in a new generation of environmentally sound technologies, clean industrial processes, and cleaner cities has the power to positively transform economies in societies.

Three basic issues emerged:

- i) What if the need to reduce wastes could derive the design and manufacture of better products and services?
- ii) What if cleaner investments could support sustainable incomes, create green jobs and reduce poverty?
- iii) And what if consumers and business alike had the knowledge and skills needed to make environment friendly, informed choices everyday?

Improved productivity and less waste calls for using expertise in science, policy, environmental engineering, economics and financing so as to optimise resource use and minimise waste.

UNEP has focused on resource efficiency. It says “economic growth and social development cannot be sustained with our current consumption and production patterns. Globally, we are extracting more resources to produce goods and services than our planet can replenish, while a large share of an increasingly urban world population is still struggling to meet basic needs.” Resource efficiency represents a critical opportunity to address this unsustainable path, building green economies in which economic growth is decoupled from environmental harm. By enabling the design and production of low impact product and services, resource efficiency can help us meet human needs, while expecting to sustain the ecological carrying capacity of the earth.

UNEP defined resource efficiency from a life cycle and value change perspective. This means reducing the total environmental impact of the production and consumption of goods and services, from raw material extraction to final use and dispose.

UNEP’s Resource Efficiency sub-programme works to ensure natural resources are produced, process and consume in a more environmentally sustainable way, paving the way towards the green economy. This is an economy which yielded opportunities for cleaner investments and green jobs to address poverty and enhance human well-being.

Business Initiatives for Green Growth Under Second Industrial Revolution

According to Gartner Incorporated the top issues influencing green business decision are as follows.

1. **A focus on cost and overall efficiency throughout the whole supply chain.** This means looking at all water, energy, and waste management practices as opposed to carbon dioxide-only footprint evaluations. Along these lines, capex projects must be more fully explained and justified, and payback and return-on-investment periods better defined.
2. **Energy efficiency is priority.** Within the cost and efficiency focus, energy efficiency gets the most attention. A sharp rise in crude oil, gasoline, natural gas, electricity, and heating oil prices in 2011 and anticipated increases for 2012 are compelling manufacturers to look at usage more strategically.
3. **Continued uncertainty in the regulatory landscape.** There are still many competing loose ends when it comes to figuring out which laws to follow and how to follow them. Regional, national, and global laws are in various states of discussion or implementation, or have been shelved short-term.
4. **Constraints influence.** Other constraints -- particularly growing concerns about adequate water supply -- are gaining attention. A significant supply-demand gap for water exists and will only get worse in the coming decades. Competition for sufficient water allocations for worldwide operations will heat up, and companies need to consider their water use targets.
5. **IT is taking on a new role in sustainability.** Previously, software and tech tools were aimed at compliance and carbon-reduction goals. Today the tools are being used to monitor and manage energy efficiency, track risks, and lower costs.
6. **Heavier focus on product lifecycle accountability.** Companies are going to greater lengths to determine sustainability gaps from design to end-of-life. Again, this doesn't necessarily stem from wanting to be good environmental citizens; it's another way to reduce total operational costs.
7. **The race for clean technology is clearly still on.** Globally, 2010 venture capital investment in clean tech approached high 2008 levels after a dip in 2009. The US and China are driving much of the growth in this space.
8. **Smart, green buildings and cities are a sweet spot.** Although the recession affected the construction market, green building, especially in the commercial segment, was the only growing segment. Companies are looking at ways to retrofit manufacturing facilities, warehouses, and other buildings to save on total energy expenses.
9. **It's still a risky global environment.** Supply chain, sourcing, and manufacturing operations are all global, with each regional location having its own peculiarities. Disasters like an earthquake in Japan or political unrest in countries mining raw materials cast shadows on continuity in sustainability plans.

On one hand, the sustainability conversation move away from compliance-level discussions. It's about time; there is a lot more at stake than following the rules. At the same time, it's disappointing that talks seem to be centred on cost cutting. Money-fuelled initiatives only go so far in changing behaviours. It's fair to say a certain amount of business evolution will be needed to keep the green revolution fired up

Role of Technology in Effective Cleaner Development Models

Technology is a key factor in the production of goods and services related to economic activity. Technological choices constitute a multiplier on the amount of economic activity—for a given scale and composition of production, some technologies will exert a far greater pressure on the environment and others far less. For example, since about 1970, greenhouse gas emissions in OECD nations increased more slowly than the growth in economic activity (production and consumption) because of shifts towards technologies that have less environmental impact than earlier technologies.

However, there are many obstacles to a shift towards more environmentally benign technologies. In some cases, they are economic –environmentally preferable technologies often have higher overall costs than older, more polluting technologies. But in many cases, simple cost/benefit calculations, even if limited to private returns on private investments, are not sufficient to explain the slow pace in growth in new technologies. For example, researchers have noted the “energy efficiency gap” for years. Neither consumers nor industry make investments in energy efficiency despite the fact that such investments would have very favourable economic rates of return purely from the energy costs saved without accounting for environmental benefits.

Research is just beginning to explain the obstacles to adopting more environmentally benign, cost-effective technology. One key factor, at least for households, seems to be a lack of understanding of the energy and cost impacts of commonly used technologies. It appears that the same factors may also affect organizational decision-making.

Globalization may have two contrasting effects on the diffusion of environmentally friendly technologies. On the one hand, some have argued that there is a “race to the bottom” in which rising concern for the environment and increasing environmental regulation in the most developed countries leads to movement of the most polluting industries to less-affluent nations where regulations are laxer or less well enforced. This suggests that the environmental Kuznets curve is really a matter of displacing environmental stress across national borders – consumption in the most affluent nations drives environmentally disruptive consumption in the less affluent ones. On the other hand, there is the argument that transnational companies tend to adopt those technologies and internal policies used in the domestic production across the globe. In this view, then, globalization encourages the diffusion of green technologies globally.

Empirical work to sort out these effects suggests that both of these processes may be in play. For example that trade increases environmental impacts in the least affluent countries, but although it may decrease many forms of pollution in more affluent countries, it does not affect their energy consumption or greenhouse gas emissions. In contrast, the foreign direct investment often leads to increased pressure on the environment. In addition to the potential to export harmful production, technological change that improves resource-use efficiency can have a perverse effect by decreasing the costs of resource use and thus increasing demand. If the increased demand is greater than the efficiency gains, the overall consumption of a resource can actually increase, with concomitant increases in environmental impact, a syndrome known as the Jevons paradox. The classic example that revealed the paradox improvement of the steam engine by James Watt in the mid-nineteenth century, which instead of reducing the rate of England’s coal use through efficiency improvements made the use of coal cheaper and therefore more applications were found for its use. Clearly, the choice of technology, which is shaped by economic factors and individual and public decisions, is critical in determining overall human impact on the environment.

“This industrial revolution is moving in the direction of green technologies, green energy, cleaner technologies in various production processes but also in infrastructure, housing and transportation. Accelerating the pace will keep us below two degree (of warming) – it will also reduce emissions and in effect promote growth and wealth creation in poorer countries.”

Rio +20: New and Emerging Challenges

The Rio+20 secretariat have also publicised, in July 2011, that the member states and other stakeholders have highlighted the following challenges for priority attention (July 2011):

- i. Green jobs and social inclusion
- ii. Energy access, efficiency and sustainability
- iii. Food security and sustainable agriculture
- iv. Sound water management
- v. Sustainable cities
- vi. Management of the oceans
- vii. Improved resilience and disaster management

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 global scientific and engineering fraternity and putting forth their view point. As infrastructure is now being created in most of the Asian countries, one can see the larger infiltration of cities and urbanisation process. Most of the developing world population will live in cities and towns by 2020. It is estimated that buildings alone account for roughly by 50% of global green house gas emissions. Add transport and manufacturing of building materials – and the number rises to 20-25% range. Also, Asia houses the largest number of the world’s poor and malnourished and is also significantly subject to natural disasters of all kinds, this regional meeting will be of extreme value for the global climate change and environment and development negotiations. And two largest energy consumers over the next 25 years – China and India – are also in this region.

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.

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. Experts believe that what matters for the outcome is renewed political commitment to sustainable development and identifying practical solutions.

Focus on Low Carbon Economy will Lead to the Greatest Economic Boom

While considering the statement of The Inter-governmental Panel on Climate Change Statement in 2007 “the world has less than 8 years to arrest global warming or risks what many scientists want to the catastrophic changes to the planet”, it would be easy to despair. However, this is balanced by a growing realisation of the vast opportunities such a focus can deliver, such as that “creating the low-carbon economy will lead to the greatest economic boom”. The daunting question that many are now asking is “are we actually destroying the world we are creating?” These messages are not new, however, in light of compelling evidence of both the challenges and opportunities for over 30 years now, there is still hesitancy; there is still a lack of action on a broad scale, there are even efforts to block such progress.

Rather than seeking “silver bullet” solution – the one engineering answer to save the world it is becoming clear that what we need is more like a “silver shotgun” approach, integrated solutions-based engineering portfolio options all travelling in the same direction. The engineering profession must now focus on the creativity and ingenuity that has delivered today’s incredible levels of human and industrial development on the task of delivering sustainable engineering and development solutions.

Cleaner investments can only be ensured through effective public and private sector collaborations. UN and other international agencies, on one hand, and Professional organisation like the World Federation of Engineering Organisations will have important role in ensuring introduction of Clean Technologies at a fast pace.

Conclusion

The two biggest challenges the humanity faces today are: combating climate change and overcoming poverty. Both are interrelated and one of them cannot be achieved by ignoring the other. 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 extra-ordinary 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. This approach will promote sustainability.