

Sustainability

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Tomorrow

Business Response to Climate Change





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It is this spirit of theirs we salute. The spirit that made each one of them think 'I can'.

I CAN.

The belief that **Ambuja** is built on.

From the Editor's Desk

We are at the beginning of the second decade of the 21st Century. While a lot has changed in the last decade, one really wonders if the change was for good and the development really rapid. Food, fuel and financial crises, pretty much sum up the things that went horribly wrong. They made the world realise the vast gap between the fuel needs of the rich and food requirements of the poor that would not only affect alternate fuel development, but also food patterns of 6 billion people, and trade bargains across countries.

The crises are also most significant because it brought to end 'unregulated' capitalism. Beyond the philosophy of human greed that could catapult into global recession or slowdown, it redefined geo-politics; the G20 had begun to replace the G8 and India was undoubtedly there. This was the first time that the emerging countries moved from the sidelines to the centre table for discussing a global issue.

However, it was the climate negotiation at Copenhagen that displayed the siege of the emerging countries, or mainly China and India. One can choose to be on either side of failure-success continuum in reading the outcome of the Copenhagen process. At the Centre, we believe India will need a very strong strategy 'independent' of the US or China, that respects per capita emission and historical responsibility basis, as well as enable a low-carbon development path.

Our Centre along with CII is also providing inputs to the Ministry of Environment & Forests, the Planning Commission, and other relevant Ministries on various policies and interventions required for India's low-carbon development. It is also working with various State governments to 'green' their existing industries, helping them create an enabling environment for 'greener' growth through deployment of specific ICT solutions and 'green' jobs.

The Centre will continue to work with large companies to tap unserved markets through sustainable innovation and new business models that could be deployed in both developing and developed countries. We firmly believe that India is a hot-bed for such innovation and models that will feed into much of the global progress on tackling the known issues and even the unknowns.

It is clear that none of this can be done without the foresight and responsible action of business. This issue of Sustainability Tomorrow on Business Response to Climate Change endeavours to highlight this aspect. The issue tries to gain perspective on the response to the climate challenge by the business, and what strategies and pathways they can not just follow but draw by themselves for the others to follow.

Governments have to redefine their role of being facilitators with appropriate regulations that enable and not constrict foresight, responsibility and innovation. As I sign this editorial and the issue goes to print, the political and business voices at WEF 2010 at Davos echo our common agenda. Our common agenda is to tackle the twin challenges – poverty and climate change - of the 21st Century.

Our annual training calendar for the year 2010 is enclosed with this issue and is constantly updated on our website-www.sustainabledevelopment.in. We invite you to take advantage of our service by participating in the training programs and certified courses conducted by CII-ITC Centre of Excellence for Sustainable Development. Please do email your suggestions and enquiries at sustainability@cii.in.

Regards,



Seema Arora
Editor, Sustainability Tomorrow





Business Response to Climate Change



Björn Stigson
President
World Business Council for
Sustainable Development (WBCSD)

They say necessity is the mother of invention. And, if we are to shift the world towards a sustainable, low-carbon economy and arrest damaging climate change, innovation and invention have never been more necessary.

Recent figures from the Food and Agricultural Organisation show that one billion people – or one-sixth of the world's population – suffer from hunger. These are spread around the world: 642 million live in the Asia-Pacific region, 265 million in Sub-Saharan Africa, 53 million in Latin America and the Caribbean, 42 million in the Middle East and North Africa and 15 million in the developed world.

Who can blame these people for wanting better lives? Yet food security could easily be affected if climate change is allowed to continue.

As well, the world's population is expected to grow by 50%, or three billion people, by 2050, and 85% of these will live in what we today call developing countries. All of these people will need food, water and housing. Many will move to cities: by 2050, it is expected that 70% of the world's population will be urbanised. Globally, about 1.6 billion currently have no access to electricity, and it will be difficult to improve their lives significantly without it.

But more people with electricity

cannot be allowed to mean more greenhouse gas emissions. A move to a high-growth, low-carbon economy is imperative. Breakthrough energy technologies will have to be found and put to work. Creative thinking and a lot of investment will be needed.

Business knows it is part of the solution to the world's climate change problem, it knows it must be or it may find itself out of business. It is already responsible for 85% of global investment and plays a leading role in the deployment of low-carbon energy technologies. But, as the major investor in and owner of technology, it wants to get on with working, planning and investing for the future. But it cannot do this alone: among other things, it will need a clear, consistent policy framework into which to invest, and new financial mechanisms that enhance project investments and technology deployment.

Some developing countries and



emerging economies understand that they will need new technologies, if they are to leapfrog high-carbon energy and make it into the low-carbon world and lament the inability of their countries to attract this type of investment. But those that propose mandatory technology transfer as the solution are wrong.

The International Energy Agency estimates that 70% of greenhouse-gas emission reductions could be achieved through the diffusion of existing low-carbon and energy-efficient technologies, along with technologies already in an advanced state. These technologies are transferred through projects, and through products that are bought and sold, beyond national boundaries and at a fairly rapid pace. Companies transfer technology constantly, either within its own branches in different countries, or by selling it to other companies operating elsewhere.

Countries and organisations that propose compulsory licensing of technology are misguided, and wrong if they think this will hasten development and deployment. They fail to understand that roll-out is about much more than merely owning technology. Successful deployment depends on having the necessary supporting infrastructure in place (for example, access to national electricity grids for renewable energy producers), political and regulatory stability in the host country, and a capacity locally to absorb the new technology and a competency to use it.

Establishing suitable infrastructure may require significant investment by the host country, or parallel investment projects. There is not much point in building a new, low-carbon, power plant if electricity from it cannot be uploaded into a country's supply grid, or if workers cannot access it because transportation infrastructure is poor, or if its operations are interrupted

because of unreliable water supplies. This is an area worthy of investment and one where governments and other groups seeking to hasten commercial technology transfer could usefully contribute.

Equally, there is little point in deploying a particular technology if a skilled workforce is not available to use and maintain it. Around the world, substantial resources need to be directed at improving education systems and strengthening knowledge absorption through programs that increase technological literacy in society, governments and businesses. Business can share in these costs, but governments must play a strong role in providing a platform that can support business development.

Governments could help, too, by working to ensure a clear and consistent regulatory framework into which business can invest. A country with constant change, political upheaval and labyrinthine bureaucracy, where the risks may outweigh the likely rewards, will struggle to attract investors.

Technologies are diverse, at different stages of maturity, have varied levels of carbon mitigation potential, and require different policy responses in developed and developing countries. But one constant is the need to stimulate investment so that these technologies can reach their full potential.

Financial incentives and mechanisms that drive investment towards developing countries will be essential. The IEA (WEO 2009) estimates that an annual incremental investment of US\$ 1.1 trillion will be needed to meet projected energy demand through to 2030. However, in order to realize a 450ppm scenario, the IEA estimates that it will take an additional US\$ 370 billion per year. More than half of this investment is expected to be made in developing countries. Current

levels of investment fall well short of this amount, and there is a clear and urgent need to boost them.

Furthermore it is worth noting that the IEA also estimates that it will take a mere US\$ 35 billion per year through to 2030 in order to provide universal access to electricity. Currently 1.5 billion people still lack access to electricity.

Financial mechanisms that “pull” investment towards developing countries will need to be created. These will need to be fully fungible, highly liquid and transparent. These various mechanisms should be designed and used concurrently for maximum effect.

A global carbon market will be important aid to reaching our long-term emissions goals. But to be effective this market will require the establishment of a long-term emissions pathway, with intermediate targets, to create sufficient demand in national carbon markets, boost investor confidence and drive investment in new technologies. This global market should be created by linking the various existing mechanisms, and assisted by the establishment of a global carbon price.

Legislators and policy-makers who came to Copenhagen in December need to understand that a future framework that is based on a “one size fits all” approach will not be successful in delivering the necessary investment in technology. Financial mechanisms should be designed to incentivize low-cost mitigation opportunities (for example, energy efficiency) and higher cost mitigation projects (such as new low-carbon technologies).

Market failures could occur where low-cost opportunities from developing countries generate large quantities of offsets that depress the carbon price in emissions trading schemes, and so prevent the development of higher

cost projects. Failures could occur also when few offsets are delivered and the emissions trading schemes include mainly higher cost projects per emission reduced, resulting in overpayment for too little mitigation benefit.

Different policy measure will be needed around different types of mitigation opportunities that have different financial needs. For instance:

- Opportunities in low-cost mitigation projects, mainly energy efficiency measures, can largely be self-financed but specific policy measures are required to help overcome market barriers to implementation. These will for the most part need to be on a country-by-country basis.
- Manufacturing industry and power generation mitigation projects need stable, long-term incentives. Funding for these low-carbon solutions should come mostly from carbon markets, as they develop at national and regional levels, and, in some countries, will need capital support.
- Reforestation and avoided deforestation are low-cost opportunities but more needs to be done through tailored financial mechanisms or funding. The current Clean Development Mechanism (CDM) precludes recognition of the important carbon management potential of managed forestry projects. Carbon markets, forests carbon policy and financial mechanisms must be designed to take full advantage of the multiple benefits offered by sustainable forest management.
- High-cost mitigation options will require international financing and new funding mechanisms to leverage private sector investment

and bridge the funding gap for innovators as they attempt to scale up to demonstration projects.

It is in this last area that unprecedented levels of public-private partnerships will be necessary if we are to get the breakthrough technologies we will need to fight climate change. Business alone will not be able to bear the cost of developing and bringing to market technologies such as carbon capture and storage, biofuels and next-generation nuclear. If solutions to climate change are to be found and implemented on a global scale, cooperation across all nations and all sectors of society will be paramount.

Businesses make their investment decisions after weighing the risks and rewards. Innovative, breakthrough technologies could help save our climate, but only if it makes sound business sense to invest in them. A strong intellectual property rights regime will be crucial if business is to invest in high-risk, high-cost new ideas.

There are some who advocate a weakening of IPR regimes because they see them as a barrier to the diffusion of low-carbon technologies around the world. I believe they are wrong.

Business invests in innovation because it sees a business opportunity: that is, it believes that after some years of significant financial burden and a lot of work, it will eventually see a profit from the particular project. That is the nature of business, and the means by which it creates jobs, provides livelihoods and contributes to economic growth.

Strong intellectual property rights encourage investment in innovation – in finding solutions – because they protect the right of the inventor, or the investor, to profit from his or her work by granting exclusive rights for a limited period. By requiring

inventors to disclose the details of their inventions in exchange for protection, patent systems promote the broad dissemination of knowledge, from which further innovations may grow.

Measured by the number of patent submissions, innovation is currently concentrated in just a few countries: Japan (42% of total patents), Germany (13%), the US (12%), China (6%), South Korea (5%) and Russia (4%). But last year China patented more technologies than it had done in the previous 25 years.

But what is really remarkable about patent statistics is that the number of innovations patented in developing countries grew at an annual average rate of 18% between 1997 and 2003, compared with 9% globally. As well, research has shown that successful technology diffusion correlates with a supportive business environment, lower barriers to trade and foreign investment and tertiary education. Clearly, investment is a key factor, but so too is creating an enabling environment for that investment.

Many of the technologies needed for the climate solution will be in the energy sector. In some sectors, such as pharmaceuticals for instance, a single patent may be critical. A new drug may be the result of a single innovation, a single discovery or single process. But this is not the case with energy. Here the technologies may be huge and complex, reducing greenhouse gas in a range of ways, and this may involve myriad patents. The royalty costs for energy patents may be just a small part of developing a low-carbon energy technology, because for these kinds of technologies the big costs are in aspects that are not patentable, such as supporting transport infrastructure or operational and maintenance costs. For some other products, again such as a new drug, the patent royalties could be more than 90% of the development cost.

Successful deployment of technology is not hindered by the patent system. It is hindered by things such as a lack of infrastructure, a lack of education and training, a lack of good organisational practices, political instability and a lack of a policy framework that fosters investment.

I believe we can reshape our world and get it back on a track that protects our climate and yet promotes economic growth. How we do this will be a test of our ingenuity and ability to work

together for the greater good. Making the right decisions now will spur new industries, create green jobs, change our lives and secure our future. But we will not do this by thinking within narrow national borders, or in a climate of blame and shame.

We are running out of time. We can design a better world, but only if all sectors of society work together with a renewed spirit of cooperation. We can do this. I know business stands ready.

Mr. Björn Stigson has extensive experience in international business. He began his career as a financial analyst with the Swedish Kockums Group. From 1971-82 he held various positions in finance, operations and marketing with ESAB, the international supplier of equipment for welding. From 1983-91 he was President and CEO of the Fläkt Group, a company listed on the Stockholm stock exchange and the world leader in environmental control technology. Following the acquisition of Fläkt by ABB, in 1991 he became Executive Vice President and a member of ABB Asea Brown Boveri's Executive Management Group. In 1995 he was appointed President of the World Business Council for Sustainable Development (WBCSD), a coalition of some 200 leading international corporations.

Mr. Stigson has served on the board of a variety of international companies and organisations. He is presently a member of number of boards/advisory councils, such as Prince Albert II of Monaco Foundation; China Council for International Cooperation on Environment and Development and Co-Chair of its China Low Carbon Economy Task Force; Dow Jones Sustainability Indexes (DJSI); Global Energy Assessment Council; Harvard Environmental Economics Program; India Council for Sustainable Development; Energy Business Council of the International Energy Agency (IEA); America's Climate Choices Initiative of the US Congress; and the Veolia Sustainable Development Advisory Committee. He is also Chair of the Peer Review of German Sustainability Policies.

About the WBCSD

The World Business Council for Sustainable Development (WBCSD) is a unique, CEO-led, global association of some 200 companies dealing exclusively with business and sustainable development. The Council provides a platform for companies to explore sustainable development, share knowledge, experiences and best practices, and to advocate business positions on these issues in a variety of forums, working with governments and non-governmental and intergovernmental organisations.

www.wbcd.org

In Conversation with Ricardo Young, President, Ethos Institute, Brazil

In today's context, what has been the evolution of topics such as the "environment" and "climate change" in Brazil?

People in Brazil have been concerned about the environment and climate change for long. They value the forests, biodiversity and water resources. There is a Bill on the environment in place from 1988. Other documents / events that have heightened the consciousness in the masses include the film by Al Gore "An Inconvenient Truth", the IPCC Reports as well as the Stern Report. In other words, since 1996 there has been much more awareness on the topics of environment and climate change. Even NGOs are much more aware now.

At the political front, Ms. Marina Silva - our former Environment Minister - has started a new Green Party, and is currently eyeing the prospect of contesting for the position of the President of Brazil in 2010.

So far, business has not resisted any action or legislation on climate change; rather they have sought ways to make the environment better and also looked at opportunities to make their business grow. In contrast, and surprisingly, it has been the agricultural sector that has resisted the imposition of binding legislation on them.

Can you give some examples of how the business and industry have worked to improve the environment, and thereby contributed to sustainable development?

There are several examples that come to mind. Let me highlight a few prominent instances for the benefit of your readers in India.

- Companies are building capacity in municipal authorities to better manage their finances and funds.

- Businesses are also providing a boost to education and literacy in Brazil in two ways:

- [a] Setting up libraries in public schools since bookstores are not common in Brazil

- [b] Developing National Awards for teachers in schools on pedagogical methodology.

- Donating old computers to slums to enable "digital inclusion".

- Using solar panels for the computers in the Amazonian region.

- Working with the community to offset the environmental damage arising out of the mining activities.

- Working for public health to address the two major problems - diabetes and cataracts.

- Sustainable Cities Initiative looks at space, mobility, entertainment, security and other diverse sources to cover health, education, food.

- People are now using "sustainability values" to assess the performance of public servants; e.g., Mayor of a city.

What are some of the major challenges facing industry in Brazil in the context of sustainability?

Like India, Brazil, too, has a desire and pressure to grow its economy. Though the last six years have seen a lot of effort to make social inclusion possible, there are several concerns that also need to be addressed on a priority basis. Some of these include the following:

- Nearly 44 million people in Brazil (i.e., 20% of the total population) live below the poverty line. These people have minimum wages lesser than \$ 230 per family; the challenge is to improve the quality of life for this segment of the society.
- About 70% of the energy in Brazil is sourced from hydropower, and the ability to enhance this is limited. Therefore, industry is looking at combinations of thermal and oil, or thermal and biofuels.
- The lack of basic infrastructure in many parts of the country.
- The biggest challenge is [lack of] primary education. Although 100 million persons out of a total population of 190 million have access to internet, there are not enough scientists and engineers in Brazil. It was very appropriate the Asia Sustainability Summit organised by CII-ITC Centre of Excellence for Sustainable Development began with the topic of ICT.
- The annual growth rate of the Brazilian GDP has actually shrunk from 5.5-6.0% over the last 2 years due to the economic slowdown prevailing globally.

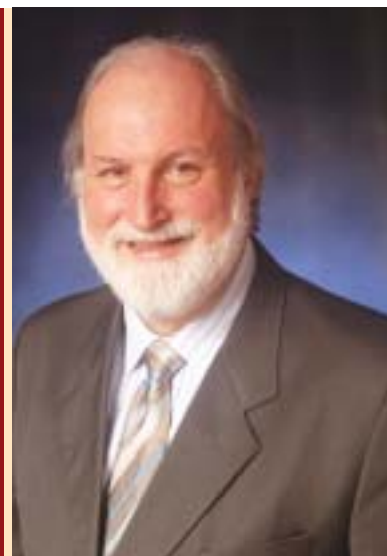
- Issues like the lack of ownership of land, combined with large tracts of unproductive land, have compelled the population to migrate to the cities. This can be reversed only with the help of a biomass-based economy.

How can these barriers be overcome?

Industry and government will necessarily have to work together; and continuous dialogue is a must. The lending institutions are now only beginning to include social responsibility, or CSR, as a sort of pre-condition to lend money. Also, these institutions are now stopping the lending to those organisations that are in the “dirty labour” list of companies. Finally, businesses are now very receptive to international good practices. Brazil would look not only towards the developed countries, but also to Indian businesses.

Where do the small & medium enterprises [SMEs] figure in this path?

SMEs are key to our future. It doesn't matter whether they belong to India, or Brazil, or anywhere else. While we need to encourage them and provide a level playing field, they in turn also have to be accountable and must be responsible for their acts. The government policy now is to levy lesser taxes for the SME businesses. There is also a new Bill in the anvil; it is designed to encourage self-entrepreneurship. Finally, these SMEs must be able to leapfrog in CSR through the value chain [viz., supply chain].



Mr. Ricardo Young is the President of the Ethos Institute, Brazil. He holds degree in Business Administration from Fundação Getúlio Vargas, São Paulo, Post Graduation degree in General Management from PDG/EXEC and Fellow of the ELIAS program at MIT.

Mr. Young is Chairman of the Board of Yázigi Internexus; founder and Chairman for three terms of the Associação Brasileira de Franquias (ABF). He was General Coordinator at PNBE and World Business Academy, Member of the Council for Economic and Social Development to the President of Brazil until, President of Instituto Ethos de Empresas e Responsabilidade Social and UniEthos; Board Member of Instituto Akatu, WWF, Global Reporting Initiative (GRI), AccountAbility, (London). He is also the Member of the CSR Zurich Group.

Mr. Young has Co-authored several books and articles on corporate social responsibility and sustainable development.



A more sustainable future.

At Intel, we incorporate environmental performance goals throughout our operations—from designing “green” features into our buildings to manufacturing our products and handling waste. Since 2001, we have invested over USD 23 million on hundreds of projects to improve energy efficiency and resource conservation in our facilities globally; and Intel Capital, our internal venture capital group, has invested more than USD 100 million in solar energy.

In 2008, we reduced our total CO₂ impact below 2007 levels, and we are on track to reach our goal of reducing our absolute global-warming gas emissions 20% by 2012 from a 2007 baseline. Intel's investment of more than USD 100 million in water conservation programs during the past decade has enabled us to reclaim more than 3 billion gallons of water a year. We also recycled or reused 84% of our chemical waste and 88% of our solid waste in 2008.

In India, as part of the Climate Savers Computing Initiative that Intel and Google launched globally in 2007, we are working together with other leading IT companies to promote the use of more efficient technologies, with the goal of reducing IT-related CO₂ emissions by 4 million tons and saving Rs 2,250 crores in energy costs. We are also sponsoring studies and driving broad initiatives to help find and promote additional ways that IT can be used to combat climate change across all sectors of the economy.

To learn more about Intel's culture of corporate responsibility, visit www.intel.com/go/responsibility

Initiatives at Intel India

- For the first time, in 2008, we tied a portion of each employee's variable compensation to the achievement of our environmental objectives, as part of a global program.
- Solar hot water systems at our campus in Bangalore now supply nearly 100% of the site's hot water requirements, saving approximately 70,000 kwh on an annual basis.
- Through our water treatment and reuse plan, wastewater from cafes and restrooms are fully treated and reused to meet 60% of our irrigation needs at the site.

Was COP15 the Beginning of the End, or the End of the Beginning?



Gary Kendall
Executive Director
SustainAbility Ltd.

As the dust begins to settle on an extraordinary 15th Conference of the Parties to the UNFCCC, we find ourselves sifting through the rubble of what many commentators were quick to dismiss as abject failure. Failure on so many fronts, one hardly knows where to begin.

We could start with the risible organisation of the event, which saw tens of thousands of accredited delegates forced to stand in line outside the Bella Center for several hours in subarctic conditions, only to be denied entry owing to the hopelessly inadequate venue capacity. Access for the concluding two days of the event was restricted to just three hundred of the so-called “non-governmental observers”, a rather awkward category encompassing a broad swathe of academic institutions, the corporate sector, trade unions, and all

manner of civil society organisations. With stakeholders as diverse as this, excluded from the sharp end of the negotiations, who were left keeping our politicians honest?

But for the remainder of this article, we shall reflect on the outcome of COP15 and its very real consequences for the business community. By “outcome”, we mean not only the Copenhagen Accord – the three page document delivered with some haste at the end of the high-level segment by politicians keen to rescue something of substance from the debris – but also the disintegration of the UNFCCC process. We believe that both will have profound implications for humanity’s attempts to address the climate change challenge.

Despite UNFCCC Executive Secretary Yvo de Boer admonishing the private

sector for its lack of engagement (given the circumstances described above, it is easy to see why), the corporate voice in the run up to COP15 was stridently expressed through the Copenhagen Communiqué, a global initiative convened by the University of Cambridge. At the opening of the conference, some 900 business leaders from all over the world – including those of energy-hungry and carbon-intensive corporations such as Shell, Cemex and American Electric Power – had signed the Communiqué calling for a robust deal. And with good reason, for forward-thinking CEOs were profusely aware that a feeble outcome at COP15 would only serve to make strategic investment decisions more challenging in the coming years.

So what did the private sector want from Copenhagen, and to what extent were these demands met? As the pre-eminent business voice going into COP15, the Communiqué makes it crystal clear:

A strong, effective and equitable international climate framework will stimulate the domestic policy interventions, bilateral and regional deals that are needed as a matter of urgency to deliver on intermediate and long-term reduction targets and accelerate construction of the low-carbon economy. This will unlock the potential of business to do what it does best: to invest profitably, to innovate, and make affordable low-carbon products and services to billions of consumers around the world. The more ambitious the framework, the more business will deliver.

As vocal advocates of the capability – and with it, the responsibility – of business to be a positive force in driving towards sustainable outcomes,

we at Sustainability could not have put it better ourselves: “The more ambitious the framework, the more business will deliver.” So in terms of ambition, did COP15 deliver anything noteworthy? Despite being decried in many quarters, we believe it certainly did – a level of ambition unlike anything seen before at a UNFCCC Conference of the Parties.

It has been the proverbial elephant in the room. Since the Convention came into force in 1994, the big unanswered question has been: what exactly is meant by the ultimate objective, that atmospheric greenhouse gas concentrations should be stabilised “at a level that would prevent dangerous anthropogenic interference with the climate system”?

From the mid-1990s onwards, numerous climate scientists, policy advisors, think tanks and civil society organisations have attempted to pin this down – whether through parts per million of CO₂ equivalent, an overall carbon “budget”, or degrees of warming versus the long-term pre-industrial average – but never has a

COP delivered its verdict, until now. Paragraph 2 of the Copenhagen Accord is explicit on this point:

We agree that deep cuts in global emissions are required according to science, and as documented by the IPCC Fourth Assessment Report with a view to reduce global emissions so as to hold the increase in global temperature below 2°C Celsius, and take action to meet this objective consistent with science and on the basis of equity. We should cooperate in achieving the peaking of global and national emissions as soon as possible, recognizing that the time frame for peaking will be longer in developing countries and bearing in mind that social and economic development and poverty eradication are the first and overriding priorities of developing countries and that a low-emission development strategy is indispensable to sustainable development.

To say that this paragraph is dripping with consequence for business and society at large would be an understatement. First, it draws a line in the sand that says “2°C is too





much". To the extent that there was any disagreement among UNFCCC delegates on this point, it was that the 2°C threshold is too weak, not too restrictive. The Alliance of Small Island States (AOSIS) – an affiliation of 42 nations which includes many of those most vulnerable to rising sea levels – together with a group of some 80 Least Developed Countries (LDCs) were vocal during COP15 in conveying the message of "one point five to stay alive".

Second, it meets one of the primary demands of the business community – expressed through the Copenhagen Communiqué – which is that "targets will need to be guided by science to ensure global greenhouse gas concentrations are stabilised below critical thresholds". This is a crucially important principle, because it means that emissions reduction targets will be informed not by what is deemed politically acceptable but by what the science indicates will be necessary to meet the chosen level of ambition.

Third, the paragraph makes the point that more advanced economies will be expected to decarbonise more rapidly than developing ones. This text preserves the Kyoto Protocol principle of "common but differentiated responsibilities", important given that poverty alleviation stands alongside climate change as a critical challenge of the 21st century.

Taken together, the first two points

represent the clearest statement of ambition that the business community could have wanted. Based on the IPCC Fourth Assessment Report, we know that staying below 2°C or somewhere between 2-2.4°C likely requires that global greenhouse gas emissions will peak and begin to decline within the next decade, culminating in a complete decarbonisation of the energy sector by the middle of this century, as well as reversal of deforestation and massive reductions in emissions from agriculture and waste. We are talking about nothing less than a complete transformation of the ways in which we produce and consume, within the space of 40 years. This is not wild conjecture on our part; it's a considered response to the Accord's stated ambition to stay below 2°C, informed by the best available scientific understanding of climate change. And it represents nothing less than our next moon shot.

What exactly does a decarbonised energy sector look like? It most probably means that we will not be able to use fossil fuels unless we capture and sequester the combustion emissions. Carbon Capture and Storage (CCS) must be brought to scale rapidly, and given the size and economic lifetime of today's fossil-fuelled power generating fleet, must be retrofitted to existing equipment. Given that fossil fuels currently account for some 80% of

global primary energy supply, the task ahead is monumental. But we are not talking about halting fossil fuel use, only eliminating emissions from their combustion.

So what about emissions that aren't amenable to CCS, namely emissions from small and/or mobile sources, such as those from the transport sector? If we are indeed committed to staying below 2°C, then by 2050 they will be no more. Of course, that doesn't imply the transport sector will cease to exist, it simply means that our mobility needs will no longer be served by technologies that release CO₂ to the atmosphere. To the extent that we can learn how to produce biofuels sustainably – with virtually zero net greenhouse gas emissions over the full life cycle – we may continue to enjoy the manifest benefits of consuming liquid hydrocarbon fuels. With its need for the high volumetric energy density that comes only in liquid form, the aviation sector will likely have the right of first refusal in the biofuel pool. As for surface transport, the lion's share of our mobility needs will be supplied by decarbonised electricity and hydrogen gas molecules.

Eliminating emissions from fossil fuels is just one of many strategies that we will execute with unprecedented speed over the next four decades. We will also continue to channel massive investments into developing and commercialising sustainable renewable technologies that generate electricity from physical rather than chemical energy sources. We will increase by orders of magnitude the efficiency with which we convert primary energy into desirable energy services such as lighting, heating, cooling, mobility and telecommunications. In parallel, we will design out much

of our superfluous energy demand by insulating our homes, by making better use of natural lighting, heating and cooling processes, and by transforming the way we access goods and services.

This vision is not particularly new, of course. Futurists have been painting this picture for many years: highly efficient consumption of increasingly renewable and sustainable sources of energy. The difference now is that the world's political leaders are aligned with and committed to delivering this vision. The nuts and bolts of how we will get there, are still to be machined, and this brings us to the other important outcome of COP15.

What had been billed in the preceding weeks as the most important conference since World War II may have marked the nadir of a cumbersome UN-driven formula that had taken 17 years to reach what many hoped would be a glorious climax in Copenhagen. Since it has been suggested that the very fact COP15 degenerated into high farce, demonstrates that climate change has finally come of age as a political issue, now taken so seriously by Heads of State of today's and tomorrow's leading economies, that dealing with it can no longer be delegated to civil servants and environment ministers.

Future historians may reflect that the 15th Conference of the Parties in December 2009 marked the beginning of the end of the United Nations Framework Convention on Climate Change – a maddeningly complex process seemingly designed to fail – while at the same time signalling the end of the beginning of critical period of cooperation between the world's leading emitters – chiefly China and the United States – to meet

the UNFCCC's ultimate objective of preventing dangerous anthropogenic interference with the climate system.

Symbolic of this new era, 2009 also witnessed the dawn of the G-20, which announced the arrival of so-called emerging economies – Argentina, Brazil, China, India, Indonesia, Mexico, Russia, South Africa, South Korea, Saudi Arabia and Turkey – as important and powerful global political players. Perhaps the G-20 is the forum that will ultimately deliver the political and economic apparatus necessary to tackle climate change. The carbon dioxide emissions of these 20 nations together account for more than 80% of the global total.

Whether the UNFCCC continues to be relevant or is overtaken by an

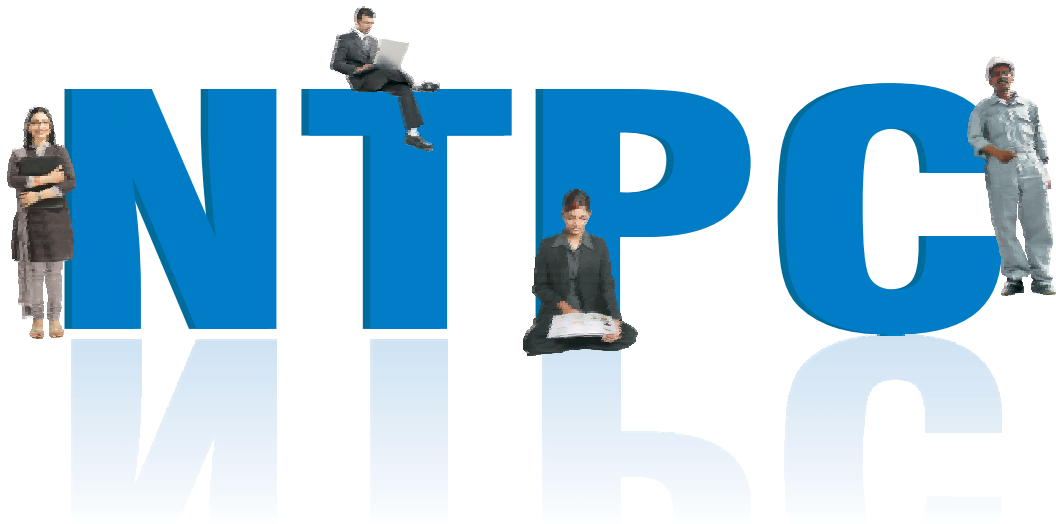
alternative (G-20 or similar) process, what is clear for business is this: for 2 years since COP13 in Indonesia, corporate leaders may have enjoyed a short-term benefit from the fig-leaf provided by the Bali Roadmap – “We want to tackle climate change, but we are waiting for Copenhagen to deliver the clarity we need in order to make sensible investment decisions.” Well, COP15 has come and gone. The Copenhagen Accord may not represent everything that business had hoped for, but in terms of setting an ambitious target for global action to mitigate climate change it could not have been clearer. From 2010 onwards, any business strategy that is blind to the 2°C threshold – informed by the best available science – will no longer be tenable.

Dr. Gary Kendall joined SustainAbility in 2008 as Director of Climate Change programs and was appointed an Executive Director in January 2010. In close partnership with fellow Executive Director Mark Lee, he is responsible for building a team and fostering a working culture that will enable SustainAbility to realise its vision.

In addition to supporting SustainAbility's consulting activities, Dr. Kendall leads the think tank and convening function which generates ideas and thought leadership designed to advance the sustainable development agenda. He regularly contributes articles – in particular relating to energy security and climate change – and presents SustainAbility's perspectives at international conferences and through the media.

Prior to joining SustainAbility, Dr. Kendall spent two years working in WWF's (World Wide Fund for Nature's) Global Climate & Energy program. His main interests were the causes of – and solutions to – the series of major environmental threats posed by the development of unconventional oil substitutes and the potential role of international oil companies in tackling climate change. This followed nine years in the oil industry with ExxonMobil, spanning a diversity of roles from Research and Product Development to Sales, Marketing and Business Development. Working across Europe, the US and developing Asia gave him first-hand insight to the strategic and day-to-day challenges faced by one of the world's most problematic sectors from a sustainability perspective.

He is the author of the WWF publication “Plugged In: The End of the Oil Age”.



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Climate Change: A Challenge & Opportunity for Indian Industry



Climate change is one of the most significant emerging risks facing the world today, presenting huge challenges to the environment and to global and local economies. It is also one of the most difficult risks to mitigate.

Climate risk cuts across almost every industry in every corner of the world—energy producers and consumers; transportation providers and those reliant on it; forestry, agriculture, and food producers; construction; chemicals, pharmaceuticals, and the life sciences; real estate; communications and technology; tourism and hospitality; the retail industry; and more. The strong threat of increasingly volatile weather conditions; resulting impacts on insurance markets, business resources, personnel and corporate preparedness and; increasing legal and regulatory

pressures and mounting public and shareholder activism, are the risks which climate change poses to businesses.

While the time horizon for the impacts of climate change is unclear, organisations should be asking themselves a number of questions related to their climate-risk mitigation strategies. These questions are as follows:

- How prepared is the organisation for climate change and the potential weather and health impacts on its operations?
- How prepared is the organisation to handle a changing regulatory environment?
- Do the organisation's policies adequately address areas such as loss of production, inability to supply to the customers,

employee assistance and gaps in communication?

- Has the organisation's insurance coverage been reviewed recently for the potential impacts of climate change?

Climate Change as a Business Issue

Given the sweeping global nature of climate change, climate risk has become embedded in every business and investment portfolio. Severe weather events and changing climatic patterns, and current or impending regulations that impose a cost on carbon reduction, thereby leading to a shift in the competitive paradigm, will have a significant impact on businesses. Climate change is increasingly being seen as a strategic issue, and leading

companies are taking action now to mitigate the risks and take advantage of the opportunities arising from it to ensure a position for themselves in the emerging low-carbon global economy.

The risk that climate change poses to any individual business varies, but nearly every company will face some pressures. The business risks from climate change include:

Regulatory risk: Companies with significant GHG emissions or energy-intensive operations face risks from new state, national and international regulations limiting carbon emissions and imposing a cost on the same. While few countries already have mandatory climate change legislation in place, momentum for similar legislations in many countries is growing. California and ten North-eastern states in the US have already taken regulatory action to ensure emission reductions. Japan, China and others have instituted GHG emission reduction targets, fuel emission standards and renewable energy mandates. Meanwhile, the entire EU is pushing to reduce GHG emissions under an ambitious cap-and-trade carbon emissions trading programme already valued at over US \$30 billion a year. All major companies including oil producers, banks and automakers will be impacted by the fast-spreading regulations.

Physical risk: Businesses are at risk from the physical impacts of climate change, including the increased intensity and frequency of severe weather events such as prolonged droughts, floods, storms and sea level rise. Climate change may worsen dry seasons and droughts, as well as weaken water retention in the variable monsoon periods. This can have

alarming impacts considering the fact that 65% of the Indian agriculture is rain-fed, and one-sixth of the country is already drought-prone. Moreover, floods affect an area of around 7.5 million hectares per year. With climate change impacts becoming more pronounced, an increasingly urbanised population may become vulnerable to new flood risks.

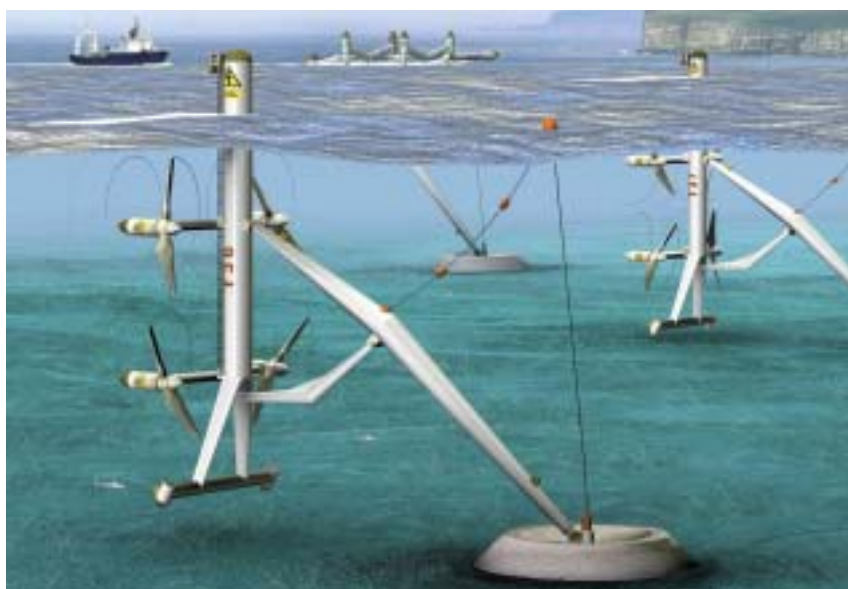
Reputational and competitive risk: Tightly linked to the regulatory risk in the global and domestic market places, climate risk preparedness will be a key driver in a company's ability to compete. General Electric, for example, sees huge growth opportunities from its many new climate-friendly product lines, such as wind turbines, high efficiency gas turbines, IGCC power plants and hybrid diesel-electric locomotives. India is already a production hub of small fuel efficient cars and its potential has increased as most European and American auto manufacturers realise the competitive risk arising out of smaller cars.

Litigation Risk: Companies in carbon-intensive industries such as

oil and gas, electric utilities, and automobile manufacturing are already starting to face litigation concerning corporate contributions to global climate change. These are mostly seen in countries with some carbon legislation or countries impacted by them. Car manufacturers exporting to the EU are impacted by stringent emission norms applicable in the European market. Similarly, cement manufacturers are now facing the litigation risk for high emissions during the production phase. The potential liability is immense should the courts find companies guilty in such cases. Even if some of the lawsuits are unsuccessful, the costs of litigation and the damage to reputation incurred by some companies could have been detrimental.

The Business of Climate Change: Turning challenges into opportunities

Business leaders are increasingly finding it good to address global warming as regards to the bottom



line. Companies at the vanguard no longer question how much it will cost to reduce GHG emissions, but how much money they can make from it. Climate change poses risks to the industry, but it also presents opportunities: astute companies are already taking advantage of new products, markets and competitive advantages inherent in the low-carbon economy.

Many Indian companies are adopting technologies, practices and approaches that will help build a carbon constrained economy. Many have been adopting carbon mitigation actions to reduce their cost and gain reputation and also a competitive edge. Companies in India have presently sought strategic benefits from voluntary GHG reductions through operational improvement, anticipating and influencing climate change regulations, accessing new sources of capital, improving risk management, elevating corporate reputation, identifying new market opportunities, and enhancing human resource management.

The Indian private sector is increasingly working in tandem with the global markets because of its clientele and the technological processes used in production cycles. Improving the efficiency of the supply chain of one's company is no longer a regulatory risk but an informed and strategic tool to be deployed for improving profit margins and public image.

India's biggest business associations have taken the lead in engaging with the Indian industry on climate change issues. One of India's apex industry associations, Confederation of Indian Industry (CII), has established the CII-ITC Centre of Excellence for Sustainable Development and the

CII-Sohrabji Godrej Green Business Centre in order to engage with the industry on sustainable development issues. These institutions together with the energy policy division of the CII have undertaken several initiatives, including an indigenous standard for green buildings, the CII Code for Ecologically Sustainable Business Growth (as of March 2009, 220 industrial units have voluntarily committed to take up the code), promoting international cooperation and building linkages for bringing green technologies to India, etc.

India's single largest electricity utility company, NTPC, established the Centre for Power Efficiency and Environmental Protection (CenPEEP) in collaboration with USAID with a mandate to reduce GHG emissions per unit of electricity generated by improving the overall performance of coal-fired power plants. CenPEEP is also assisting various state electricity utilities in India by demonstrating and disseminating knowledge about

improved technologies and practices. ITC, one of India's foremost private sector companies, has a Carbon Committee that looks after company strategies to reduce its climate footprint. By greening 80,000 hectares of land through total farm and social forestry plantations, ITC has sequestered more carbon dioxide than what it emits. In 2008, the company drew 24.1% of its energy requirements from renewable sources produced internally. Larsen and Toubro (L&T) in India has also undertaken several initiatives to reduce its GHG emissions. The company meets nearly 8% of its electricity requirement through the use of renewable energy sources. L&T uses technology to deliver products that conserve energy and are less resource intensive. Wipro has launched 23 green initiatives in the last couple of years, most of which have resulted in significant savings for the company; for example, all the CFLs in the Bangalore campus of Wipro were replaced with LED lights resulting in 75% saving in electricity consumption.



In the green building sector, CII has facilitated certification of several LEED Platinum rated buildings, which are now being built across India. As a remarkable commitment, K Raheja (a real-estate developer) has proposed all his future projects to be LEED certified. MNCs like HSBC, ABN AMRO, WalMart, Microsoft, Gillette and Carrefour are also opting for green complexes in India. Of the 22 LEED-rated buildings in India, 5 are platinum rated. Over 218 LEED green building projects in the country are underway, amounting to more than 130 million square feet of space and representing construction that is significantly less resource intensive than traditional construction. The Indian Green Building Council has set the goal of achieving 1 billion square feet of green building space by 2012.

Indian industry has also achieved remarkable progress in energy efficiency and renewable energy. Average energy intensity in key sectors such as cement and iron and steel has been declining consistently. In August 2009, India's Prime Minister unveiled an energy efficiency trading system designed to save 5% of the country's energy consumption, and 100 million tonnes of carbon dioxide annually by 2015. The initiative, which is expected to cover around 700 installations, is to be underpinned by a market in tradable energy efficiency certificates.

Smart Grid technologies are at last becoming a reality in India. Smart grid systems allow electricity customers to lower their carbon footprints without having to compromise with their lifestyle or habits, and also create an extremely profitable business opportunity for electric utilities and distribution companies.

India is in a position to play a major role in large-scale commercialisation of renewable energy technologies, and can offer technology transfer to other developing countries and support them in building capacity. The country has already achieved installation of over 10,000 MW of renewable energy-based capacity, and stands fourth worldwide in terms of wind power installed capacity. It is notable that more than 95% of the total investments in renewable energy in India have come from the private sector. Suzlon, an Indian-owned company, has managed to blend strategies creatively to leapfrog innovation to enter new technology markets. Operating in 20 countries, Suzlon is ranked as the fifth leading wind turbine supplier in the world, with over 10.5% of the global market share in 2007.

The approval of the National Solar Mission has given huge impetus to the solar cell manufacturing companies in the country. Tata BP Solar and Moser Baer India have taken the lead in this sector. In September 2009, Moser Baer India won the contract for the one MW project by Mahagenco, a power generation company owned by the government of Maharashtra.

Efforts to mitigate climate change and global warming offer new opportunities for the Indian industry and business to leapfrog the energy and resource intensive development process being witnessed by the developed world. It is clear that environmentally conscious investment decisions can allow the country to enter into an era of carbon-efficient advanced technologies. Entrepreneurs adopting environment-friendly measures in their business ventures can now look forward to additional support from investors while contributing to conservation

efforts. Investment up to US \$100 million will be raised for various small and medium green enterprises (SMEs) in the country by 2012 under the 'New Ventures India' scheme launched by the US-based World Resources Institute as part of a USAID programme.

According to a study conducted by WWF India in 2009, responses from the Indian companies belonging to both the energy intensive and non-intensive sectors convey a common verity that regulations in India, if imposed, will prove to be an opportunity rather than a risk.

Some of the key opportunities specific to the energy sector include the Clean Development Mechanism, diversification into renewable energy and GHG accounting, which serves as a driver for development of new products and services that mitigate GHG emission from the value chain. ONGC is the leading central PSU in developing CDM projects in India. The company has 4 registered CDM projects with potential reduction of 119,655 tonnes of carbon dioxide equivalent emissions annually; it is developing 13 more potential CDM projects.

For the automobile industry, the most prominent commercial opportunities exist in the form of energy efficient vehicles, cleaner fuels, green transport and mass rapid transit solutions. The Reva Electric Car Company in Bangalore is currently the world's leading electric car manufacturing corporation. REVA offers not just efficient design, but efficient production as well. REVA's new low carbon assembly plant in Bangalore is being built as per the LEED guidelines, harvesting rainwater, using solar energy for heating and lighting,

and making the most use of natural light and ventilation. The first charge in every REVA car is made using solar electricity. A battery 'second life' programme further increases efficiency and reduces waste.

DLF, a major real estate developer, is coming up with the first-ever private metro project in India. There is a big thrust on commissioning energy efficient buses running on clean fuels in New Delhi prior to the Commonwealth Games in 2010. This has emerged as a prominent business opportunity for Indian automobile manufacturers. For instance, according to Tata Motors, "with climate change, there is an increase in demand of fuel efficient vehicles due to their low GHG emissions. This is an opportunity to design and develop fuel efficient and alternate energy vehicles and to work on advanced technologies, fostering innovation for design and development of advanced fuel efficient vehicles, minimising our dependencies on fossil fuels. It is also an opportunity for minimising energy consumption through elimination of energy losses during manufacturing, thereby reducing manufacturing costs and increasing productivity."

Climate change is creating a demand for outputs from the material sector which can serve as green alternatives to carbon and energy intensive resources and products. Talking about Saint Gobain, a large part of their products represent a solution for climate change. Around 30% of Saint-Gobain's net sales and 40% of its operating profit derive from energy saving solutions. Substantial investment is also being poured into product development to improve the resilience of material goods to climate change wear and tear.

In the construction and engineering sectors there is a rising demand for buildings that are compliant with ECBC/LEED guidelines, which in turn creates a demand for companies that are adequately equipped with the knowledge, skills and abilities required to deliver these solutions. Indian and global companies with a portfolio of products designed to curb emissions and energy intensive practices, are already accounting for sizeable profits associated with these opportunities. Technology solution providers are faced with the opportunity of developing innovative solutions to help society adapt to climate change. For example, Jain Irrigation Systems, the world leaders in irrigation systems, has recently bagged an Rs 77.8 crore worth of World Bank order to supply and service drip and

sprinkler irrigation systems in 25 sub-basins in Tamil Nadu.

Conclusion

As Climate change poses direct threat to businesses, it is making its place as a business risk in the boardrooms and then transforming itself into an opportunity. The stress is on thinking-out-of-the box and switching over to a low-carbon operation.

Companies that manage and mitigate their exposure to climate change risks while seeking new opportunities for profit will generate competitive advantage rivals in a carbon constrained future. Where there is risk, however, there is also an opportunity, and companies are increasingly seeing great business prospects in addressing climate change.



This paper has been sourced from **Carbon Disclosure Project Report 2009, India 200** by CII-ITC Centre of Excellence for Sustainable Development & WWF. The Carbon Disclosure Project is supported by British High Commission, New Delhi.



CLIMATECHANGE ANDENERGY



The challenge and opportunity of our time is to find an answer to Climate Change. We at WWF-India, are working towards contextualizing climate change in the framework of inclusive development. Our work can be broadly classified into research and impact assessment, engagement with key stakeholders and raising awareness through public participation and campaigns.

impact assessment & adaptation

coastal ecosystem

Areas along the Eastern Coast of India and Sunderbans Delta

himalayan ecosystem

Glaciers, High Altitude Wetlands and Climate Change

river basin

Vulnerability assessment in the Ganga and Godavari Basin

business & industry engagement

policy advocacy

global & national campaigns



Green Pathways



Jamshyd N Godrej
Past President, CII and
Chairman of the Board
Godrej & Boyce Manufacturing
Company Limited

No sooner had Environment Minister Jairam Ramesh announced in Parliament that India would cut its emission intensity by 20 to 25% by 2020, there was a welter of protests. Would it not imperil India's rapid quest for accelerated development by imposing a huge additional burden? Emission intensity is the amount of carbon emitted in producing one unit of gross domestic product. Soon after the parliamentary statement, came the Conference of Parties to the UN Framework Convention on Climate Change in Copenhagen, and our Prime Minister together with the leaders from Brazil, South Africa, and China, or the BASIC countries, promised to pursue voluntary cuts in carbon emissions irrespective of the outcome in Copenhagen. He and the Indian delegation then worked with their counterparts from BASIC and

with President Obama in framing the Copenhagen Accord.

While inadequate, in my opinion the Copenhagen Accord is a necessary and constructive platform that enables the global community to maintain momentum towards a final agreement. And our leaders deserve to be commended for showing admirable foresight and vision by pledging to progressively bring down our carbon emissions and for taking a constructive approach towards securing an international agreement as these actions will also serve India's own best interests.

Due to climate change, monsoons are threatened, agriculture productivity is on the wane, extreme weather events are on the rise, the glaciers are melting, thereby imperilling our water security, our coastlines are

eroding, and our forests and wildlife are endangered. And that's not all. Climate change endangers our health and the well-being of our children. India, indeed South Asia, has the highest child mortality rates in the world, and as the NGO 'Save the Children' points out, climate change will "reduce poor communities' access to clean water, reduce their ability to grow nutritious food, increase food prices and allow malaria mosquitoes to spread."

Clearly, if the global community, and India as its responsible member and leader, makes an all out attempt to arrest emissions causing climate change, it will serve our interests. The question is how do we chart our growth trajectory and achieve the goal that our Prime Minister and Minister have committed us to. Globally, there are about five or six policies that have been proven to help win the energy-climate battle, and the good news is that these are exactly the policies that our Government is focusing on, either through the National Action Plan on Climate Change or other schemes. It is doing so because these policies are in our national self interest from a development perspective as well as from a climate perspective. By putting greater political will at central, state and city levels and by promoting better coordination and deploying technical capacity behind these policies now and in the future, we can not only meet, but possibly also exceed the goal of reducing our emissions intensity by 20 to 25% that the Minister has announced. These policies are focused on:

- Energy efficient appliances and building codes: The energy consumption by Indian households is increasing dramatically, and it is interesting to note that just a handful of appliances including incandescent bulbs and tube lights, fans, refrigerators and TVs consume more than 86% of the household energy bill. The first set of mandatory standards for four appliances including refrigerators and air conditioners will come into effect in January, 2010.
- Vehicle fuel-efficiency standards: The fuel efficiency labeling programme for all types of vehicles needs to be planned and implemented as soon as possible. Significant amount of fuel can be saved aside from associated savings in pollution and health cost.
- Demand Side Management in

the power sector: Power utilities can make money by helping homeowners save energy rather than by encouraging them to consume it. This area of work is getting increasing attention from the Forum of Regulators, the Bureau of Energy Efficiency and Indian NGOs like Prayas, and CII.

- Increasing supply of renewable energy: Power utilities must be mandated to produce 15 – 20% of their energy from renewable resources. A new policy on feed-in tariffs has also been announced. The solar mission is ambitious but has achievable targets.
- Sustainable Transportation: Many of our Tier II and III cities may never be able to afford metros, and they may never need to if the Bus Rapid Transit System (BRTS), which is a proven effective alternative and



costs a fraction of the metros, could be pursued through best practice designs.

The first three policies are already part of the National Mission for Enhanced Energy Efficiency (NMEEE) while the National Solar Mission that was adopted recently is intended to advance renewable supply. At the same time, the Ministry of Urban Development's Jawaharlal Nehru Urban Renewable Mission (JNURM) has been doing much to advance both BRTS and other key sustainable transport policies such as non motorized transportation.

From the standpoint of reducing the emissions intensity of our growth, it is important to note that the energy sector comprises roughly 60% of the total emissions in India and is thus a dominant source. Besides increasing energy productivity through a sleuth of policy measures embodied in the National Mission on Enhanced Energy Efficiency, meeting future energy and development through a low carbon roadmap is a energy security imperative.

Let's also remember that a low carbon roadmap that reduces the emissions intensity of our development would also reduce air pollution and improve people's health. The recently announced programme for improved cook stoves by the Ministry of New and Renewable Energy could not only have positive health effects for millions of rural women and children but also reduce the threat of black carbon that is also believed to be melting our glaciers. Past failures need not deter the new India.

The India of 2030 has yet to be built including 80% of the needed infrastructure. If this new capacity is green, estimates show that India's carbon productivity could improve

Mr. Jamshyd N. Godrej is the Chairman of the Board of Godrej & Boyce Manufacturing Company Limited. He graduated in Mechanical Engineering from Illinois Institute of Technology, USA.

Mr. Godrej is the Chairman Emeritus of Aspen Institute – India. He is the Vice President of World Wide Fund for Nature – International and is a Trustee and President Emeritus of World Wide Fund for Nature – India. He is a Director of World Resources Institute, USA; and a Director of ClimateWorks Foundation, USA. He is the Past President of Confederation of Indian Industry and also the Past President of the Indian Machine Tool Manufacturers' Association.

Mr. Godrej is the Chairman of the CII Sohrabji Godrej Green Business Centre. The Centre is housed in a LEED Platinum demonstration building which is the first green building in India and the greenest building in the world at the time when it was rated. The Green Business Centre is a Centre of Excellence for green buildings, energy, energy conservation, non-conventional energy sources, water policy, water conservation, etc.

Godrej and Boyce Mfg. Co. Ltd. manufactures and markets refrigerators; washing machines; air conditioners; office furniture; home furniture; security equipment for banks (such as safes, strong room doors, bank lockers, etc.) and for commercial establishments and homes; locks and latches, forklift trucks and warehousing equipment; process equipment for chemical, petrochemical, refineries and allied industries; precision tools for sheet metal, zinc, aluminium and thermoplastics; real estate development.

The Godrej group are leaders in home appliances, consumer durables, office equipment, industrial products, consumer products and services.

Mr. Godrej is an ardent yachting enthusiast and has done extensive cruising along the west coast of India.

The President of India conferred on Mr. Godrej the "Padma Bhushan" on 3rd April 2003.

by around 45% while meeting our development objectives. At the same time, India's energy consumption could decrease by 22%. Maximising India's energy and carbon productivity clearly benefits India's society and economy. Presently, India's energy-intensity it stands at 0.19 kg oil equivalent/dollar (in purchasing parity terms). This is comparable to OECD countries and better than China (0.22). Some European countries and

Japan are in the region of 0.12 and 0.15 respectively.

The only limiting factor will be our imagination and the perseverance needed in charting new pathways.

Note: This article by Mr. Jamshyd N Godrej, Past President, CII and Chairman of the Board, Godrej & Boyce Manufacturing Company Limited is sourced from The Economic Times, dated December 29, 2009.

Will we have enough leaders in time?



Cyrille Jegu
Executive Director
The Natural Step in Asia

Business response to climate change varies greatly. Some businesses don't even acknowledge the existence of climate change and therefore the necessity to do anything about it. Others acknowledge it, but do nothing about it either because they don't really take it seriously, they are focused on short-term issues, they wait for someone else (usually their government) to tell them what to do or because they don't know what to do about it. Few others have understood the potential threat to their business and are starting to do something about it in a piece-meal fashion. Even fewer organisations still, have fully grasped the potential threats posed by climate change, as well as the opportunities to change the way they do business and are working towards a symbiotic business model, one that respects the laws of nature and contributes to the

growth of society and the health of the environment. These organizations do not wait for government regulations. They do not wait for markets to be in place, they lead and create new markets for themselves, they grow but not at the expense of society or the environment.

"The simple truth is that there are no companies that are sustainable in the world today; there are none. What we have are companies that are experimenting with pieces of the puzzle."

- Stuart L. Hart

Climate change: a symptom of a system in crisis

It is difficult for businesses to assess their preparedness when the climate

change debate is really focused on Green House Gases (GHG) and little else. Climate change is only the symptom of deep-rooted systemic issues. Dealing with climate change seriously, strategically and systematically means looking at the roots of the issues, not just the symptoms. Such is the complexity of the problem that it is difficult indeed to grasp the magnitude of the changes required to address the problems at their cores. However, businesses can and should take a systemic approach to resolving the issues at their roots, solving several inter-related issues at once. Only a handful of approaches can deal with such complexity, the Framework for Strategic Sustainable Development developed by The Natural Step is at the top of those.

To address the problems of today, of which climate change is one of many along with deforestation, toxic wastes, air, water, land and food pollution, loss of biodiversity, etc. (which, by the way, are all connected) a systemic approach is essential. Businesses therefore need to understand the system within which they operate. The environment and society are not issues for business; they are the context within which businesses operate. In business language, if you consider who provides the 'real' capital (natural and human), it means that business is a wholly owned subsidiary of society, which is itself a wholly owned subsidiary of the environment, not the other way round. By reframing the context, the necessity to follow natural laws within its limits, and to re-evaluate the purpose of business in society, becomes compelling.

Everything is connected. Hundreds of millions of people have no access to drinkable water; they wake up

everyday not knowing whether they will have enough to get through the day, let alone tomorrow. At the same time, industrialized nations are consuming resources at a staggering rate. Some chose to get a gym membership for \$2 a day, others have to live with less than \$2 a day. How can we be content when the excess of some seem limitless whilst the fundamental needs of others are not satisfied?

How can we deal with climate change and environmental degradation if we don't tackle poverty, malnutrition, easily curable infectious diseases, corruption, crime, access to education and health-care, etc. How can we look after our planet, if we cannot look after each other?

We have a chance to solve the current climate crisis if, for a while at least, we look at what is wrong with the current economic and social systems. Ervin Lazlo clearly makes the point by saying that "...the whole system is structurally unsustainable... it has to be transformed. It can't be patched up." Everything is connected and yet we keep looking at each symptom/problem in isolation.

While the responses required to address these crises might be complex and difficult, an understanding of their root causes is quite clear. The simple fact is that much, if not most human activity (industrial and otherwise) is at odds with the fundamental operations of the natural systems that support us, and all our activities.

"Civilization has so cluttered elemental man-earth relation with gadgets and middlemen that awareness of it is growing dim. We fancy that industry supports us, forgetting what supports industry."

- Aldo Leopold

The Rules of Nature

There is a set of laws that business needn't wait to be written to influence their enterprises, they are the Laws of Nature. There is virtually universal agreement on the parameters set by our Earth's natural life-support systems.

All systems on earth are ultimately powered by the energy of the sun. A constant input of solar energy drives all life's processes as well as the global physical forces that maintain the land, oceans and atmosphere that harbor life.

With respect to matter, the earth is a closed system. There is a finite amount of physical resources at our disposal.

Living systems sustain themselves by accessing the constant flow of incoming solar energy and circulating the material resources they need through grand closed looped cycles of use and reuse.

These are the systemic parameters within which all sustainable practices must ultimately exist.

Human Production Processes violate these system parameters.

Based on the false assumptions of unlimited natural resources to draw from, unlimited ecosystem services to support us and unlimited places to put our wastes, human society has evolved linear economic systems that takes natural resources, makes products and then disposes of them as waste when they are no longer useful to us. Sooner or later, in a finite world, this one-way industrial process must end. There is a limit to resources available

as well as the capacity for the earth's life-support systems to absorb the impact. The myriad of environmental problems we are experiencing today are a manifestation of reaching these limits.

Global warming and consequent climatic changes are a clear result of global imbalances (on the land, in the atmosphere and oceans) created by human industrial processes. The ever-accelerating burning of fossil fuels, deforestation and the secondary effects of increasing ocean acidity, melting ice and permafrost have created a crisis of epoch proportions. At the very least, an immediate business response needs to be the systematic reduction of green house gases emissions from its operations. They need to focus on the efficiency of their energy use, the capture of resultant emissions and the replacement of fossil fuel resources with renewable non-emitting energy resources.

Responsible but not Accountable, yet!

Business, and its addictions to fossil fuel, to short term gains, to market dominance, amongst other less than constructive attributes, is very much responsible for the climate crisis we are currently facing and our children and grand-children will face. But are they held accountable? How many businesses, and their leaders, have been held accountable for the environmental and human degradation they have caused whilst doing business and making money for their shareholders? Was anyone put in jail for disregarding environmental legislation?

When I was studying economics in a business school several years ago, I was given an exercise to calculate the

viability of an investment for pollution control equipment considering the potential fine. I guess if a jail term had been included in the equation in case of non-compliance, it would have been a much easier problem to answer. My guess is that Union Carbide made that kind of calculation for their factory in Bhopal. We know too well the consequences for the local population, and the lack of consequences for those responsible.

In 1999, Ray Anderson, Founder and CEO of Interface Inc., said during an interview: "one day people like me will go to jail". This remark generated a shock wave in the business community. He went on to say: "if stealing is a crime, stealing our children's future must be a crime too". The concept of limited liability is certainly very helpful for companies, their leaders and shareholders.

We know the effect that human activities (industrial or otherwise) have on the climate. The Environmental, Social, Financial, and Moral crises we are currently experiencing call for drastic actions, and whilst negotiations take place in Copenhagen. Business can choose to be part of the problem and wait for regulators to tell them how much they are 'allowed' to pollute OR business can choose to be part of the solutions, be proactive in not just reducing its negative impact on the environment and society, but actually having a positive impact.

A couple of months ago, I was asked at a CSR conference to define a sustainable business, here is what I said: "A sustainable business is one that contributes to the fulfillment of human needs, and does so profitably within the limits and capacity of the environment (natural and social) within which it operates."

Long gone are the days of the first corporations in America where communities had the power to give, but also to withdraw, a license to operate to any company operating under their jurisdiction. It is time to re-think the institutions upon which we have built our destructive civilization over the past 200 or so years. Time to rethink our governance structure so business is held accountable and our accounting systems so we count the right things. Time to re-evaluate our taxation system so we don't Tax the Value Added but the Value (resources) Thrown Away.

It is time to consider the climate crisis as an opportunity to re-invent our civilization, and business has a fundamental role to play in this necessary revolution.

"For life on this planet, it is the ecologists, and not the bookkeepers of business, who are the ultimate accountants."

- Stewart Udall

Are Businesses Leaders or Followers?

Today some businesses are so large they are bigger, in term of revenue and impact on the planet and climate, than some countries; and yet they had no direct representations in Copenhagen. Of course, they do what they can to lobby governments, unfortunately not always in the right direction, but they do not take part directly in the debate.

Business and its leaders often complain about the ever increasing and constraining regulation, always arguing that leaving market forces take their course. In this time of many crises, market forces have proven to be the problem rather than the

solution. Whilst I agree that too much regulation tends to hinder innovation and entrepreneurship, I also believe that too little of it leads to where we are now. I am not suggesting that there isn't enough regulation; I am saying that the current regulation is misguided. Regulations based on arbitrary rules don't work; this has been proven time and time again. Principles based regulation, with the adequate accountability and deterrents would be a much more effective way to ensure responsible behaviours are observed.

Today many businesses are against a carbon tax. The stigma that surrounds the word 'tax' makes that position quite understandable, especially if it is in addition to the existing taxes. But what is the alternative? A Cap and Trade Carbon Market? I invite you to take a look at a short video <http://www.storyofstuff.com/capandtrade/>. It is not the usual academic piece of research but it certainly makes a point. Good or bad is for you to decide.

Some companies however, have decided not to wait for a hypothetical treaty, new regulations or taxes or anything else for that matter. They just decided to do it, to change the drivers of their business:

- Shared values not just value of shares;
- Be market disruptive instead of nature destructive;
- Follow the laws of nature instead of systematically breaking them;
- Create, innovate, re-invent instead of destroy, monopolise and lobby for status quo;
- Borrow, use, return instead of take, make, waste;
- Fulfill the needs of many instead of the greed of a few;

- Human & natural capital growth not just turnover growth etc;

These businesses are as competitive as any other businesses, and they tend to perform better too, but what set them apart is not only what they do but also how they do it. The opportunities for these businesses are endless.

An Inspiring Example: Interface Inc.

The aforementioned Ray Anderson of Interface Inc. did not wait for International Conventions to be formed, fees and taxes (and jail terms) to be levied or incentives to be developed; he made a moral commitment to take another path in his business. He decided to harvest the innovation and ultimate profitability of taking a path towards sustainability. (see Mid-Course Correction: Toward a Sustainable Enterprise: The Interface Model, Ray C. Anderson, Chelsea Green Publishing, 1998).

Interface is into its thirteenth year of pursuing its 'Mission 0', where it has pledged to eliminate any negative impact it will have on the environment by the year 2020. Since 1996, it has reduced the water intake to produce their carpet by 80%. It has reduced the amount of waste sent to landfill by 70% in the same period. Through improved efficiencies and renewable energy use it has reduced its energy use by 45% and greenhouse gas emissions by 71%. In addition to this, they have instituted a carbon offset program to compensate for all of their air travel – three trees are planted for each ton of carbon dioxide generated in their air travel – Since 1997, Interface has sponsored the planting of more than 62,000 trees.

Interface is committed by 2020 to operate all manufacturing, sales and

office facilities with renewable fuels and electricity. Their facilities in North America and Europe operate now with 100% renewable electricity.

It is a happy consequence that Interface has enhanced its profitability and competitive edge by doing what it has done. But it is important to note that is not why Ray Anderson did it. He did it because his conscience compelled him to, because of the moral obligation he felt for leaving a better world for his and everybody else's grandchildren.

The size of the problem equals the size of the opportunity

"The level of change that is going to be forced on our economies, our value chains, our companies and the people who work in business is going to be both profound, and profoundly exciting. There are few times in world history where I would rather have been alive."

- John Elkington

In order to try and dampen the effects of climate change, the scientific community seems to agree that green house gases emissions have to be reduced by 80% by 2050. I personally think that we've got to do it before that, and I also believe we can do it before 2050 if we put our minds to it.

Business being responsible for a large portion of the emissions today, needs to launch a significant effort and dramatic shift away from current fossil fuel dependency. But above all there needs to be a paradigm shift in the way business views and treats waste. If Business was counting the true cost of waste, and shareholders could actually see it on the balance sheets,



they would be much more focused on reducing or even eliminating it. But what is waste? William McDonough and Michael Braungart have defined waste as 'food'. For Ray Anderson's Interface Inc, waste is "everything that does not add value to the customer". Thanks to this definition Interface has saved over US\$400 million through reducing its waste and avoided cost since they started their journey 13 years ago. These millions could have gone straight to the bottom line, but it was and is still used to pay for the other investments made by the company towards its 'Mission 0' goals, which will generate yet bigger returns for the environment, society, the company itself and its shareholders.

As Amory Lovins of the Rocky Mountains Institute said of Interface, "If they can do it, it must be possible! If they can do it (being a oil intensive

business), anybody can do it! And if anybody can do it, everybody should do it!" This is reinforced by what Al Gore is fond of saying, "We have the means to change, all we need is the will." While William McDonough more forcefully highlights our collective responsibility by saying: "Negligence begins tomorrow, because now we know what to do." I think negligence started some time ago.

Whilst Interface and others are doing a remarkable job they are only addressing the needs of a few. There are an estimated 4.5 billion people (and growing) who, today do not have their basic fundamental needs fulfilled and are most likely to suffer from the effects of climate change. Already, it is estimated that there are 25 millions Climate refugees, and this number is unlikely to go down anytime soon.

While these needy billions may represent the largest untapped market in the world, they have little, if any purchasing power and are thus completely un-served by business and a consumer economy. Bjørn Lomborg reminds us of the fact that "Environmental concern is still very much a First World concern. Most of the world is still pretty worried about the fact that their kids can die from easily curable infectious diseases." This has to change. The need for supply of clean water, sanitation, affordable medicine, clean power, education, food, communication, etc. opens mind blowing opportunities to do well whilst doing good, that is to say doing differently. Peter Senge, in his book, "The Necessary Revolution," asks us to consider, "What would

a way of thinking, a way of living, and ultimately an economic system look like that worked based on the principles of the larger natural world? And how do we create such a way of living in our organisations and societies, one step at a time?"

The impending global consequences of Climate Change require that we begin to think about this new way of living, a new purpose for business and different way of doing business. It is businesses like Interface and others like it that are showing us the way, and it is organisations like The Natural Step, the Rocky Mountain and the Biomimicry Institutes that are telling businesses how. One question remains though.

Will we have enough leaders in time?

Mr. Cyrille Jegu, MBA is leading the development of The Natural Step Framework for Strategy Sustainable Development in Asia with a primary focus on India and China. The Natural Step is an international NGO providing educational, research and advisory services in Strategic Sustainability to Businesses, Communities, NGOs and Governments alike for the last 20 years. Cyrille is a guest lecturer on Strategic Sustainability in a number of universities in China and Europe. He is also a member of the Cambridge Sustainability Network, the International Energy Conservation and Environmental Protection Association, the Institute of Directors and an Energy Saving Trust (UK) Ambassador.



Confederation of Indian Industry



CII-ITC Centre of Excellence
for Sustainable Development

CII-ITC Centre of Excellence for Sustainable Development TRAINING CALENDAR - 2010

#	Training Programme	Day & Date/s	Duration in Days	Location
1	IRCA Accredited Auditor/Lead Auditor Training Course on Occupational Health & Safety Management Systems (As per OHSAS 18001:2007)	Tuesday-Saturday 5-9 January	Five	Bangalore
2	GRI (Global Reporting Initiative) Certified Training Programme on Sustainability Reporting	Wednesday-Friday 17-19 February	Three	Chennai
3	IRCA, UK Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course	Monday-Friday 15-19 March	Five	Bangalore
4	GRI (Global Reporting Initiative) Certified SME training programme on Sustainability Reporting	Saturday-Sunday 27-28 March	Two	New Delhi
5	GRI (Global Reporting Initiative) Certified Training Programme on Sustainability Reporting	Tuesday-Thursday 6-8 April	Three	Chandigarh
6	IEMA Approved Advanced Environment Management Systems Auditors Course (As per ISO 14001:2004)	Monday-Friday 26-30 April	Five	Pune
7	IRCA, UK Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course	Monday-Friday 24-28 May	Five	New Delhi



Confederation of Indian Industry



CII-ITC Centre of Excellence
for Sustainable Development

CII-ITC Centre of Excellence for Sustainable Development TRAINING CALENDAR - 2010

8	IRCA Accredited Auditor/Lead Auditor Training Course on Occupational Health & Safety Management Systems (As per OHSAS 18001:2007)	Monday-Friday 21-25 June	Five	New Delhi
9	IRCA,UK Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course	Monday-Friday 12-16 July	Five	Hyderabad
10	IEMA Approved Advanced Environment Management Systems Auditors Course (As per ISO 14001:2004)	Monday-Friday 9-13 August	Five	Chandigarh
11	GRI (Global Reporting Initiative) Certified Training Programme on Sustainability Reporting	Tuesday-Thursday 17-19 August	Three	Pune
12	IEMA Approved Advanced Environment Management Systems Auditors Course (As per ISO 14001:2004)	Monday-Friday 6-10 September	Five	Bangalore
13	IRCA Accredited Auditor/Lead Auditor Training Course on Occupational Health & Safety Management Systems (As per OHSAS 18001:2007)	Monday-Friday 4-8 October	Five	Ahemadabad
14	GRI (Global Reporting Initiative) Certified Training Programme on Sustainability Reporting	Monday-Wednesday 18-20 October	Three	Kolkata
15	IRCA, UK Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course	Monday-Friday 8-12 November	Five	Mumbai

For more information and registration, write to sustainability@cii.in

Companies and a low carbon economy: The revolution from pre-Kyoto to post-Copenhagen



Dennis Pamlin
Senior Associate
Chinese Academy for Social Sciences

Post-Copenhagen an opportunity for winners in a low carbon economy

The situation after Copenhagen in many ways is best possible for innovative companies that can deliver low carbon solutions. No clear framework exists and the only thing we know is that significant reductions are needed. We do not know exactly, how big the reductions will be; when they will take place and; where they will take place.

Leading policy makers and scientists say that we need 80% reduction of greenhouse gases globally by 2050 and 40-50% reductions in developed countries by 2020.

Such reductions will not happen through a business-as-usual scenario and will require enormous changes in all parts of the economy. Companies that are able to provide the services we need without using fossil fuels, will be the winners within two decades.

Drastic measures should be expected

For the first time, during our modern economy, business will be in the same situation in which the nature is during periods of rapid change. Those who adopt will be very successful and those who fail to adopt will become extinct. The economy is approaching a situation similar to the one which the nature experienced 65 million years ago, when the dinosaurs were almost extinct and mammals took over. Now it is time for the fossil companies to become extinct and a new generation of companies to take over. It is however, very important to remember that no company must die, it is the fossil business models that will become extinct. Any company that is willing to change business model has the opportunity to survive and be successful as we move into the 21st century economy.

What is different when nature is compared with business is that business is very influential when it comes to the

rules and regulations that exist. This has resulted in a situation where powerful companies reluctant to change have been blocking necessary changes and instead of a smooth transition we get a more radical shift. The longer we wait the more radical and fast the changes will be.

There are of course the options that the polluting industries will be successful in blocking actions to reduce emissions, it is important to remember that this will only result in even more dramatic changes due to extreme weather events, famines, floods and most certainly climate protectionism, resulting in civil unrest and war. So radical change is coming, the question is not if, it is when the change is coming.

Pre-Kyoto discussion was problem focused

Even if there is a lot of lobbying going on all over the world trying to stop the transformation to a sustainable low carbon future, there is much to be optimistic about. If we compare the situation pre-Kyoto (before 1997) with the situation post-Copenhagen (in 2010), it is fundamentally different¹. So much have changed that it cannot be seen as a changed situation, it is totally a new situation.

As Figure 1 illustrates the only really strong business voice at the pre-Kyoto time was the fossil fuel business, represented by the oil & coal companies together with the automotive industry. As these companies are the most powerful on the planet their voice cannot be underestimated. NGOs were the strong voice for action at that time. Other companies were not really aware or uninterested of the climate issues back then.

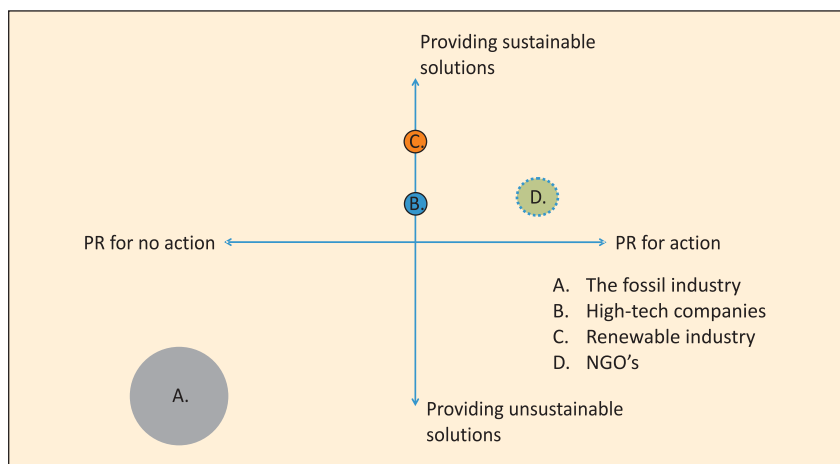


Figure 1: Pre-Kyoto (before 1997): Role of non-state actors

It is important to understand that much of the climate discussion and the structure of the current legislation, including the Kyoto Protocol, are based on the old situation and old thinking that dominated the creation of the Kyoto Protocol.

I want to make it very clear that Kyoto is important and has many valuable contributions, but it is also important to keep in mind that it is only half of a working framework. It was created by environmentalists who knew how to stop companies and was inspired by the Montreal Protocol that helped phasing out the Ozone Depleting Substances. The idea behind the current framework is that there are companies which emit harmful substances and a framework is needed to force these companies to reduce the emissions.

While such an approach is suitable, when a technology fix is needed. But when the mentioned companies are relatively weak compared to policy makers and NGOs, it is not enough for a transformative challenge like climate change. In this case, it is not enough to hope for a technology fix. It is clear that a fundamental change, both in the global economy and

in provision of goods & services, is needed.

An old framework in a new world

Today, there is no company that is dismissing climate change as unimportant. Compared with pre-Kyoto, we can note that there is conflict over the need for action.

Even more important is the fact that the fossil industry has changed rhetoric (we will return to the action soon) as a number of new companies have emerged. The renewable companies have become important voices in the discussion. Companies like Suntech and Himin group from China, Suzlon from India and Vestas from Denmark have demonstrated that becoming world leaders in renewables is more about brains than economic muscles.

The role of entrepreneurs is also taken much more seriously. The fact that the three leading electric car companies have challenged the traditional car industry (BYD along with Better Place from China and Tesla Motors from California) is impressive. More impressive is the fact that none

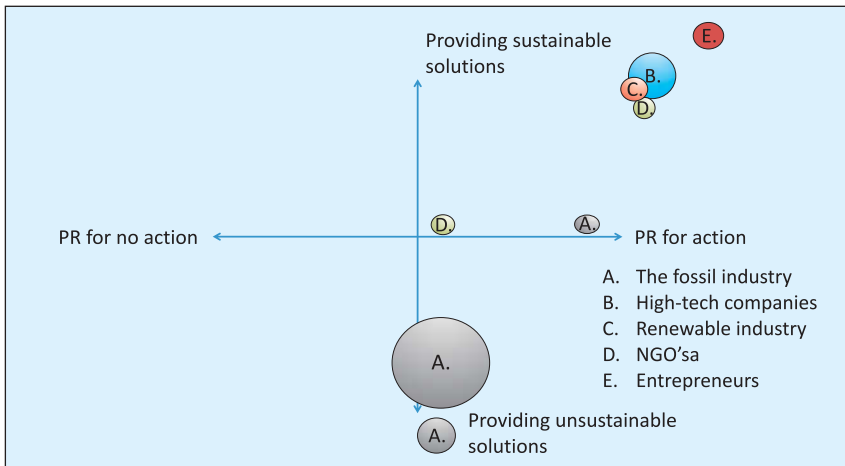


Figure 2: Post-Copenhagen (2010): Role of non-state actors

of these companies existed before 2003.

The high-tech companies, and especially ICT companies, have emerged on the global scene with a low carbon agenda. Major companies like HP, IBM, Intel and Ericsson have done a very interesting work. They have been supported by telecom operators who were the first to realise that their primary impact was more in what they provide to the market and not their own emissions.

When we study the NGOs and fossil companies, we see that interesting things have happened. Even if the fossil companies have changed rhetoric but very little has actually happened practically beyond the technology improvement that would have happened anyways. Some companies have even moved back into high carbon intensity. The companies like Vattenfall invest heavily into coal and oil companies like BP, Shell and Total begin investing in tar sand, which is one of the dirtiest fuels on the planet. Similarly, most car companies continued to market and sell SUVs. Most fossil companies have some investments in more innovative areas, but these investments are only

a fraction of what is needed to really have an impact on the business-as-usual strategy pursued.

So while these companies talk about action many seem so locked into their old business models that policy makers concerned by the climate and economy, must ask themselves if the best thing is to get them out of the market as soon as possible, not to jeopardise strategies that support a sustainable low carbon development.

The situation for environmental NGOs is also interesting. Many seem

to be caught in the pre-Kyoto world and think that focus should be on those creating the problem and the way to do this is to ask for a price on carbon and to stop the polluters. To work with winners is still something that few engage in (Winners are polluters that are slightly better than their competitors). Some NGOs have moved on and work with the new group of companies, but the work is still not high on the agenda.

The changes from pre-Kyoto to post-Copenhagen

Before looking into the future, summarising the change we have seen, it is clear that new companies and sectors have emerged that are moving the issue forward and also providing concrete solutions. On the other hand, there is an unholy coalition between fossil companies and some NGOs that are stuck in a discussion usually focusing on carbon price and the role of CCS.

In Figure 3, the movements between pre-Kyoto and post-Copenhagen are described and based on this picture,

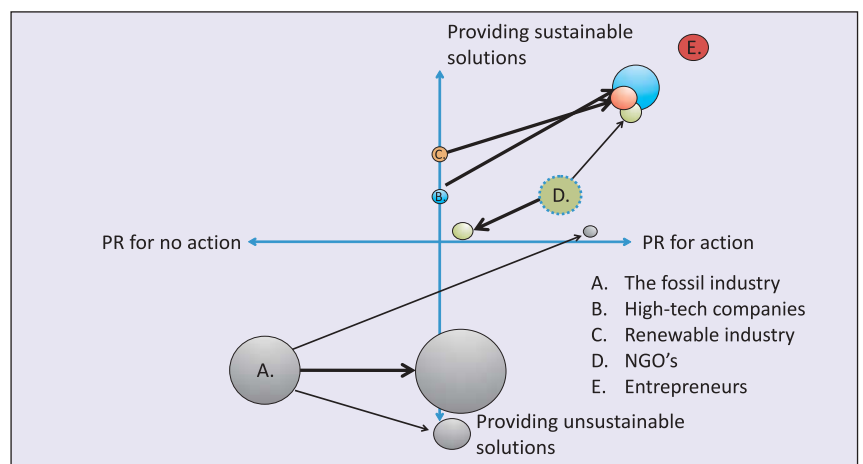


Figure 3: Changes in sectors between pre-Kyoto and post-Copenhagen (2010)

two groups can be identified: the problem group and the solution group.

Beside the sectors that are indicated in the figures, there are three more that are important to mention.

First, and probably most important is the financial sectors. The re-insurance companies moved the climate issue when some of the world's most skilful analysts concluded that the world's economy could not deal with climate change as the risks were too big. The venture capitalists built up capacity in clean tech and together with mainstream investors, accelerated investment into a new generation of companies. Far from enough, but compared with the pre-Kyoto world, it is a new reality. Pension funds and institutional investors have been lagging behind and rapid shifts are to be expected.

Second, the architects and city-planners moved forward and have initiated projects around the world that could lead the way. These projects are often driven by PR, but have a significant value as they show what is possible.

Third is the PR/marketing sector. Here almost nothing has happened; many are still supporting their customers in pushing a high carbon, over consumption lifestyle. It is likely that the PR/marketing sector will see itself pulled into the climate discussion in the post-Copenhagen phase.

Beside the change in sectors there is also a shift in geography. Pre-Kyoto the active companies were almost all western, today many of the companies active in the climate discussion are from developing countries. Especially the re-emerging countries like India and China have companies that are active in the climate discussion. This

has been noted that almost all of these companies belong to the solution group. During 2009, at conferences like the World Business Summit on Climate Change, Business for Environment and at the Copenhagen Climate Summit, Indian and Chinese companies were very active as solutions providers.

Four levels of innovation

To understand the current situation and the opportunities ahead, it is important to understand the different approaches companies have to take for a low carbon development and what kind of behaviour that different organisations and incentive structures promote.

Four different levels of innovation can be identified, see Figure 4. The first level of low carbon innovation is when focus is on incremental improvements that reduce the company's own problems. This is where most of the attention has been focused by policy makers, NGOs and businesses themselves. The reason for the focus is twofold: it is easily noticeable and understandable. When emissions are

discussed, people usually think about a coal power plant or just a chimney with smoke coming out. This focus makes sense for big polluters and only if incremental changes are needed.

The second level, which has got a lot of attention today, is incremental reductions through out the value chain, including all suppliers, starting from the extraction of material from nature and then also looking at the use-phase & end-use of the products. For most companies which are not the major emitters, it is in these parts where the majority of the emissions exist. Among IT companies, retailers, biotech companies and the manufacturing companies, up to 98% of the emissions cannot necessarily be associated with their own direct impact.

Still it is common for companies to aim for "climate neutral" and offset the emissions as they focus on level 1. This is a reason why offsetting might be one of the worst innovation killers today, keeping the companies on innovation level 1.

The third level is when the company acknowledge that the way they produce

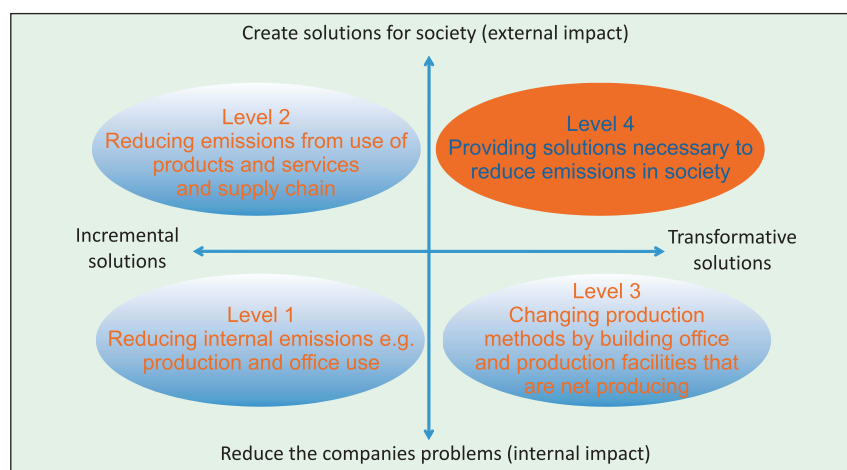


Figure 4: Four levels of innovation and different corporate approaches to low carbon development

things is not sustainable and instead of trying to improve unsustainable production methods, it develops solutions that become part of the solution. This can be a manufacturer of furniture that becomes a net producer of sustainable bio-energy, or a car manufacturer who builds so many wind power mills as it constructs its manufacturing plant & becomes a net producer to ensure that it puts more renewable energy on the grid than used.

The fourth level, and the most important level for the 21st century, is when the company starts to focus on what it is providing to society through its products and services. The question on this level is if the services the company provides are helping people getting a better life while helping to reduce emissions society? then obviously the other levels are needed as well. But unless we get more companies to focus on how their core business is contributing to a low carbon economy, it will be impossible to reach the reductions needed.

Some people are afraid that focus on the core business, and solutions that company provides that can help reduce emissions in society, will distract them from the need to reduce their internal emissions. Looking at the companies that have begun to explore this area are almost leading in level 1-3 as well. Probably, because the companies that link low carbon development to their core business, requires a commitment from the CEO and the board. And if one wants to be the company that helps the customers towards a low carbon economy, it is not credible if the company has its own emissions. If anything is true, it is probably that many of the current initiatives that focus on internal emissions are distracting from effort on the higher innovation levels and not the other way around.

Moving towards a strategy that brings reductions in society

Given that we need dramatic

reductions and today most companies are taking steps that aim to reduce the internal emissions, the question is how these companies can move up the "innovation chain".

The first step would be for companies to clarify about the kind of work they are involved in. By disclosing the kind of work they are involved on each innovation level, it would be easier to understand the kind of companies that are stuck in a risk approach and the companies that have moved on.

Today it is observed that companies which used to focus only on their internal emissions are also looking down to their supply chain as well as the use-phase and end-use of the products. This is good, and all companies should make an assessment of their whole value chain to get an understanding of where the major emissions are. But this will never happen as long as the sole focus is on short-term reductions and only the EHS/CSR department are held responsible.

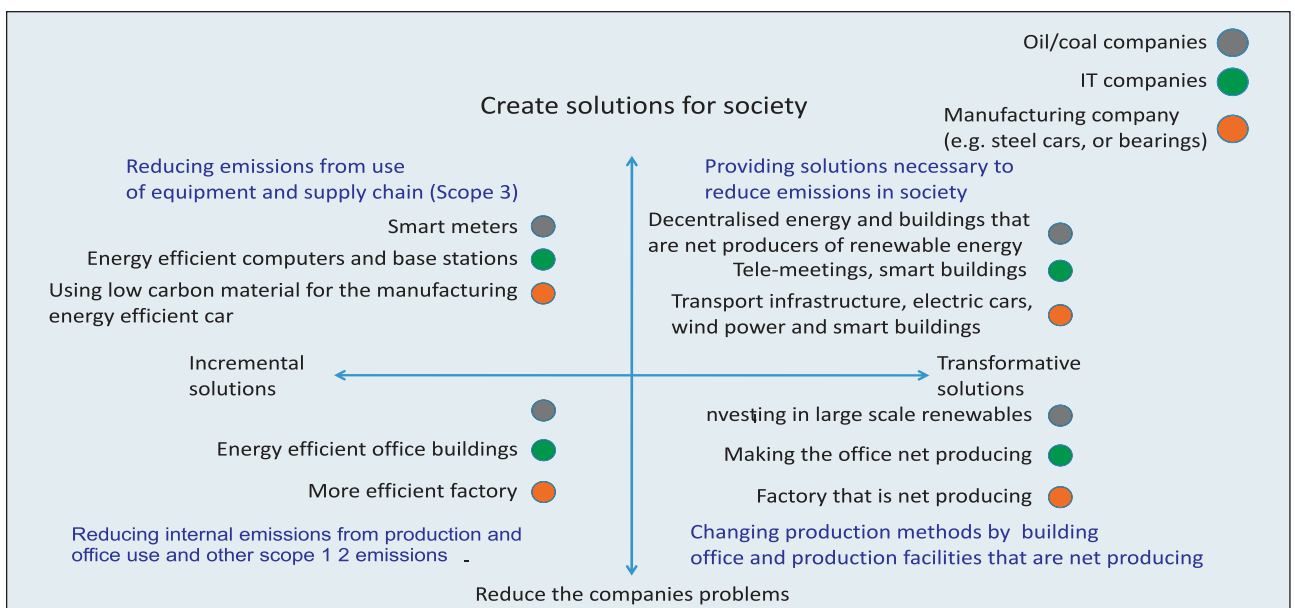


Figure 5: How the four levels of innovation are used in different sectors

Companies that only focus on incremental improvements run the risk of becoming trapped in incremental thinking. The automotive industry in Detroit, is a very good example of how influential companies with very good employees can lose the innovation edge when they only look at incremental improvements of existing ways of doing business. Policy makers, media, innovators and NGOs should also be aware that companies with an incremental focus will not be prepared, and will most certainly resist the initiatives that aim to support rapid reductions. Even if a company is leading in the field of incremental improvements, and is regarded as a leader by those working with incremental improvements, they are quickly getting into problems now as it is time to focus on the significant reductions that are needed.

Initiatives run by governments, NGOs and consultants should also assess if they run the risk of undermining the necessary innovation within companies. For example, those working with incremental reductions and asking companies to disclose the

emissions, should clarify what kind of emissions they are referring to and how they ensure that the pressure they put on companies does not result in an incremental lock-in and are not counter productive. The same goes for those consultants and companies involved in offsetting as this often blocks innovation³.

Governments also have a significant responsibility and should avoid a single-minded focus on companies' internal emissions that only require incremental improvement. Shifting from a product to a service perspective will help governments a long way and all governments, when they ask for services and not products, should use their public procurement in a way that supports companies that are investing in innovation to deliver solutions the society needs.

With a focus on transformative change, companies will be able to distinguish themselves from those who are just repeating yesterday's business success. The need for low carbon solutions can help bringing back the enthusiasm in business and

reward those that are innovating with focus on what society needs.

References

- ¹ The graphs are based on analytical work where the media activity, presence at the negotiations and lobbying activity.
- ² This could for example be companies that are providing solutions that enable buildings to become net producers of decentralised and renewable energy, it can be companies involved in providing people with food that is possible for 9 billion people to eat, more vegetarian indian food for example and less hamburgers made out of beef. It can be companies providing IT equipment that allow people to work flexible and dematerialise their lives.
- ³ That offsetting is not good for innovation is something that is well known among those of us working with companies and was captured in a good way by Brian Fry: "Unfortunately, experience has shown that carbon offsets don't actually encourage behavior changes. In fact, carbon offsets are beginning to be seen as a way for people and businesses to "assuage their guilt" by buying a "get out of jail free card." http://www.thewhir.com/blog/Brian_Fry/121109_Greenwashing_Carbon_Offsets. The definition of offsetting is not clear and some initiatives to increase production of renewable energy are obviously good.

Mr. Dennis Pamlin is Senior Associate at Chinese Academy for Social Sciences. He has engineering, industrial economy and marketing in academic background. He has worked as an independent consultant and advisor to governments, business and NGO's since 1993. In parallel with the independent work, Mr. Pamlin worked part time for WWF with global policy issues from 1999 to 2009. During this time he initiated WWF's Trade and Investment Programme work in the BRICS (Brazil, Russia, India, China and South Africa). He initiated and lead WWF's work with the ICT sector.

Mr. Pamlin is on the board of a number of corporate sustainability initiatives. Today he is working with leading companies in emerging counties like China Mobile and the renewable companies in Baoding as well as western companies such as IKEA and Unilever. His focus is on innovation and high technologies often in combination with incentive structures and values. He has initiated projects such as the low carbon city initiative, IT and sustainability, Winners in a low carbon economy and climate positive. Right now three main projects are resource efficiency in the Chinese 12th five-year plan together with the NDRC, nanotechnology for sustainable abundance and a Climate Positive leadership group (with focus on transformative change).

Mr. Pamlin has just launched the initiative "21st Century Frontiers".

Viewpoint

Business with a Soul: Sustainability that delivers profits and works for the poor



Bishal Thapa
Managing Director
ICF India

"Are not poverty and need the greatest polluters?"

-Indian Prime Minister Indira Gandhi, UN Conference on Human Environment, Stockholm 1972

"The world has come a long way since 1972, but we have not been able to respond to that challenge... Let us answer Mrs. Gandhi's question here in Copenhagen! Let our Copenhagen Agreement be not just about restrictions and constraints - but about sustainable development, green growth and possibilities!"

- Andreas Carlgren, Sweden's Minister for the Environment, UN Climate Change Conference, Copenhagen 2009

In 1972 Prime Minister Indira Gandhi was the only head of state to attend the UN Conference on Human Environment in Stockholm – one of the precursors to the current Climate talks. Speaking at the conference she challenged the world to consider environment in the context of the need for poverty reductions.

This time around in December 2009, the UN Conference on Climate Change in Copenhagen was somewhat different. 130 world leaders and over 20,000 delegates participated. Sweden's Minister for the Environment, Andreas Carlgreen in a statement on behalf of the European Union and its member states invoked Mrs. Gandhi's challenge from the 1972 conference and implored world leaders to seek a solution. He must

have been disappointed because nobody listened. Copenhagen failed to produce either a solution or an agreement.

Copenhagen was never intended for the faint of heart. Nor was it ever intended for the ideologues and idealists that lined the chilly streets outside the Bella Centre in Copenhagen to press leaders for a solution. Since the Bali Action Plan in 2007, the fault lines that kept developed countries apart from emerging economies and developing countries had been growing. Country positions continued to harden and the size of the negotiation text only grew in size with each passing day and each additional proposal, reaching to as much as 600 pages at one stage in the process. Success or failure, Copenhagen was always headed for a spectacular denouement.

And what a denouement it was! In the final hours of the conference, a persistent US President unable to secure a meeting with the Chinese Premier barges unscheduled into a meeting of leaders from China, India, South Africa and Brazil (BASIC) to create an outline of an accord. The President departs shortly thereafter to beat an incoming snowstorm in Washington DC that threatens to derail his return flight. In the mean time, 28 countries sign up to the Copenhagen Accord but it fails to be endorsed by the full Conference of Parties and is merely taken note of in the final plenary.

The Copenhagen Accord has just about enough for the pragmatists to believe progress is possible and lacks just about enough for the skeptics to believe is a step backwards. The Accord acknowledges the need for action to limit temperature rises to

within 2 degrees; requires developed countries to jointly or independently provide commitments on economy-wide emissions reduction targets; requires emerging economies to submit appropriate mitigation action subject to verification; and promises immediate funding of \$30 billion annually through 2012 and \$100 billion annually through 2013-2020 to support the needs of developing countries. In its current form, the Accord is not legally binding. It is outside of the UN framework and runs the risk of creating a parallel competing process for combating climate change.

Using Climate to open a new front in the battle against poverty

"For developing countries it wasn't clear what a legally binding treaty would mean for them, how it would impact their ability to grow their economies or eradicate poverty."

- Yvo de Boer, Executive Secretary of the UNFCCC, 23 December 2009

Three and a half decades after the first UN conference on the environment, the failure at Copenhagen results as much from the unanswered question that Mrs. Gandhi posed on the nexus between poverty, development and environment. Developing countries, larger emerging economies included, continue to see development and poverty reductions at odds with emissions reductions.

Developing countries have argued that they need to grow in order to reduce poverty and improve living standards. Efforts to curtail emissions, or even impose standards on how clean that growth should be, could limit the ability of poorer countries to grow and develop. Nobody has quite figured out why that should not be the case. And more often than find solutions to that vexing question, it was easier to gravitate to the more polarizing ideological position of blaming the west and demanding retribution.



Developing countries want richer nations to implement deep cuts in emissions, provide technology transfer and financial support. All these will no doubt need to be part of the final answer, but the singular focus on these elements fails to address the underlying dichotomy between poverty reductions, development and emissions that will continue to tear at every agreement on offer until it is addressed. And there is no magical sustainable development pathway made possible by technology transfer or financing that suddenly makes all of this seem easy.

For the discussion to be relevant to developing countries climate must be reoriented through the lens of their development imperatives back home. Why does climate matter? How does it help or detract in the fight against poverty or for better governance or social services? How does it aid food security and enhance social justice? How does it help improve infrastructure, business environment, attract investments and create the basis for growth?

In poorer countries climate change compounds already existing vulnerabilities. These vulnerabilities, for example of food security, political stability, access to energy, health or education are tied to the very causes of poverty. By centering the climate response on poverty reductions and development, mitigation and adaptation actions will offer an opportunity to address the root causes of poverty.

For many developing countries, the root causes of poverty and the challenges to poverty reduction often lie in poor governance, corruption, the lack of political and economic stability and inadequate resources. Many of these result from systemic constraints with

deep historical roots and entrenched interests. Developing a response to climate offers an opportunity to design a new set of strategies, bring additional resources to bear, test out new delivery agents, find new ways of challenging entrenched interests that can help overcome the persistent systemic constraints and in the process incidentally provide the gateway to cleaner growth. This should be the basis for sustainability – one that puts poverty reduction first and offers cleaner growth as a co-benefit.

Climate is not merely an afterthought in this consideration of sustainability. Such an approach to climate provides the basis – the necessary spark – for challenging entrenched interests, mobilizing new resources, designing new solutions, engaging new delivery agents, stimulating new ways of thinking, motivating better transparency and governance, which together hold the best prospect for addressing the deep rooted causes of poverty. A climate response for developing countries is all about opening a new front on the battle against poverty.

Consider India's electricity industry as an illustration. The sector has struggled with three broad objectives: access for all, reliable supply and growth to meet rising demand. These objectives, however, have remained elusive. The failures stemmed mainly from endemic system inefficiencies of state monopolies – failed state electricity boards, high commercial losses, structural and regulatory bottlenecks and payment uncertainty.

Two decades of sector reform efforts finally coalesced into the Electricity Act 2003 - a comprehensive set of regulatory and structural measures to liberalize and modernize the sector. Implementation has been patchy across the states but there are visible signs of success. Private participation has increased significantly. A stronger regulatory framework has evolved. Many state electricity boards have restructured. Most importantly, there are greater opportunities and increased certainty of returns. Everybody agrees that a robust electricity sector in the vision of the Electricity Act stands the best chance of delivering on the objectives of access, reliability and growth.



But the reform process is far from over. The challenge now is to get the Act implemented uniformly across the country both in letter and spirit so that it may overcome the entrenched interests that prevent progress in the sector. Left to its own, implementation of these sector reforms could easily take at least another decade to realize.

More recently, the Government of India announced that it will seek to install 20,000 MW of solar over the next 5 years as part of its climate mitigation strategy. Availability of technology and financing notwithstanding, 20,000 MW of solar is unlikely unless the endemic problems of the power sector are first resolved.

This is where the response on climate, such as the 20,000 MW of solar initiative, could be useful. In promoting solar, the Electricity Act will need to be better implemented. Endemic problems that plagued the sector such as state monopolies, payment risk, transparency and regulatory stability, which are all elements within the Electricity Act, will need to be more rapidly addressed. The solar initiative could provide the impetus for better implementation of the Electricity Act. If successful, India will have 20,000 MW of solar but it will also have achieved a much greater feat: a more robust electricity sector more in line with the Electricity Act and better positioned to meet the aspirations of growing India.

Businesses as a the delivery agent of sustainability

"GDP does not mean gross domestic product; it means green domestic product. Unless we start to think of green economic

growth, our growth will not be sustainable."

- Jairam Ramesh, Indian Minister of Environment and Forests, 5 August 2009

While government actions will be necessary in creating the regulatory and structural framework, businesses will have to be the frontline delivery agents of sustainability. Public delivery mechanisms alone will not be able to comprehensively address the magnitude of the challenges. As the drivers of growth, businesses have the capacity to develop and implement solutions that deliver on growth, poverty reduction and sustainability.

While governments set goals, businesses will have to be the one that will need to deliver with actions. Whether it is reductions in intensity or emissions, it is the individual actions of businesses that will be counted to see whether the goals have been met or not. And while governments lay out broad initiatives, business will have to find the way of translating the macro goals into meaningful actions on the ground.

Climate solutions, whether implemented domestically or with international support, will require significant levels of financial support and technology transfer. The Copenhagen Accord outlines a \$100 billion international fund that could be mobilized to support developing countries. Domestic action, such as India's National Mission on Enhanced Energy Efficiency, will mobilize several billion more. Such funding cannot be routed only through public channels. It will need new market based gateways to stoke the development of new technologies and solutions.

Climate solutions will require high levels of transparency and reporting.

The need to report on domestic mitigation action was one of the key differences in the negotiations. The Copenhagen Accord proposes a consultative process in a way that protects national sovereignty but does require developing countries to submit to verification of action. Businesses have the capacity to bring in higher levels of transparency, create the cross-border trust by reinforcing existing and new trade and investment links. By helping to develop, institutionalize and adopt monitoring and reporting standards, business can influence governments to resolve one of the sharpest fault-lines in the current climate negotiations.

A new paradigm for sustainability: recognising the nexus between environment and poverty

"In the developing countries most of the environmental problems are caused by under-development. Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation. Therefore, the developing countries must direct their efforts to development, bearing in mind their priorities and the need to safeguard and improve the environment."

- Declaration of the United Nations Conference on the Human Environment, 16 June 1972

Sustainability has always been an established part of carbon markets. The Clean Development Mechanism (CDM) requires participants to describe how the proposed CDM

project is sustainable. The CDM mechanism requires host governments to first approve the project application before it is considered by the CDM Executive Board. A criteria that host governments are supposed to evaluate is whether the project meets sustainability requirements. In practice though, these measures of sustainability are poorly developed and almost never applied.

Carbon markets differentiate on sustainability metrics. Projects that have high a sustainability quotient often tend to earn a premium over other projects in primary credit markets. This is particularly true in voluntary carbon markets where sustainability is often one of the guiding principles.

Sustainability has always been a part of the Indian corporate psyche. In the past, sustainability was largely focused around social spending: health, education and other social services. The approach mirrored the government's efforts in the sector and

was mostly philanthropic in nature. These activities were labeled as part of the Corporate Social Responsibility (CSR) and represented spending that was taken from the profits of the company. Monitoring of spending and assessment of impacts from CSR were limited. Local environment, health and safety and governance were often the other components of sustainability.

For businesses, the sustainability paradigm now needs to move away from defining the company's sustainability initiatives in philanthropic terms. It must instead begin to frame its business objectives more directly in the context of the nexus between development, growth and environment. The strategic challenges that businesses face are no different than the choices that their governments have to answer: how to simultaneously deliver poverty reductions, development and clean growth.

One way of addressing the paradox between development and clean

growth is through a sustainability paradigm that brings together environmental, social and economic considerations as the basis for decision making. Firms adopting this framework will have to place a value on social and environmental benefits. Firms must continue to grow and profit. But that growth and profit must also include social and environmental returns.

Many firms might argue that such a framework for sustainability will provide them a clean conscience but will do little to enhance their bottom line. This should not be the case anymore for three reasons. First, businesses are the frontline delivery agents of the response to climate change. Adaptation and mitigation action – whether funded domestically or internationally, backed by technology transfer or not – will rely primarily on business to drive implementation. Does your business not want to be part of the biggest transformation since the Industrial Revolution? Second, the challenge of simultaneously ensuring poverty reduction, development and growth is the biggest driver of current times. While governments craft policies and international agreements take shape, business that develop innovative models to address this challenge will remain ahead of their competition. Third, within a few years businesses that do not directly address their social and environmental footprint will not be able to operate. All of these are not only directly important to the bottom line, but are of immediate relevance.

Implementing sustainability

Businesses cannot simply develop a sustainability vision and leave it



at that. That vision must be fully mainstreamed into the corporate process and shape decision making within the firm. It needs to be backed by a real management and organisational structure that allows it to be operational on a day to day basis.

- **Define the Framework:** An organisation's approach to sustainability must be based on a clear framework of how it recognises the current challenges and intends to respond as a business to that challenge. The framework must be comprehensive and address economic, social and environmental considerations.
- **Enterprise wide approach:** Many Indian companies have adopted sporadic and piecemeal project activities under the Clean Development Mechanism (CDM) as part of their mitigation effort under corporate sustainability. While such activities offer a start, the broader sustainability framework will require an enterprise wide approach that can subsequently be used to develop a strategy for mitigation or adaptation. Rather than adopt a project by project approach, companies may find it more useful to develop a more comprehensive mitigation strategy that aligns with their business needs and objectives.
- **Integrate into business objectives and develop corporate systems:** Several Indian companies have outlined strong sustainability statements but are not adequately matched with operational systems that allow the sustainability objectives to be realized. For sustainability to be meaningful, it must be integrated within the core decision making framework

of the company. Additionally, the organisation must also have adequate systems to manage the evolution of the strategy over time and to future optimize future initiatives.

- **Monitoring and Reporting:** Many Indian companies have been faulted for not doing enough on sustainability when in fact several of them had robust ongoing initiatives. This partly reflects the difficulty many organisations have in monitoring and reporting their ongoing sustainability strategy. A wide variety of options are available to organisations for monitoring and reporting, including many that have widespread international acceptability such as the Global Reporting Initiative (GRI). The choice for monitoring and reporting must, as with other elements of the sustainability strategy, reflect the underlying business interest of the firm and fit within its operating systems.

Looking beyond the gloom of Copenhagen

"Mitigation. Transparency. And financing. It is a clear formula - one that embraces the principle of common but differentiated responses and respective capabilities. And it adds up to a significant accord..."

- President Barack Obama, UN Climate Change Conference, Copenhagen 2009

The world did not come to an end in Copenhagen. Carbon markets did not come to an end and the risks of climate change have not gone away. The Copenhagen Accord did not have everything in it to please everyone but it provides a basis for continued efforts

towards an international agreement. The first set of tests will come within a month when countries need to provide concrete commitments under the Accord.

Whatever the outcome, businesses will be central to the solution on Climate. As an international agreement takes shape, business need to start examining how they will begin to position for a changed world order where the bottom line extends beyond just the profits they make. As the first industrial revolution did two centuries ago, businesses have the capacity to transform the Climate Revolution into a second industrial revolution – one that is sustainable and positions us firmly towards progress.

Mr. Bishal Thapa is Managing Director of ICF International (India). ICF International, a global professional services firm, partners with government and commercial clients to deliver consulting services and technology solutions in energy and climate change; environment and infrastructure; health, human services, and social programs; and homeland security and defense markets. Mr. Thapa has been with ICF since 1998. He regularly advises public and private sector clients in energy and environmental issues worldwide. His key areas of expertise include climate policy, carbon markets, Clean Development Mechanism, emissions markets, power and fuel markets and energy asset valuations. Mr. Thapa holds an M.A. in Economics from the University of Maryland, College Park, USA.



Confederation of Indian Industry

Calendar

January

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2010



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Industrial Ecology – Developing Systemic Solutions to Climate Change and other Environmental Challenges in Indian Industry

Introduction

Climate change presents a major threat to the long term sustainability of human life. Business has an important role to play in addressing this threat and many companies are already finding profitable ways to reduce greenhouse gas (GHG) emissions by increased attention and action on their energy consumption, waste management, transportation, logistics and other stops along the product chain. Importantly, climate change does not respect business boundaries, nor governmental ones, so we propose an approach called “industrial

ecology” that can be implemented at multiple organisational levels – within individual firms, across supply chains and regional industrial clusters, and even globally. Industrial ecology provides an innovative suite of concepts and tools for thinking about the system in which a company and its products are embedded, and then managing the environmental implications throughout those systems. Industrial ecology helps companies and government planners to design and manage industrial production and human consumption activities such that they maintain ecological integrity and create sustainable livelihoods¹.

Greenhouse gas emission reductions and climate change mitigation are environmental impacts that can be managed through industrial ecology strategies, along with other environmental impacts associated with the businesses. With its intensive focus on materials, water, and energy and how these resources flow through production and consumption systems of various sizes and dimensions, industrial ecology raises some key questions for companies:

- Does a given company have a sense of the full inventory of its material and energy needs?
- Where do the required resources originate and where do they go when the company no longer needs them?
- Which of the materials, energy, and processes are most responsible for GHG production and how might the company reduce impacts in these targeted areas?
- Could a focus on GHGs mask other issues?

Industrial ecology's approach suggests a need for collaborative action, as individual companies often must work with others to solve large problems, such as climate change, that extend outside their boundaries. This article proceeds with an elaboration of some of the key concepts and tools used in industrial ecology, accompanied by instances of their implementation by companies along with the implications for reducing climate change impacts through each of these activities.

Key concepts

One of the central themes of industrial ecology is that industrial systems would be more sustainable if they were organised and managed with some of the insights we have gained

from observing biological ecosystems. In biological systems, the resources – carbon, energy, water, minerals and other elements – are continuously cycled and taken up by a variety of organisms through food web linkages. Ecology provides several metaphors that might be employed by business managers and policy makers. One fundamental example is the concept of “metabolism” or how plants and animals utilise food and energy for functioning and growth, which is likened to how industrial facilities utilise raw materials and energy.

A system's view is another critical conceptual foundation of industrial ecology – suggesting that it is not enough to think about ways to reduce the environmental impacts of using a particular product, but that we must think about the entire physical and social system that creates demand for the product, and ways of systemically altering impacts. For example, improving automotive engines to increase fuel efficiency and reduce carbon dioxide emissions raises the environmental performance of a single car, but at the next level, such gains are easily erased with an overall increase in the number of vehicles used by a population. Similarly, engine efficiency does not address the problem of highway congestion and availability of road networks. At the broadest level, driving involves land use and lifestyle choices as well as societal needs that ought to be considered while devising solutions to the problem of transportation.

Industrial ecologists recognise that all products have an “embedded utility” equivalent to the total amount of water, energy, and materials needed to produce it, including resources used for raw material extraction and product manufacturingⁱⁱ. If a

product is landfilled, these resources are lost along with all the energy and emissions associated with their production. Since most commercial energy is produced from burning fossil fuels, then cycling energy – through co-generation, reuse of agricultural wastes, or recovery of energy intensive materials such as aluminum – reduces greenhouse gases by utilising the embedded energy in the cycled resources rather than requiring more fossil fuels to be used for energy productionⁱⁱⁱ. Cycling materials for use in other production processes reduces carbon and energy footprints when compared with virgin materials that must be extracted from the earth then energetically transformed and transported through numerous stages. Cycling water means using it more than once, an increasingly urgent practice where water is scarce owing to expected changes in precipitation patterns brought on by climate change. Recovered resources free up land and capital for other opportunities that would have been required for the equivalent amount of goods to be made from virgin resources.

Business implementation of industrial ecology tools and implications for climate change

Industrial ecology allows focus of energy and materials utilisation at the facility level, across firms or, more broadly, at the regional and global level. Figure 1 highlights that the goal of industrial ecology is sustainability. While everyone does not define sustainability in the same way, industrial ecology adds some tangibility for business leaders, based in its focus on physical flows.

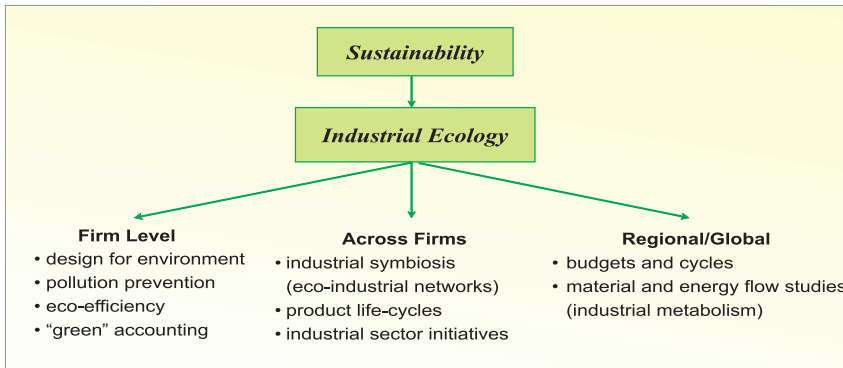


Figure 1: Industrial ecology is concerned with questions of the sustainability of industrial production and human consumption activities at multiple organisational levels – within a firm, across firms and regionally or globally^{iv}.

The three primary scales at which industrial ecology operates are described below:

1. Facility or Firm- Within a firm, economic and environmental considerations are drawn together into one system, by focusing on design, efficiency, and pollution prevention practices within companies to increase economic savings and simultaneously decrease environmental impact. Indian industries have employed eco-design to incorporate environmental consciousness into the design of products and services, thereby reducing their environmental impacts through these proactive choices.

The World Business Council for Sustainable Development^v has identified seven elements that businesses can use to improve firm and/or facility eco-efficiency:

- Reduce material requirements (total mass)
- Reduce energy intensity (energy per unit of output)
- Reduce dispersion of toxic substances
- Enhance recyclability
- Maximize use of renewable

resources (avoid depletion of finite resources)

- Extend product durability/product life
 - Increase service intensity
- 2. Across Firms-** Crossing organisational boundaries implies cooperation among firms and organisations through resource and information sharing within a single industry sector or across different sectors. If the firms are close to one another geographically, this resource sharing is known as “industrial symbiosis.” Thinking across whole supply chains that

can incorporate global systems, firms have recognised that their products cross many boundaries during their life cycles from design and manufacture to distribution, use & final disposal. Taking a lifecycle perspective requires companies to account for the entire set of environmental impacts from beginning to end. The Indian Ministry of Environment and Forests (MoEF) initiated a project to use life cycle assessment in the steel sector in 1997. The intent of studying three diversified steel plants was to identify the best practices in the steel industry and to provide a benchmark to the Indian steel industry by creating a database, which would encourage other steel plants to adopt better practices, reduce emissions and improve their productivity^{vi}. In the case of climate change, it is necessary to consider not only greenhouse gas emissions from facilities and transportation, but also the GHGs generated by activities throughout the company’s whole supply chain that can be attributed to their products (see Figure 2). Several

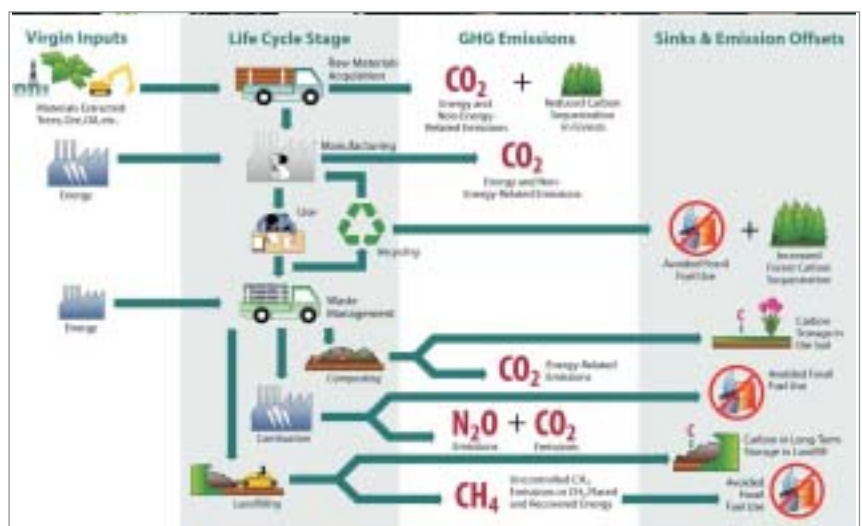


Figure 2: Greenhouse gas accounting across different life-cycle stages with emissions and sinks from specific activities^{vii}.

multinational corporations, including Walmart in China and 3M in India are working with small local suppliers to improve environmental performance by implementation of metrics and standards, including systems for reduction of GHGs.

3. Regional/Global Flows- Tracking flows of material and energy across regions, economies, and the globe illuminates what happens to the constituents of industrial and commercial products. Material flow analysis methods (also called industrial metabolism) are used to map and quantify the flow of materials through a network of actors, and may refer to a single material or substance that is tracked nationally or globally or many materials tracked locally. Figure 3 shows a substance flow map of India's iron cycle – iron entering, being transformed domestically and/or leaving the economy for the year 2000 in millions of metric tons of iron per year (Tg

Fe/year). India is the seventh largest iron using country in the world with high mining quantities (50 Tg Fe/year removed from the lithosphere and converted to crude iron ore). While more than 40% of total production was exported to other regions, 21 Tg of iron was added to India's stock of buildings and equipment – a high rate of accumulation demonstrating India's rapid growth. Globally, the iron and steel industry accounts for around 7% of total anthropogenic CO₂ emissions. Although the amount of CO₂ emitted by the Indian iron and steel industry is relatively low, the carbon intensity (ton C/ton) of this industry in India in 1994 (1.2) is much higher than that for USA (0.55) or China (0.82)^{viii}. Material flow studies enable quantitative identification of resource consumption and emissions generation in different stages of materials processing and use, and can be used to identify opportunities for improving

resource efficiency and reducing the carbon intensity of distinct activities on a large scale.

Collaborative business strategies and industrial ecology

Large problems, such as climate change, which extend beyond a single firm, require collaborative solutions that are fostered by the focus of industrial ecology. One example where inter-firm collaboration is geographically focused is that of industrial symbiosis, which has been described as a collaborative approach to competitive advantage, in which a group of companies in traditionally unrelated industries work together to manage the natural resources they consume and the waste they generate more effectively. This type of inter-firm cooperation is practiced in many industrial clusters around the world and includes shared provisioning of utilities and services, and the exchange of byproducts for use as raw materials.

In the Tianjin Economic-Technological Development Area (TEDA), China, which hosts some 60 international Fortune 500 companies, over 80 symbiotic exchanges of materials, energy, and water across companies have been identified^x. Preliminary analysis at TEDA indicates, substantial GHG reduction from process energy recovery and energy cascading (such as condensate recycling), significant water reuse, and savings in transport, given the shorter distances these materials travel in and around a region rather than being shipped in from more distant areas.

Staff of the National Industrial Symbiosis Program (NISP) funded by the UK government, routinely use

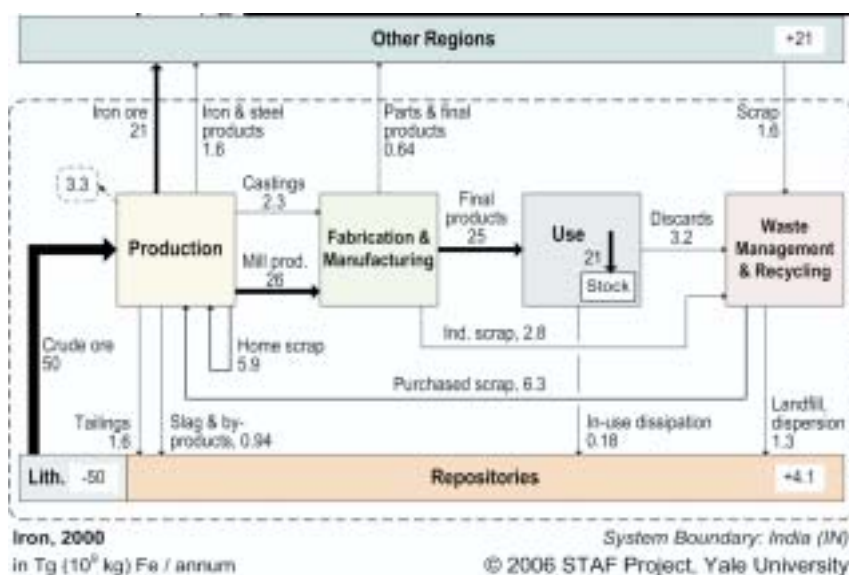


Figure 3: The Indian Iron cycle for the year 2000. Quantities of iron ore being extracted, iron being processed, manufactured, exported, going into use, recycled and disposed^x.

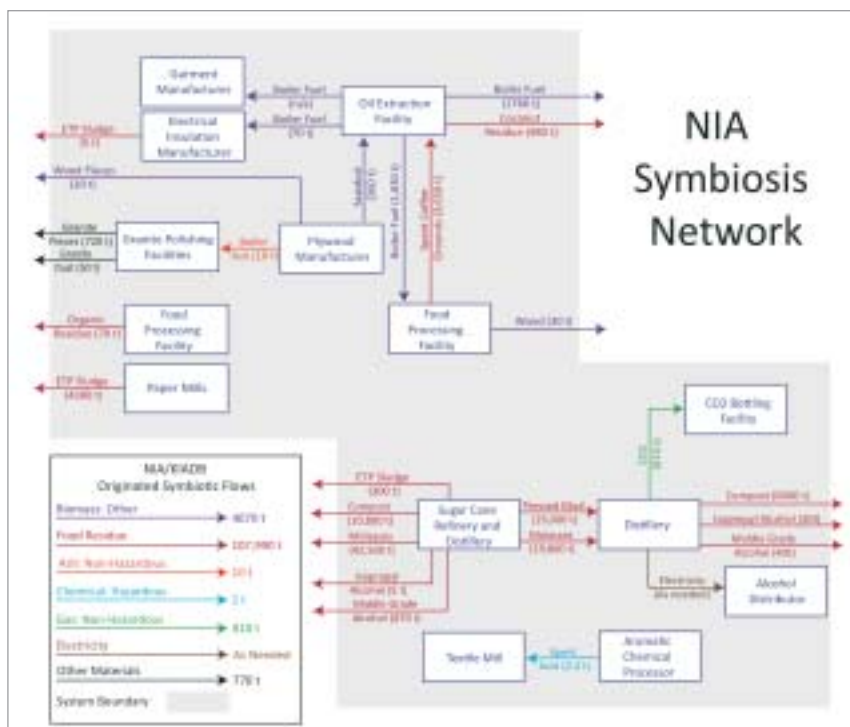


Figure 4: Network depicting inter-firm reuse of industrial byproducts generated by facilities in the Nanjangud Industrial Area, Karnataka.^{xii}

publically available conversion factors to assess the GHG impacts of every industrial exchange. In the last four years, NISP reports having diverted over 5 million tons of waste from landfill, saved nearly 8 millions tons of virgin material from use in the UK, while eliminating over 5 million tons of carbon emissions throughout its industrial network^{xi}.

Material reuse and recycling is quite commonplace in India, and a similar system of industrial symbiosis linkages was recently uncovered in Nanjangud, Karnataka. Many companies in this region use agricultural residues in place of coal for generating energy, thus lowering their CO₂ emissions and in some cases supplying this lower carbon-content energy to the Karnataka electricity grid mix. In addition, many companies in Nanjangud transfer the bulk of their byproducts for reuse by others within

20km of the industrial estate. Figure 4 highlights 11 of these byproduct exchanges, which provide companies with economic savings from replacing more expensive virgin raw materials with locally available byproducts, and generate positive environmental spillover benefits – such as lowering emissions from transportation because of localised reuse, and reducing the disposition of materials to landfill (and associated generation of GHGs) and need for energy-intensive processing and supply of raw materials.

The special case of micro, small and medium scale enterprises- In India, with millions of informal micro, small and medium scale enterprises, industrial ecology concepts can also be applied to identify opportunities for reducing total material consumption and disposal. In the town of Tirupur, Tamil Nadu, a 1996 study highlighted that while no small textile producer

used much of resources in aggregate, but more than 4000 individual small-scale units consumed 90,000 kiloliters of water and 1,200 tons of firewood every day^{xiii}. By identifying how raw materials, energy and water were consumed in various stages in the textile processing supply chain, the researchers pinpointed opportunities for improving resource recycling and efficiencies. A local entrepreneur then developed an innovative means to recycle wastewater using waste heat from the dyeing process, thus simultaneously reducing the energy requirements, GHG emissions and conserving wastewater – a truly systemic solution that was implemented in many dyeing units. Another solution was offered to replace firewood with textile wastes that would give a double advantage of leaving forest cover intact as well as lowering emissions from the burning of wood.

Policy and industrial ecology

In addition to strategies directly taken up by businesses, a broad array of policy programs that support an industrial ecology approach can be used to reduce climate-related impacts of industrial activities and waste management on a larger scale. Some of the most successful programs include instituting policies that require producers of goods to play a larger role in taking back and recycling products (extended producer responsibility) and assessing fees and taxes on categories of goods such as tires or batteries, or on landfill disposition more generally, to reduce disposal and encourage recycling.

In developing countries, waste management plays a particularly large role in GHG production in several ways e.g. informal land spreading-a

widely accepted practice in India, is a significant GHG generator as landfilling and wastewater treatment. Waste generates methane which is greater than 20 times^{xiv} more powerful than the CO₂, a greenhouse gas we usually associate with human-induced climate change. In fact, methane accounts for about 90% of emissions from the entire waste sector^{xv}. At the same time, India's pervasive and effective informal

recycling networks recover vast quantities of materials for reuse and recycling thus avoiding or postponing disposal.

In waste management and in many other key areas, governments have an important role to play in shaping policies that support business in "doing the right thing" while giving them the flexibility to innovate and devise profitable solutions for climate change as well as local resource management

problems. While much of government activity in these areas is local, there is also a growing activity at the national level. Germany and Japan are credited with the earliest legislation to encourage more "recycling-oriented" or "sound material-cycle" societies. Most recently, China enacted 'The Circular Economy Promotion Law' as of January 1, 2009, a progressive and far reaching policy based on the need to balance China's rapid economic growth with the realities of a deteriorating environment. The "circular economy" is defined comprehensively in the law referring to the reduction, reuse and recycling of resources during the processes of production, distribution and consumption.

Outlook: Opportunities for using industrial ecology to tackle climate change implications of your business

It is often said that "we manage what we measure." This is becoming increasingly important as companies today face a complex landscape in which they must manage competing priorities and risks. Many Indian businesses are already tackling this challenge and engaging in proactive solutions to reduce their carbon footprints and operate more sustainably. In a recent survey by The Financial Express, more than 60% of Indian businesses reported that they are aware of climate change impacts on their business and are already pursuing strategies to address these impacts^{xvi}. At the same time, it is significant to note that an overwhelming number of company managers are still not aware of their



“carbon footprint”^{xvii} or, all together, of their total “environmental footprint”. An industrial ecology approach can further help businesses to:

- Quantify material & energy use and emissions generation within their own facilities;
- Consider substitutes at the design, fabrication, distribution, or end of life phases where problems have been identified;
- Extend consideration to activities across their company’s supply chain and in the places where they are located; and
- Evaluate the total life-cycle impacts associated with their production to identify inefficiencies as well as the most significant sources of GHGs from their activities and strategically target their actions to those areas.

The approach associated with industrial ecology commands attention to an examination of all possible resource problems a company might face and not just a single issue within its walls. Indeed, in expanding boundaries to nearby companies as in Nanjangud and across the product life-cycle as in the steel sector, industrial ecology expands the solution for Indian companies to tackle climate change. By collaborating with others to reduce waste and greenhouse gases as well as conserve energy and resources, companies can proactively respond to localised resource problems as well as global ones such as climate change.

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Through the IEDC program, Dr. Ashton works with international colleagues to adapt industrial ecology research and application to the co-mingled problems of energy access, water quality and quantity, waste and material management, and global warming in emerging economies. To this end, she spent the Fall 2009 semester in India where she conducted collaborative research with the Resource Optimization Initiative and other local partners in Bangalore and taught the country’s first graduate course in Industrial Ecology at TERI University in New Delhi.

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Climate Change and Industry's Response



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The issue of climate change is not a subject to debate anymore, rather it's time to come together and mitigate climate change which is becoming a harsh reality. It has almost been 20 years since the issue of climate change was first raised when the UN General Assembly decided to launch negotiations and established the United Nations Framework Convention on Climate Change (UNFCCC). This was followed by several rounds of discussion internationally and finally arrived at modalities to deal with climate change under the aegis of Kyoto Protocol. The period witnessed intense deliberations on the subject covering scientific curiosity, right to development, political willingness, and north-south divide etc.

The Civil Society Report on Climate Change¹ produced by over 40 Civil Society Organisations from around the world concludes that cutting greenhouse gas emissions is not a cost-effective way to address climate change. Rather it argues that policies must promote economic growth and empower the poor so that they are able to solve today's problems

and adapt tomorrow's situation, if any. This report throws light on the pressure being created by the rich countries on India, China and other developing and poor countries to sign up to binding emissions targets. The snapshot of report's conclusion is mentioned below:

- Cutting greenhouse gas emissions in the coming two decades is not a cost effective way to address climate change.
- Deaths from climate related natural disasters have fallen dramatically.
- No evidence that climate change has caused an increase in diseases.
- Agricultural production has outpaced population growth in the past 50 years.
- Water scarcity can be managed with modern technologies.
- Millions of people in poor countries currently die unnecessarily due to a lack of wealth and technology.
- Global restrictions on greenhouse gases (GHGs) would undermine

the capacity of people in poor countries by retarding economic growth and general economic development.

- Governments should focus on reducing barriers to economic growth and adaptation.

The economists felt that climate change will not have any adverse impact, if there is money to tackle the change going to happen. Further, they were unanimously echoing that we should focus more on adaptive measures rather than mitigating.

Further, the book *Unstoppable – Global Warming²* offers the relatively new but already convincing evidence of a moderate, irregular 1500-year sun-driven cycle that governs most of the earth's constant climate fluctuations. This describes ancient climate history i.e. 4.5 billion years ago when creation of earth took place as well as modern climate history i.e. 600 to 200 BC, the Roman Warming. It is mentioned that human emitted CO₂ has played a minor role in the recent temperature increases. However, no scientific evidence is visible. This book also criticizes IPCC's 1995, 2006 & 2007 reports. Due to global warming, there will be no negative impacts on sea levels, wildlife, agriculture, weather, human health, etc. It is also revealed that cold is more frightening than warmth. In fact, CO₂ is not likely to be the principle climate driver and wind / solar power are not a solution. We should adopt the greatest invention of the 20th century i.e. insulation.

However, times have changed and so does environmental and social impacts of climate change. The shift in weather & temperature patterns e.g. events such as Katrina, melting of polar ice caps, rise in sea level,



etc. have already underscored the potency of climate change and left human civilization to ponder, what went wrong in their course of growth & development.

The economic imperative for action against climate change is also strong. The Stern Review on the Economics of Climate Change, 2006, concluded that under a Business-As-Usual (BAU) scenario a 2-3°C rise in temperature could reduce global economic output (as measured by GDP) by 3%. Using the results from formal economic models, the Review estimates that if no action is taken, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year. It is clearly evident that the benefits of strong, early action on climate change outweigh the costs.

Where do we stand now and how the things have changed after Copenhagen Summit are two big questions confronting us. With moderately successful outcome of the Summit, the world is again stalled at a juncture with not very clear roadway

ahead. The Summit culminated with a 'Copenhagen Accord', which was supported by a large majority of Parties, including the European Union, but opposed by a small number. It also mandated two ad hoc working groups on long-term cooperative action under the UNFCCC and on further commitments for developed countries under the Kyoto Protocol to complete their work at the next annual climate conference, to be held in Mexico City in November 2010.

The Accord endorses for the first time at global level the objective of keeping warming to less than 2°C above the pre-industrial temperature. Another outcome of Summit is that it requires developed countries to submit economy-wide emission reduction targets and developing countries for their mitigation actions, by 31 January 2010.

Though we as a developing nation have not agreed on any binding targets, still commitment in the form of mitigation actions, brings a direct onus on to take actions internally. Under Kyoto protocol, developing countries especially BRIC (Brazil, Russia, India and China) nations have been benefited to a great extent through Clean Development Mechanism (CDM). CDM is a system that funds clean technology in developing countries and has been a spectacular success for India with present carbon market of net worth of Rs. 23,500 Crores.

Industry being a vital component of any country's economy holds a key role in making climate change mitigation a success. Being at the core of problem as a polluter and at the same time steward of financial & knowledge capital of the world, industry can play a pivotal role in crusade against climate change

though few reports suggest that CO₂ has nothing to do with climate change. Several industries have already pioneered in their efforts of reducing GHG emissions throughout their core and non-core activities. Others are still exploring potential projects, which can further result in GHG emission reduction. In fact, industry should come forward with whatever options that can be adopted in mitigating climate change.

The concept of 'Carbon Neutrality' has been latest buzz word in the dictionary of corporate response towards climate change mitigation. The carbon neutrality, or having a net Zero Carbon footprint, refers to achieving net zero carbon reduction by balancing a measured amount of carbon released with an equivalent amount sequestered or offset. The carbon neutral concept may be extended to include other greenhouse gases (GHGs) measured in terms of their carbon dioxide equivalence i.e. the impact a GHG has on the atmosphere expressed in the equivalent amount of CO₂.

For any organisation, best practice of attaining carbon neutral status entails reducing and / or avoiding carbon emissions first and then only the unavoidable emissions are offset. The term can be understood in two ways:

- It can refer to the practice of balancing carbon dioxide released into the atmosphere from burning fossil fuels with renewable energy, that creates a similar amount of useful energy, so that the carbon emissions are compensated, or alternatively using renewables only that do not produce any carbon dioxide (GHG emissions);
- It is also used to describe the practice of carbon offsetting,



by paying others to remove or sequester 100% of the carbon dioxide emitted into the atmosphere, e.g. by planting trees or by funding 'carbon projects' that lead to the prevention of future greenhouse gas emissions, or by buying carbon credits to remove (or 'retire') emissions through carbon trading. These practices are often used in parallel, together with energy conservation measures to minimize energy use.

Several corporates such as Dell, Google, HSBC, ING Group, PepsiCo, and Tesco have already given their commitments of carbon neutrality. They have kept ambitious targets for reducing both direct and indirect emissions thereby attaining carbon neutrality.

Carbon neutrality can be usually achieved by combining following formal steps:

1. Development of company level policy or commitment statement

2. GHG inventory and analysis
3. Implementation and action
4. Reduction and offsetting
5. Evaluation and repetition

Although these may vary depending on whether the strategy is implemented by an individual company or a group, country/state policy on climate change, etc.

1. Development of Policy on Climate Change

This is to be endorsed by senior most management of the company. Having a company level policy on climate change underpins the commitment of management and sets a road map to follow. This policy/statement can be either crisp or elaborate, depending upon the requirements of the company. As per the objectives of the policy, companies can monitor their progress on regular basis.

2. **GHG Inventory and Analysis**
Inventory and analysis of the GHG

emissions that need to be eliminated, and the options for doing so, is the most crucial step, as it enables setting the priorities for action from the products purchased to energy use and transport, and to start monitoring progress. This can be achieved through an inventory of emissions that aims at answering following questions:

- Which operations, activities, units (boundaries for accounting) should be included?
- Which sources (direct and indirect emissions) should be included?
- Which gases should be included?

Most widely used GHG protocol for inventorisation and analysis is the one developed by World Business Council for Sustainable Development and World Resource Institute. It provides set of data which facilitate in calculating carbon footprint of the company.

3. Implementation and Action

In order to progress systematically towards climate neutrality, companies can make use of their existing environmental (or sustainability) management system established by the international standard ISO 14001. This can be implemented either by a specialised department under the EMS system comprising of people from different function or by a dedicated EHS / Sustainability team to give holistic approach in identification and implementation GHG mitigation projects.

4. Reduction and Offsetting

One of the strongest arguments for reducing GHG emissions, is that it will be often linked with energy saving, which in turn is nothing but saving revenues for company. Energy prices

across the world are fluctuating, more often with rising trend, affecting the business bottom line/profitability. So it is both common sense and sensible for the company to use energy as efficiently as possible. Examples of few possible actions to reduce GHG emissions are:

- Obtain /generate electricity and other energy from a renewable energy source, either directly by generating it (installing solar panels, wind mills, etc) or increasing portfolio of green energy purchased i.e. Hydro, wind energy;
- Using alternative/cleaner fuel for transportation of product and raw materials such as bio-fuels and electricity;
- Recovery of waste heat/energy;
- Less energy intensive technology, etc.

Carbon offsets aims to neutralize the amount of GHG contribution by funding projects which should cause an equal reduction of emissions somewhere else, such as afforestation. However, same should be under the premise of "First reduce what you can, then offset the remainder". Offsetting can also be done by supporting a responsible carbon project, or by buying carbon credits. The purchased carbon credits are being facilitated through various commodity exchange including Chicago Commodity Exchange, US and Multi Commodity Exchange (MCX).

5. Evaluation and Repetition

This step includes evaluation of the results and compilation of a list of suggested improvements, with results documented and reported, so that experience gained of what does (and does not) work is shared with those who can put it to good use. Finally,

with all that completed, the cycle starts all over again, only incorporating the lessons learnt. The Science and Technology move on, regulations become tighter and the expectations / standards people demand go up. So the second cycle will go further than the first, and the process will continue, each successive phase building on and improving on what went before.

Over and above these steps, all companies should endeavor to report regularly on their GHG emissions to external world. The benefit of reporting can be directly linked with company's image and reputation and it also leads to enhancement of stakeholder trust. The companies world-wide are using their annual Sustainability/ Sustainable Development/Corporate Responsibility reports for disseminating information on GHG emissions and measures taken to mitigate them.

Another milestone in this direction is the world-wide initiative taken by leading financial institutions through Carbon Disclosure Project. As a part of this project, companies are voluntarily required to disclose their GHG emissions and measures taken to reduce them. Data collected under this project is utilised by financial institution in their decision making on investments. In India this project was launched under partnership of CDP with CII-ITC Centre of Excellence for Sustainable Development and WWF-India.

The first voluntary disclosure of carbon footprint by Indian corporate under Carbon Disclosure Project (CDP)³ was responded by about 100 companies. Though the response was slightly low but it demonstrated the willingness of Indian industry to take issue of climate change worth considering. The survey findings provide a case for efforts taken to create awareness,

capacity building/training on GHG inventorisation & accounting, as well as sharing international experiences to undertake GHG accounting in a formalised manner. However, the survey also highlighted apprehension of regulatory action due to GHG emission disclosure. This year the disclosure of Indian companies to the CDP has been improved both in terms of contents and understanding on climate issues and its impact on business bottom line. Surprisingly, a large number of companies not only disclosed the information on GHG emission, but also adopted more accurate methodology in collection of data⁴.

Today, many Indian corporate are measuring, reporting and managing the GHG emissions. They are now aware of risk emerging from climate change and are preparing to convert these risks into opportunities.

The business associations such as Confederation of Indian Industry (CII) have played an instrumental role and taking lead in engaging with Indian industry on issues linked with climate change. Further, these organisations in partnership with international agencies have been carrying out workshops/seminar/projects for capacity building on Sustainable Development and wide gamut of areas under it such as Climate Change, Energy Conservation, Renewable Energy, Green Building concept etc. Hopefully their efforts along with proactive support from industries will bear fruit soon and deliver first of its kind 'Low carbon developed economy' for India. Mitigating climate change is the beginning of a journey and industry's response will certainly make it possible to manage –unmanageable.

Dr. Y K Saxena is a Bio-chemical engineer and working in the field Environmental engineering since 1980. He is a known personality in industry as well as government regulatory bodies & institutions in India & abroad.

Presently, Dr. Saxena is Chief of Environment, Health & Safety and Sustainability with Jubilant Organosys Limited. He has also served Ambuja Cement and Central Pollution Control Board.

Under his leadership, the companies started sending cards with environmental messages on World Environment Day with a request to celebrate this as New Year Day and to work for environmental consciousness throughout the year.

He is a founding member & Secretary of Society for Environmental Education and desires to help the schools for environmental education & awareness for students as well as teachers. His desire for environmental education began with his assignment with United Nations Development Program (UNDP) during 1984-1990 in Jamaica, West Indies. He is dedicated towards formal & non-formal environmental education for children with several schools of Noida & Delhi and a visiting faculty to various business schools & engineering institutions.

Dr. Saxena earned his PhD on studies of "Effects of Cement Dust on Plants". His professional association includes life membership of various institutions. He has published more than 80 papers/articles in national / international conferences / journals on various issues of environmental management. Dr. Saxena authored his first book "Environment Explained– Meaning and Definitions of terms and themes", a glossary of environmental terms from A to Z and recently wrote his autobiography "Eclipsed or illumined?–A Retrospective!!"

Besides various awards, the Centre for Science and Environment, under its Green Rating Project of Government of India and UNDP, adjudged him as Best Environmental Manager of the country to recognize the Manager's contribution in Greening the Industry in 2002.

He also served as Stakeholder Council Member of Global Reporting Initiative (GRI), Netherlands during 2004–2008 & worked for GRI G3 Sustainability Reporting guidelines.

Dr. Saxena has been member of various committees of Central Pollution Control Board, Confederation of Indian Industries as well as the Ministry of Environment & Forests, Government of India.

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CDM Business and Climate Change-The way forward



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Climate change represents one of the greatest environmental, social and economic threats facing the planet today. The warming of the climate system is unequivocal, as is now clear from observations of increase in global average air and ocean temperatures, widespread melting of snow caps, ice sheets at Poles and rising global mean sea level. The Earth's average surface temperature has risen by 0.76°C since 1850. Most of the warming of planet that has occurred over the last 50 years is very likely to have been initiated by anthropogenic activities like the burning of fossil fuels, agriculture and land-use changes including deforestation. These cause emissions of carbon dioxide (CO₂), the main component responsible for climate change, as well as of other 'greenhouse' gases. To bring climate change to a halt, the emissions of these trace gasses must be reduced significantly.

The three key targets to be met for carbon emission reductions are:

- Reduction in energy consumption compared with projected trends;
- Increase in renewable energies' share of total energy consumption;
- Increase in the share of sustainably-produced biofuels

Due to the concern among the world leaders about climate change and its impact, corporate and governments are scrambling for solutions to remain afloat and how to redo their strategies. The world is moving for a low carbon economy, where the focus is towards zero contributors or to become carbon neutral in future. But this is not enough, now the focus has to be on becoming carbon positive and not only on reducing the direct emissions but also on how to influence others to follow the sustainable path and to develop new business models. Instead of looking at climate change as only an environmental problem where the best thing business can do is to reach zero discharge, it is time to look how an industry can also become part of the solution. Instead of having zero, or carbon neutral, as companies need to have a target that also make them a net contributor of sustainable energy solutions, to become carbon positive.

Clean Development Mechanism (CDM) is one such opportunity under the Kyoto Protocol that enables a country with emission reduction target to implement an emission reduction project in a developing country. This is very much similar to the joint implementation mechanism, but the only difference is that the agreement of implementing a project must be between a developed and a developing world. The Emission Reductions (ERs) generated by this process are known as Certified Emission Reductions (CERs), each equivalent to one tonne of CO₂. These CERs can be traded and sold, and used by industrialised countries to meet a part of their emission reduction targets under the Kyoto Protocol.

Thus, CDM stimulates sustainable development and emission reduction opportunities, while giving industrialised countries some flexibility in how they meet their emission reduction targets. The CDM projects must qualify through a rigorous process of public registration and issuance process designed to ensure real, measurable and verifiable reductions that are additional to what would have occurred without the project. The mechanism is overseen by the CDM Executive Board, accountable ultimately to the countries that have ratified the Kyoto Protocol. In order to be considered for registration, a project must first be approved by the Designated National Authorities (DNA). Therefore, CDM is one of the catalysts in the transition from 'business-as-usual' to sustainable businesses. The 'win-win' feature of CDM makes it profitable for both the parties that are in agreement to implement the project. One country may get benefited by the technology transfer and the monetary incentives by a developed nation and the other



would get benefited by achieving their committed GHG level targets or even gain profit by selling the extra CERs generated and thus promoting sustainable development.

Operational since the beginning of 2006, the mechanism has already registered more than 1,000 projects and is anticipated to produce CERs amounting to more than 2.7 billion tonnes of CO₂ equivalent in the first commitment period of the Kyoto Protocol, 2008–2012. India has been actively participating in the CDM projects, which can be observed from the fact that as on 17 March 2009, 398 out of total 1455 projects registered by the CDM Executive Board are from India, which is next only to China with 453 projects. The National CDM Authority (NCDMA) in India has accorded host country approval to 1226 projects facilitating an investment of more than Rs.151, 397 crores. These projects are in the sectors of energy efficiency, fuel switching, industrial processes, municipal solid waste and renewable energy. If all these projects get registered by the CDM Executive Board, they have the potential to generate 573 million Certified Emission Reductions (CERs) by the year 2012. At a conservative price of US\$ 10 per CER, it corresponds to an overall inflow of approximately US\$ 5.73 billion in the country by the year 2012.

The Concern

As a new concept and still a developing mechanism there are fewer odds that have deep concerns. One of them is 'Additionality' i.e. the Emission Reductions or CERs generated by a CDM project should be additional to what would have occurred if the project was not implemented makes the mechanism more complex and costly. The check for the additionality is one of the major challenges faced by the project proponent, and to carry a baseline study i.e. study of the project without the implementation of CDM makes the process stringent and complex. And still if the project is being not approved by the CDM Executive Board or is being asked for reviewing then all the cost involved in preparing the project is non-recoverable.

And with respect to the CDM, such a justification can at least be partially given based on the fact that under the Kyoto Protocol, developing countries are meant to be exempt from emission limitations. This suffices to conclude that 'Business as Usual' (BAU) emissions must be regarded as permitted and hence as legitimate objects for offsetting activities. But it does not suffice to conclude that emissions that were or would have been reduced under BAU conditions should not be permitted (and hence not be credible); i.e. the integrity baseline should be BAU and not (some form of) BAU (-). Why? Because if the emissions that were reduced under BAU conditions are regarded as not permitted, then the BAU baseline in effect becomes a target baseline (defining what are and what are not permitted emissions).



Had they not undertaken the BAU reductions, then they would have been in non-compliance with the 'BAU target', something which clearly does not square with the idea that they should not be subject to emission limitations. To put it differently, by not crediting actual BAU emission reductions – for reasons of not being additional – the current CDM practice can be regarded as de facto introducing the BAU baseline as a target baseline. Any emissions that were reduced under BAU conditions were in 'non-compliance' with that BAU target, which is why they are not to be certified. Clearly this sort of argumentation does not sit easily with the idea that developing countries are not meant to have emission limitations. Indeed, it could be turned on its head as an argument as to why non-additional reductions should be credited. Moreover, there are other arguments both for and against crediting non-additional emission reductions.

Climate Change and Business

Climate change is very much racing up the corporate agenda and almost three times as many firms responded to this year's annual survey from the Carbon Disclosure Project (CDP), a group of institutional investors holding assets worth \$10,000bn (£5,700bn), the same as the US gross domestic product. "The world's most powerful investors have an obvious reason for wanting to avert climate change, because it would devastate their wealth according to the James Cameron, the CDP chairman. What's positive about the report is that it reveals that the world's largest corporations are increasingly responding to this demand by quantifying and reducing their greenhouse gas emissions.

CDP believes that most of the business leaders are beginning to take climate change seriously after weather-related disasters costed industry \$70bn

during 2003. There is also pressure because rules are being developed across the OECD favoring a shift to a low-carbon economy, meaning the "cost of carbon" is becoming a headache for energy-intensive companies. According to the CDP analysis even a small 5% shift in energy prices could affect per-share earnings by 15%, so risk management and energy efficiency are taking a new level of importance.

Coping with anthropogenic climate change may prove to be the ultimate test of global citizenship. Changes in the climate will be linked with human interferences. This means we all as global citizens have responsibility for the consequences of climate change over the coming century. The science of climate alteration is uncertain. There is disagreement amongst scientists and analysts. This science is, however, sufficiently coherent to be confident that human-element is contributing to global warming over

and above any natural variation. This widely shared view reinforces the conclusion that climate futures are neither natural nor forecastable.

The two sets of observations, namely the interactive and interconnected character of climate change have huge implications for business such as:

1. Business has both a commercial and a moral responsibility to reduce greenhouse gas emissions, and to encourage other businesses to do so, in a cost effective and socially responsive manner.
2. The scope for innovative approaches to greenhouse gas reduction and to creating a non carbon-based energy future offers a huge potential for creative and expanded activity. An example lies in renewable energy services, especially as these carry a premium under emerging energy policies.

Climate change presents a profound strategic challenge to the firms. Despite the considerable attention given to potential economic opportunities, the primary issue facing many sectors is the "regulatory risk" of higher costs for fuels and other inputs, and lower demand for energy-intense products. Measures to control the emissions of GHGs most directly threaten sectors that depend heavily on fossil fuels. Other energy-intense sectors include cement, paper, and aluminum. Industries also face considerable competitive risk as changes in prices, technologies, and demand patterns disrupt sectors and entire supply chains. Investments in research and development are too risky, as low-emission technologies, such as those of renewable energy, require radically new capabilities that threaten to undermine the position

of existing companies. Moreover, the uncertain path of technological evolution makes the task of choosing among competing technologies a difficult business options. It is therefore not surprising that a wide range of sectors responded aggressively to the prospect of regulation of GHG emissions.

Hindrances for Combating Climate Change

1. Collaborations within various sectors seems irrelevant when competitive tendencies prevail. Practices like IPR and trade competitiveness are major obstacles for environmentally friendly technologies adoption.
2. Inadequate capital investment, absence of data base and shortage of trained manpower in the field of science and technology which in turn leads to inefficient policy formations.
3. Scientific uncertainties about climate change forecasts generated from the study of climate modeling.

Probing the Paradox

Much of the corporate activity on climate change is stimulated by the perception of long-term market opportunities in new high-margin, low-emission products and technologies, as well as cost savings from lower energy use. The development of markets for trading carbon credits present a further stimulus. Several groups, such as the Investor Network on Climate Risk and The Climate Group, have played an important role in highlighting the financial risks and opportunities facing various sectors and encourage corporate to evaluate and manage these risks rather than ignoring them. A more proactive stance is likely to provide firms with some protection against litigation and damage to their reputation, as well as more influence on shaping the detailed mechanisms of climate-governance systems, such as allocation and trading of carbon credits.

The substantial business opportunities clearly do exist. The rapid growth of markets for renewable and clean energy, and for energy efficiency, is one example. The global markets for





wind, solar photovoltaic (PV), and fuel cell power are growing at an annual rate of approximately 20%, and are forecast to reach \$115 billion by 2015, from a 2005 base of only \$24 billion. Markets for associated electronics, materials, construction, and services will also experience rapid growth. The global market for energy efficiency products, currently estimated at \$115 billion, is projected to grow to over \$150 billion by the end of this decade. These markets, however, present substantial technological risks, and many of the small enterprises active in these areas are currently in a precarious financial position. In other sectors, the incentives for action are even less clear.

Worldwide Response to Climate Change

Pacific people, some of whom may very much be affected by sea level rise, salinated land, drought and increasingly frequent cyclones, are

uniting and joining in creative actions planned to empower residents and raise awareness of climate change. In Papua, New Guinea, The Centre for Law and Environmental Rights is hosting 'Peg a metre, clean a metre' on Ela beach. Ruth Pune, organiser of the event says, "We are bringing a message to world leaders that we want them to reduce the current level of carbon in the atmosphere from 390ppm to the target of 350. In Tuvalu, the 350 Climate Action Festival included showcasing solar and wind energy in Funafuti. Sean Weaver, a New Zealand climate scientist working in the Pacific, says that the biggest challenge from a climate change perspective is water security and consequent food security associated with drought. According to him, projections for the western Pacific are for increased drought. Sea level rise also threatens lots of low-lying areas, not to mention the likely increase in the intensity of storms and associated flood events in Pacific countries.

Business Response to Climate Change in India

Science suggests the current climate changes in India are due to accumulated emissions of over 200 years of industrialisation. The world (civil society, government, business) should work together to achieve sustainability. The issue of climate change, particularly for India, is closely linked to development as India's development denominator is associated with huge population; ongoing industrialisation; extensive urbanisation and need for greater agricultural output. Climate change features in regular discussions as it is closely linked with growth, poverty, equity and the future of the human race. It is optimistic to find Indian companies voluntarily disclosing their carbon footprints and trying to keep emissions under control. CII has completed the 3rd Carbon Disclosure Project for India's top 200

companies. Such voluntary initiatives should be augmented with policies and initiatives, which can help India, achieve leadership in climate change mitigation agenda.

Indian Business Solutions to Climate Change

1. If India has to continuously grow at 8-9%, then it should reduce dependence on fossil fuels. According to India's Integrated Energy Policy, by 2030 India will be importing more than 90% of oil and about two-third to three-fourth of coal, and the energy cost will increase tremendously. In this regard the National Solar Energy Mission, which is an ambitious project introduced by the Government of India for reducing India's dependence on non-renewable energy sources and is based on the fact that India receives high insolation and is leading to innovate & scale up the solar technologies.
2. The Energy Efficiency National Mission builds on India's decoupling of its economic growth and energy intensity. The clearance of Civil Nuclear Energy Agreement will help India to have better energy security.
3. Green India Mission has been formulated as an adaptive and mitigating practice for climate change. The mission aims to scale up India's forest cover from the current 18% to 33%.
4. The Indian firms can focus on utilisation of renewable resources of energy which increases operational efficiency.
5. Effective water treatment facilities should be developed along

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with new, innovative scale-up technologies.

6. People should switch to certified forestry products so that wastage of resources is reduced.
7. Business approach should be focused on developing newer efficient and sustainable goods. Also technology driven study can lead to options that help in effectively mitigating climate change concerns for India

Copenhagen – Failure?

All eyes were set on the Conference of Parties meeting at Copenhagen concluded recently; the importance of this conference can be seen from the fact that emission reduction strategy post 2012 was to be decided there. 119 heads of state and government participated at the climate summit in Copenhagen, ranking the summit among the worlds largest ever, and

the largest outside of New York. The 119 heads of state and government represent countries that account for 89% of the world's GDP, 82% of the world's population and 86% of global greenhouse gas emissions. Included were the 20 largest economies and the top 15 greenhouse gas emitters in the world. Many had predicted Copenhagen as a failure and had less hopes of some concrete outcome of this negotiation. Australian Prime Minister Kevin Rudd also urged world leaders to be more flexible as a consensus looks difficult to achieve. Otherwise, the global climate summit is at risk of "failure". This negotiation looked less compromising and more protecting as the leaders were in favour of protecting their own industries & GDP, instead of looking at a common solution and played regular blame game.

Still hopes are high with the outcome of this never ending negotiation.



Revised National Ambient Air Quality Standards

Compiled by Vishwabandhu Bhattacharya, Executive Officer
CII-ITC Centre of Excellence for Sustainable Development

After a gap of 15 years, the Ministry of Environment and Forests announced the notification of the Revised National Ambient Air Quality Standards 2009. These ambient air quality standards/limits provide a legal framework for the control of air pollution and the protection of public health.

The review of the previous NAAQS and inclusion of new parameters was undertaken by the CPCB in association with the Indian Institute of Technology, Kanpur. The proposal for revision in NAAQS was deliberated upon extensively and has been notified under the Environment (Protection) Act, 1986 on 16.11.2009 by the Ministry of Environment and Forests. The CPCB has initiated the process of harmonising it's notification under the Air Act, 1981 with the revised notification so as to ensure the efficient implementation of the new standards.

These revised Standards include initiatives that have been developed in consonance with global best practices and in keeping with the latest advancements in technology and research. Some of the salient features include:

- Area classification based on land-use has been done away with so that industrial areas have to conform to the same standards as residential areas.
- The standards shall be applicable uniformly with the exception of stringent standards for NO₂ and SO₂ in the Ecologically Sensitive Areas.
- The previous standards for residential area have been uniformly applied for fine Particulate Matter (PM10), Carbon Monoxide and Ammonia. More stringent limits for Lead, SO₂ and

NO₂ have been prescribed even for residential areas.

- Suspended Particulate Matter (SPM) as parameter has been replaced by fine particulate matter (PM2.5) which is more relevant for public health.
- Other new parameters, such as, Ozone, Arsenic, Nickel, Benzene and Benzo(a)Pyrene (BaP) have been included for the first time under NAAQS based on CPCB/IIT research, World Health Organisation guidelines and EU limits and practices.

Though Mercury has not been notified as part of these revised standards, the Ministry is conscious of the need to monitor the same. Research and development in standards setting and standardization of monitoring protocols for mercury is still in progress internationally. As a result, it may be

S.No.	Pollutant	Time Weighted Average	Concentration in Ambient Air	
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)
(1)	(2)	(3)	(4)	(5)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual * 24 Hours **	50 80	20 80
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual * 24 Hours **	40 80	30 80
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual * 24 Hours **	60 100	60 100
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual * 24 Hours **	40 60	40 60
5	Ozone (O ₃), µg/m ³	8 hours * 1 Hour **	100 180	100 180
6	Lead (Pb), µg/m ³	Annual * 24 Hours **	0.50 1.0	0.50 1.0
7	Carbon Monoxide(CO), mg/m ³	8 hours * 1 Hour **	04	04
8	Ammonia (NH ₃) µg/m ³	Annual * 24 Hours **	100 400	100 400
9	Benzene (C ₆ H ₆) µg/m ³	Annual *	05	05
10	Benzo(a)Pyrene (BaP)-particulate phase only, ng/m ³	Annual *	01	01
11	Arsenic (As), ng/m ³	Annual *	06	06
12	Nickel (Ni), ng/m ³	Annual *	20	20

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.



noted that even the most progressive regimes in this regard, those of the member countries of the European Union, have not included 'mercury' in their ambient air quality standards.

In furtherance of these Standards, the CPCB is in the process of creating a road-map for the generation and maintenance of a database, monitoring of required infrastructure and for the development of protocols. The Ministry is also in the process of developing additional support systems of enforcement such as the National Environment Protection Authority (NEPA) and the National Green Tribunal (NGT) to ensure the effective enforcement of the Standards.

Comprehensive Environmental Pollution Index

The Ministry and the Central Pollution Control Board (CPCB) has released a study that for the first time calculates a Comprehensive Environmental Pollution Index (CEPI) for 88 key industrial clusters in India, using a series of objective criteria.

The CEPI is a rational number to characterise the environmental quality at a given location following the algorithm of source, pathway and receptor. The index captures

the various health dimensions of environment including air, water and land.

The main objective of the study was to identify polluted industrial clusters or areas in order to take concerted action and to centrally monitor them at the national level to improve the current status of their environmental components such as air and water quality data, ecological damage, and visual environmental conditions. A total of 88 industrial areas or clusters have been selected by the Central Pollution Control Board (CPCB) in consultation with the Ministry of Environment & Forests Government of India for the study.

Application of CEPI in 88 selected industrial clusters/areas has been an exercise involving Central Pollution Control Board (CPCB), Concerned State Pollution Control Boards/ Pollution Control Committees, and IIT Delhi.

It is suggested that areas having aggregated CEPI scores of 70 and above should be considered as critically polluted industrial clusters/ areas, whereas the areas having CEPI between 60-70 should be considered as severely polluted areas and shall be kept under surveillance and pollution control measures should be efficiently

implemented, whereas, the critically polluted industrial clusters/areas need further detailed investigations in terms of the extent of damage and an formulation of appropriate remedial action plan.

The analysis shows that there are 43 industrial areas/clusters out of the 88 are found to be critically polluted, with respect to one or more environmental component. As per the study, the top five industrial clusters/areas with the highest CEPI number are Ankleshwar (Gujarat) 88.50, Vapi (Gujarat) 88.09, Ghaziabad (Uttar Pradesh) 87.37, Chandrapur (Maharashtra) 83.88, Korba (Chhatisgarh) 83.00.

The present CEPI is intended to act as an early warning tool, which is handy to use. It can help in categorizing the industrial clusters/areas in terms of priority of planning needs for interventions. The process of evolution of method and mechanisms that yielded results are dynamic in nature. Improvements and alterations for enhancing more efficiency will be a continuous task.

It is recommended that as the step II a comprehensive analysis of spatial and temporal data shall be done for the identified critical polluted industrial clusters/areas so as to define the spatial boundaries and extent of damage to the ecological features. The outcome shall be subjected to structured consultation with the stakeholders for determining comparative effectiveness of alternative plans and policies. The effective implementation of the remedial action plan will help in abatement of pollution and to restore the environmental quality of these industrial clusters.

For more details on the index please visit – www.moef.nic.in

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District Energy Heating System

Compiled by Gourav Chutani, Executive
CII-ITC Centre of Excellence for Sustainable Development

Considering the waste of energy, it is worth recalling that the fundamental idea of district energy today is to make use of local fuel, heat or cooling sources. Often, these sources would have otherwise been wasted. This is all possible by utilising an efficient local distribution network of insulated pipes, which provide for a cheap and reliable heat or cooling source once established. In the very best of scenarios the district heating or district cooling system is fuelled by energy from waste materials, e.g. from households and/or industries.

The graphics from the US-based District Energy St. Paul in Minnesota illustrates the flexibility and principles of district energy.

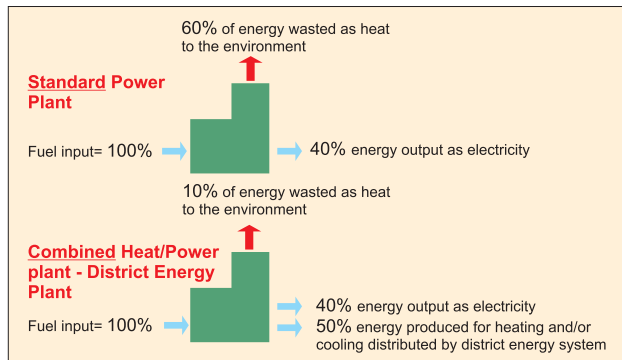
As can be seen from below the district energy system is very flexible in terms of fuel / energy source, it is able to serve numerous customers at the same time and last but not least it has the potential of storing the energy (thermal storage).

Referring to the Europe's energy consumption, the energy lost could

be substantially reduced with an increased use of district heating and district cooling. A large part of the loss comes from the single-purpose plant, which is designed to produce only electricity. The alternative to this is the cogeneration plant where both electricity and heat is produced. This is also referred to as combined heat and power (CHP) generation. In this process, heat is actually a "waste-product" of electricity production.

From an environmental point of view the heat that is wasted in the single-purpose plant is around 60% and it is important to bear in mind that this heat could have actually been used either to substitute electricity-based heat in a residential home, in the industry where it would have potentially replaced local low-efficiency boiler-generated heat or perhaps it could have been used to

Comparing energy efficiencies

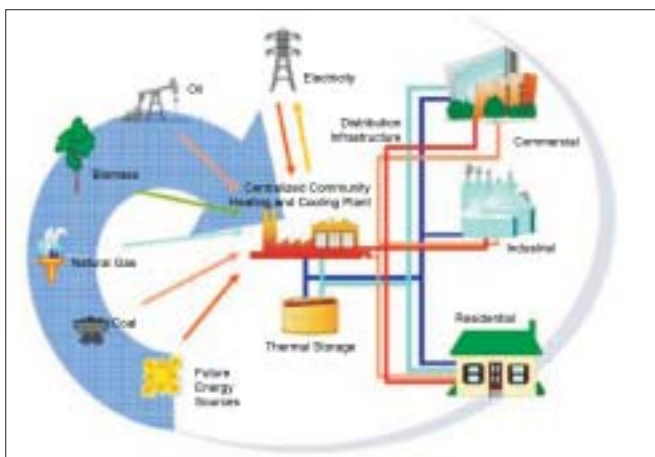


generate cooling in a district cooling system where it could have replaced electricity consuming conventional air condition. The difference of efficiencies is illustrated above and is based on actual figures.

In essence, district energy is offering i) a unique way of utilising surplus heat from the existing energy system, and ii) an early and easy option of introducing more renewable energy into the energy system.

As such, this sector can be exploited as a common carrier, which enables the use of sustainable energy sources in the system, and in this way build an efficient energy sector that paves the way for local and regional initiatives with whatever energy source one might have available.

The common carrier technology is easily accessible, known, very energy efficient and completely flexible on the energy source used.



Source: http://www.euractiv.com/29/images/DK%20White%20Paper%20on%20District%20Heating%20and%20District%20Cooling_tcm29-171064.pdf

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Compiled by Gourav Chutani, Executive
CII-ITC Centre of Excellence for Sustainable Development



The report brings out the challenges Indian companies are facing and outlines how they have integrated the long-term value and costs of climate change impacts into the assessment of the financial health and future prospects of their businesses. The companies' disclosures are based on their commitments towards the environment and averting climate change. CDP is a platform that

Carbon Disclosure Project Report 2009: India 200

By CII-ITC Centre of Excellence for Sustainable Development & WWF-India

enables them to share and highlight such initiatives amongst stakeholders both at local and global levels.

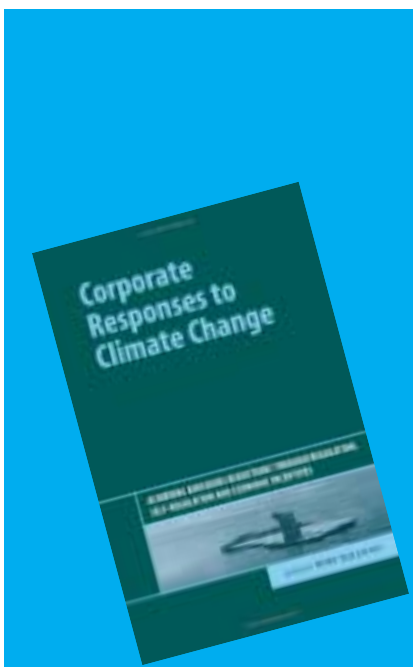
This year CDP was backed by 475 global institutional investors (representing more than US\$55 trillion of funds under management), including Indian investors such as IDBI Bank Ltd, Infrastructure Development Finance Company Ltd (IDFC) and Yes Bank Ltd. The CDP 2009 information request was sent to more than 3,700 of the world's largest corporations.

In India, the top 200 Indian companies (identified on the basis of their market capitalisation) were approached for information on their greenhouse gas (GHG) emissions,

the potential risks and opportunities related to climate change and their strategies for managing these risks and opportunities.

This report documents the response of the Indian business community to climate change; whether they view climate change as a risk or an opportunity, the absolute emissions levels, emissions intensity, performance over time, benefits, and the management strategy. The report has been prepared by CII-ITC Centre of Excellence for Sustainable Development and WWF-India based on the analysis of the responses received from the participating Indian companies.

Source: https://www.cdproject.net/CDPResults/CDP_Report-Final_India.pdf



Corporate Responses to Climate Change

Edited by Rory Sullivan

Given the scale of the greenhouse gas emissions reductions that are seen as necessary to avert the worst effects of climate change, policy action is likely to result in a complete reshaping of the world economy. The consequences are not confined to 'obvious' sectors such as power generation, transport and heavy industry; virtually every company's activities, business models and strategies will need to be completely rethought. In addition, beyond their

core business activities, companies have the potential to make important contributions to reducing greenhouse gas emissions through the allocation of capital, through innovation and the development of new technologies, and through their influence on the actions taken by governments on climate change.

Corporate Responses to Climate Change has been written at a crucial point in the climate change

debate, with the issue now central to economic and energy policy in many countries. The book analyses current business practice and performance on climate change, in the light of the dramatic changes in the regulatory and policy environment over the last five years. More specifically, it examines how climate change-related policy development and implementation have influenced corporate performance, with the objective of using this information to consider how the next stage of climate change policy — regulation, incentives, voluntary initiatives — may be designed and implemented in a manner that delivers the real and substantial reductions in greenhouse gas emissions that will be required in a timely manner, while also addressing the inevitable dilemmas at the heart of climate change policy

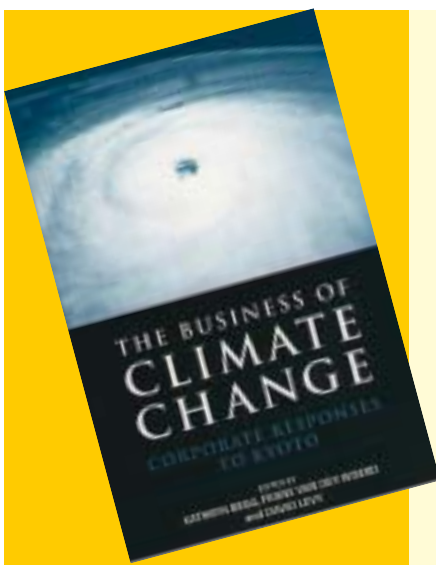
(e.g. how are concerns such as energy security to be squared with the need for drastic reductions in greenhouse gas emissions? Can economic growth be reconciled with greenhouse gas emissions? Can emissions reductions be delivered in an economically efficient manner?).

The book focuses primarily on two areas. First, how have companies actually responded to the emerging regulatory framework and the growing political and broader public interest in climate change? Have companies reduced their greenhouse gas emissions and by how much? Have companies already started to position themselves for the transition to a low-carbon economy? Does corporate self-regulation — unilateral commitments and collective voluntary approaches — represent an

appropriate response to the threat presented by climate change? What are the barriers to further action? Second, the book examines what the key drivers for corporate action on climate change have been: regulation, stakeholder pressure, investor pressure. Which policy instruments have been effective, which have not, and why? How have company actions influenced the strength of these pressures?

Corporate Responses to Climate Change is a state-of-the-art analysis of corporate action on climate change and will be essential reading for businesses, policy-makers, academics, NGOs, investors and all those interested in how the business sector is and should be dealing with the most serious environmental threat faced by our planet.

Source: <http://www.greenleaf-publishing.com/productdetail.kmod?productid=2760>



In recent years climate change has become a leading issue on both the business and political agenda. With the Kyoto Protocol to the UN Framework Convention on Climate Change now ratified, business

The Business of Climate Change

Edited by Kathryn Begg, De Montfort University, UK; Frans van der Woerd, Vrije Universiteit Amsterdam, Netherlands; and David Levy, University of Massachusetts, USA

is bracing itself for the reality of serious regulation on the reduction of greenhouse gas emissions.

The Business of Climate Change presents a state-of-the-art analysis of corporate responses to the climate change issue. The book describes and assesses a number of recent business approaches that will help to identify effective strategies and promote the dissemination of proactive corporate practices on climate change worldwide. By identifying the factors that cause companies to pursue low-carbon strategies and support the Kyoto process, the book will

also be helpful to governments in formulating policy.

Business and industry have a crucial role to play in the implementation of the Kyoto Protocol. They are major emitters of greenhouse gases, and pressure is mounting for them to engage in a range of mitigation strategies, from emission inventorying and trading schemes to investments in low-carbon technologies. Behind the scenes a number of companies have started to develop strategies to curtail greenhouse gas emissions.

These strategies can be very diverse in

nature. At a political level, companies try to influence policy implementation and, more specifically, to test ideas in anticipation of possible regulation on the climate change issue. At a more practical level, there are a burgeoning number of initiatives to conserve energy use in production, transportation and buildings, to develop renewable sources of energy, to measure carbon emissions and sequestration at a detailed level, and to develop various markets for trading carbon credits among companies and countries. Some technologies, such as hybrid cars and compact fluorescent lighting, are now market realities.

Common to all of these initiatives is that they operate in an environment of high complexity and uncertainty. The political implementation of the Kyoto Protocol remains uncertain and many details remain unspecified. Economic instruments such as emission trading

are favoured, but their mechanisms are still hotly debated and the future price of credits is unknown. New markets for low-emission products and technologies are beginning to appear, but there are currently few regulatory drivers to assist their development. The impact of potential regulation on business will vary tremendously between companies and sectors. The fossil fuel and energy sectors fear the economics of action, while sectors such as insurance and agriculture fear the economics of inaction. Combined with the remaining uncertainties about what form climate change may take, corporate responses to reduce risks have to differentiate between sectors and have to be flexible. For individual companies, these big uncertainties demand new thinking and contingency planning.

The *Business of Climate Change* is split into four sections: 'Introduction and overview' presents a broad

perspective on business and climate policies. 'Policy instruments' outlines early experiences with different types of policy instruments to curb greenhouse gas emissions, ranging from emission trading to voluntary agreements. 'Sector analysis' assesses developments within sectors of industry that are likely to play an important role in future climate policies: oil, cement, chemical, automotive and insurance. Finally, 'Case studies' discusses bottom-up initiatives to combat climate change in five different organisations.

This book will be essential reading for policy-makers searching for instruments that have proven business support; academics and researchers analysing the complexity of how business is responding to the challenge of climate change; and businesses wishing to learn about best practice in the sectors most likely to be seriously affected.

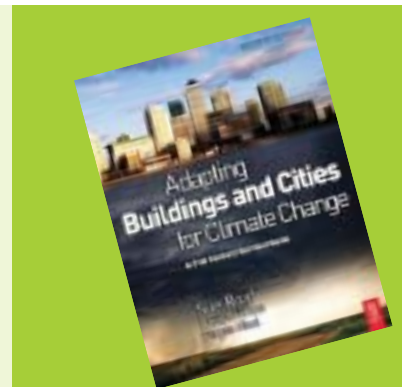
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Adapting Building and Cities for Climate Change: A 21st Century Survival Guide

By Sue Roaf, David Crichton, Fergus Nicol

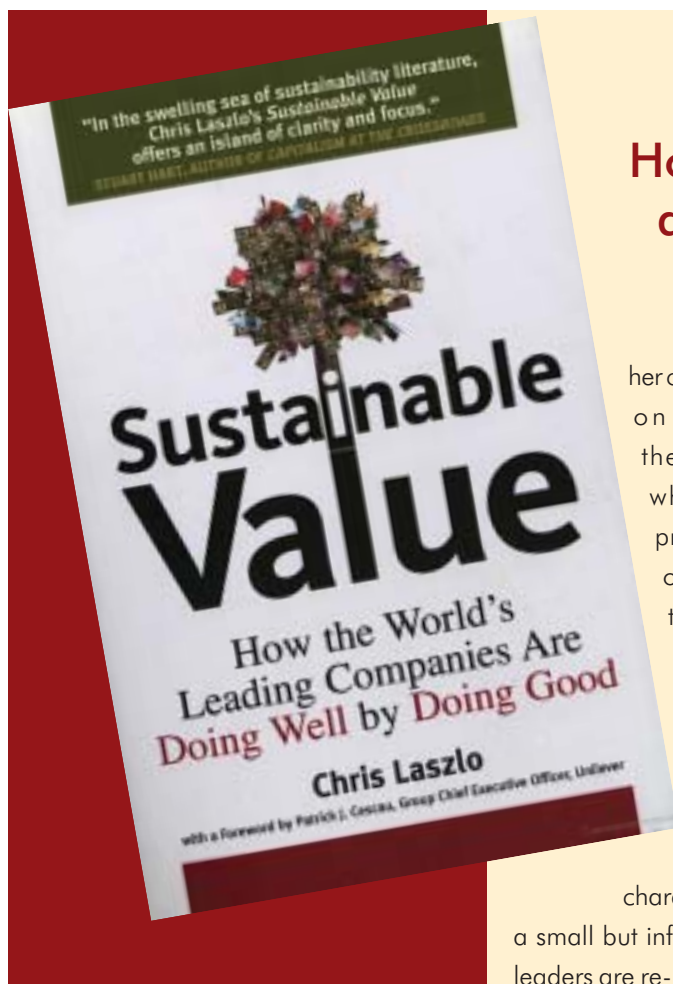
From the bestselling author of *Ecohouse*, this fully revised edition of *Adapting Buildings and Cities for Climate Change* provides unique insights into how we can protect our buildings, cities, infrastructure and lifestyles against risks associated with extreme weather and related social, economic and energy events. Three new chapters present evidence of escalating rates of environmental change. The authors explore the growing urgency for mitigation and adaptation responses that deal with the resulting challenges. Theoretical information sits alongside practical design guidelines, so architects,

designers and planners can not only see clearly what problems they face, but also find the solutions they need, in order to respond to power and water supply needs. Considers use of materials, structures, site issues and planning in order to provide design solutions. Examines recent climate events in the US and UK and looks at how architecture was successful or not in preventing building damage. *Adapting Buildings and Cities for Climate Change* is an essential source, not just for architects, engineers and planners facing the challenges of designing our building for a changing climate, but also for everyone involved



in their production and use. * Fully revised new edition; gives practical design suggestions for combating climate change through architecture * No nonsense approach from the bestselling author of *Ecohouse*.

Source: http://books.google.co.in/books?id=QXo68w7QLaYC&dq=books+on+business+response+to+climate+change&lr=&source=gbs_navlinks_s



Sustainable Value: How leading companies are doing well by doing Good

By Christopher Laszlo

her company's impact on society and the environment, while remaining profitable. Based on forward-thinking business leaders the author has worked with over the past twenty-five years, her

character reveals how a small but influential group of leaders are re-inventing the role of business in society by offering new solutions to global problems that the public sector has been unable to tackle alone.

Part II outlines the new competitive environment in which societal challenges are becoming huge business opportunities. It showcases global industry leaders who are successfully integrating sustainability into their core activities as they respond to issues such as climate change, ecosystem health, and global poverty—not only from a

sense of moral correctness, but because it makes good business sense. It demonstrates that, in the “new” competitive environment, stakeholder value built on a company's economic, ecological, and social impact is becoming an effective way to achieve competitive advantage. The real-life sustainability stories of DuPont, Wal-Mart, Lafarge, and Cargills NatureWorks are guided by top management with Profit & Loss responsibility.

Part III introduces the Sustainable Value tool-kit—a step-by-step approach to creating and managing value for stakeholders in a broad range of sectors in today's shifting competitive environment. The tool-kit is based on the authors many consulting engagements and executive working sessions in Fortune 1000 companies. These sessions, and this book, are designed to equip managers with the skills to identify how and where they can do well by doing good, thus providing them with the means to build sustainable value and compete effectively in the twenty-first century.

In *Sustainable Value*, Chris Laszlo illustrates how the competitive strategies of some of the world's largest businesses are changing as their leaders begin to take on a number of the world's most important social, environmental, and economic issues. The book's website is at www.sustainablevaluebook.com.

Part I of the book is a management fable about a young CEO and the challenges she faces in addressing

Source: http://books.google.co.in/books?id=joCaAAAAIAAJ&source=gbs_navlinks_s

Digital Energy Solution Consortium (DESC) Workshop

12th-13th October 2009: India Habitat Centre, Delhi

Shagufta Kamran, Executive

CII-ITC Centre of Excellence for Sustainable Development

The CII-ITC Centre of Excellence for Sustainable Development supported by Digital Energy Solutions Consortium (DESC) is conducting a detailed study on "Role of ICT in meeting the objectives of the NAPCC missions". The main objective of the study is to (a) identify the role of ICT in meeting the objectives of the NAPCC missions, (b) identify various CO₂ abatement opportunities by adoption of ICT, (c) present an overview of ICT solutions applicable with quantification of the GHG abatement opportunities, (d) scan current ICT policy along with an analysis of the policy scenario in terms of benefits, roadblocks etc. for each mission and (e) recommend on actionable policy initiatives and roadmap on implementation of identified ICT solutions.

For this purpose, a national stakeholder consultation was conducted on the 12-13 October, 2009 with representatives of government, industries, academia, experts, NGOs, technology suppliers, ICT service providers etc. to integrate their feedback and expertise in directing the research. The said consultation tried to encapsulate suggestions/ recommendations with regards to two missions under the NAPCC:

- Sustainable Habitat Mission (12th October)
- Energy Efficiency Mission (13th October)

The Sustainable Habitat Mission essentially talks about three components- buildings, municipal solid waste and the transport sector. In the building sector, the Mission is

aimed at promoting energy efficiency in the residential as well as the commercial sector. It is estimated that the implementation of EE options would help in achieving around 30% electricity savings in new residential buildings and 40% in new commercial buildings. In the existing buildings, the energy saving potential for residential buildings is estimated to be around 20% and that of commercial buildings is around 30%. In the Transport sector the Mission strives towards improvised urban public transport; better urban planning and modal shift and long term transport plans that ensure efficient and convenient public transport. As far as the area of Municipal Solid Waste is concerned the Mission aims to build an integrated system for the collection, transport, transfer, treatment and effective disposal of MSW. It also focuses on the development of indigenous and efficient technology for producing power from wastes.

During the course of the discussions that followed during the National Consultation Workshop on the Sustainable Habitat Mission, the following facets emerged:

- It was observed that advanced control systems that show energy consumption and water consumption are usually not provided in commercial buildings in India. The study should focus upon the mechanisms in which these systems could be set up in buildings.
- In India it has been seen that largely only stand alone building management systems exist. However sufficient work needs to be put in so as to ensure that these can operate remotely as well.
- If one is to estimate, it would be seen that there are less than 5% buildings which have a working Building Management Systems (BMS). Even within these, only data collection exists but yet there are no mechanisms to control the equipment.
- The government should increasingly work towards providing incentives in the form of tax breaks etc for enterprises that implement energy efficient technologies. If the incentive mechanisms are strong the developers would also be encouraged to adopt energy



efficient technologies. California for instance has real time electricity pricing where tariff is high during peak hours. This kind of a scheme can only be implemented using an ICT enabled network.

- Benchmarking for buildings could be done on the basis of energy performance. In India we follow LEED rating, in Europe Building Research Establishment's Environmental Assessment Programme (BREEAM) rating system is followed. In LEED we measure Light Power Density (LPD), while BREEAM measures Lighting Energy Numeric Indicator (LENI) also which is directly related to energy whereas LPD is connected to power and measuring energy is better since it gives a more accurate picture of the energy consumption.

The Energy Efficiency Mission on the other hand focuses on sector specific as well as cross cutting technology options including technology transfer, financing, capacity building and policy/ regulatory actions. Under the 11th Plan the country anticipates the energy savings potential of 10000 MW. The Industry sector alone accounts for as high as 42% of commercial energy. The mission intends to introduce a market based mechanism to enhance



cost effectiveness of Energy efficiency improvements such as certification of energy savings which could be later be traded. It also intends to develop and design various fiscal instruments as well as tax incentives for the promotion of energy efficiency. A special financing mechanism would be required for SMEs- for instance bundling and/or programmatic CDM could be possible financing routes.

The National Consultation Workshop that focused on the Energy Efficiency Mission was chaired by Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency. He gave a brief overview of the Energy Efficiency mission and acknowledged the importance of ICT as an enabling tool in establishing strong linkages between measurement and performance in the domain of energy efficiency. Mr. Devendra Singh (Ministry of Power) and A.C.R. Das (Ministry of Steel) also shared their industry perspectives. During the course of discussions that followed the following points emerged:

- ICT can play a role in real time conditional monitoring of energy use through sensors that are based on some kind of algorithm. e.g., a small sensor-pressure transducer in a car communicates through Bluetooth about the status of tyre pressure; control systems in automobiles can optimize fuel consumption etc. Therefore the focus should essentially be on the linkage that ICT can establish between measurement and performance.
- The Perform Achieve & Trade (PAT) scheme is intended to create an environment for demand and thus for the adoption of energy efficient technologies. As a result, industries would now be looking at accessing better technologies

that are more energy efficient. If NAPCC and PAT have to work, then the additional energy savings which would be achieved have to be worth the additional investment needed to achieve the same. The PAT scheme has been welcomed by the industry and is eagerly awaiting its implementation.

- Another potential area of improvement is that of capturing and utilizing waste heat. We can harness this waste heat in all processes of Iron and Steel and the energy consumption can be definitely reduced below 5.
- The focus of Accelerated Power Development & Reform Programme (APDRP) at present had largely been to address policy in terms of process efficiency as well as supply side. The government in this regard has earmarked 2 billion dollars for ICT support
- Another consequential issue that should be immediately addressed is that of theft of electricity. Losses of 10-15% need to be accounted for and the associated revenue stream could then be used by utilities to enhance their capacities.
- There is also a pressing need for advanced process control systems. TATA chemicals for instance have implemented advanced process controllers that not only reduced energy consumption but also streamlined operations, monitored energy data on a day to day basis and improved online reliability.

Further work is underway for purposes of engaging with various stakeholders for these as well as other missions covered under the NAPCC. Once the study is released, the outcome will be fed back to the stakeholders and also to the government.

4th Sustainability Summit: Asia 2009

Winning Strategies for a Sustainable World

25 - 26 November 2009
India Habitat Centre, New Delhi, India



Vishwabandhu Bhattacharya, Executive Officer
CII-ITC Centre of Excellence for Sustainable Development

The 4th Sustainability Summit: Asia 2009 – a flagship event of CII-ITC Centre of Excellence for Sustainable Development was held on 25 – 26 November 2009 at New Delhi. The Summit was organised in partnership with Ministries of Corporate Affairs, External Affairs, Environment & Forests,

Science and Technology, Government of India; National Foundation for Corporate Governance (NFCG), InWEnt and WWF.

The theme for the 4th Sustainability Summit: Asia 2009 was “Winning Strategies for a Sustainable World”. It

focused on how visionary businesses and institutions are turning crisis into opportunity to change our world into one that is sustainable and all inclusive. The Summit was designed to provide real-world understanding taking participants through the experience of ideating to transformation through action.



The Summit addressed seven thematic areas on Climate Change, Natural Resources, Corporate Governance, Emerging Economies, Sustainable Infrastructure, Responsible Tourism and Communication & Information Technology.

Climate Change is as much a defining challenge for businesses as it is for governments. Forward looking companies are starting to realise that they can gain competitive advantage by taking the lead on climate change. Businesses are increasingly focussed on the opportunities generated in the move to a low carbon economy, as a scientific consensus is emerging that industrialised countries will need to cut GHG emissions by at least 80% by 2050. The session on 'Climate Change: The Defining Challenge' focussed to share best practices in climate change mitigation helping to formulate strategies to explore the opportunities generated in the move to a low carbon economy.

Economic growth can continue without straining natural resources. However, the big question is 'how'. The session on 'Balancing Economic Growth with Natural Resource' explored the challenges, the solutions, and suggestions on meeting high economic growth balanced with conserving natural resources. Governments need to come up with necessary policies, businesses need to be sincere with their operations and look for alternate methods, and community based organisations need to be honest watch dogs.

The panel discussion on 'Winning Through Good Governance' was construed to discuss why in the present cocktail of crises, it is important for companies to look at the aggregation of the triple bottom line and corporate governance. Board directors – both

executive and non executive – cannot afford to ignore these issues. On the one hand, they need to understand and respond to changing stakeholder expectations of the role of business. On the other hand, they need to communicate what they consider being realistic expectations of what business can and cannot achieve, and what they consider to be the responsibilities of others.

The panel discussion on 'Sustainable Business Opportunities in Emerging Countries' sought to demonstrate how leading companies from some of the emerging countries are responding to the twin challenges through new business models without losing sight of core sustainability objectives. Initial successes in emerging countries reflect the incredible potential in the alignment of sustainable development needs and business value.

Economic slowdown offers governments and businesses the opportunity to increase their spending on sustainable infrastructure as a stimulus to avoid severe recession at the same tackling environmental and social conflict with infrastructure. The opportunity is huge. The panel discussion on 'Sustainable -Infrastructure: A Necessity not an Alternative' discussed avenues of business opportunities in sustainable infrastructure and how some leadership companies are already taking advantage of them.

The transition from a manufacturing to an information society gives countries opportunities to go beyond incremental changes to radical transformation that is progressive, efficient, and 'green'. It is vital for governments and businesses to consider how to achieve long term sustainable development and how technology enables rapid sustainable growth. The plenary on 'Generation

Next ICT' discussed innovative ways in which ICT has and can further sustainable growth.

With a contribution to the tune of 10.7% to the total global Gross Domestic Product and a share of about 10% of the World's employment, the global travel and tourism industry has been prioritised as an important driver for economic development, however with an equally large environment footprint, producing significant impacts on natural resources, consumption patterns, pollution and social systems. As more regions and countries focus on developing their tourism industry and realise its economic potential, there is an urgent need to promote and integrate sustainable planning and management into the tourism sector to reduce its footprint and make it a sustainable model. The panel discussion on 'Promoting Sustainable Tourism: Reducing the Footprint' endeavoured at sharing experiences, information and perspectives on sustainable tourism strategies in order to facilitate key stakeholders decision makers and actors in tourism industry to appreciate and develop policies and attitudes, explore areas of opportunity in sustainable tourism leading to a better understanding of the multifaceted relationship between tourism and sustainable development.

Since its inception in 2006, the Asia Sustainability Summit organised by CII-ITC Centre of Excellence for Sustainable Development has come to be recognised as the only international platform for discussing sustainability issues and the most awaited, must attend and largely talked about event of the year among industry, civil society organisations and academics working in the arena of sustainability and related areas. The

Summit has grown to be a confluence point for sustainability practitioners and enthusiasts to raise awareness and debate on issues of sustainable development and business.

The 4th Sustainability Summit: Asia 2009 was graced by Dr. Farooq Abdullah, Union Minister for New & Renewable Energy, Mr. Jairam Ramesh, Minister of State for Environment & Forests (Independent Charge) and Mr. Salman Khurshid, Minister of State for Corporate Affairs and Minority Affairs (Independent Charge) as Chief Guests.

Counting clean energy initiatives undertaken by the Ministry of New & Renewable Energy, Dr. Farooq Abdullah, outlined the National Solar Mission aiming at 20 GW solar capacities by 2022. India has achieved 15,500 MW of grid interactive installed renewable power, which is around 8% of the total installed grid capacity of the country. He further added that his ministry has been instrumental in raising awareness and accelerating development of all renewable energy sources to realise the vast potential resting within the country. He listed the projections made in the Integrated Energy Policy Report (IEPR) which reveal that India would rely increasingly on imported

oil, gas and coal in the medium term. Against this backdrop, the role of new and renewable energy assumes added significance.

Mr. Jairam Ramesh, Minister for Environment & Forests, while addressing the Summit said that the National Green Tribunal Bill and creation of a National Environmental Protection Authority will be instrumental in future jurisdiction, regulation and decisions related to the environment. Through such mechanisms the government wants to ensure economic growth and demonstrating environmental sensitivity. Public confidence in rapid economic growth can be ensured through sustainability, he opined. The Minister added that domestic cap-and-trade certification system involving energy efficiency is under development. Companies exceeding the requisite benchmark levels could sell it to those who lag, paving the way for a market-based mechanism for energy efficiency norms. He also announced that a Comprehensive Environment Protection India Report will be released by the ministry on December 21, 2009, based on a study of 80 industrial clusters. Ranking of these clusters will be undertaken based on their sensitivity towards the environment; land and

water, ensuring pollution norms are being met. Today sustainability concerns are not just CSR but part of corporate mainstream. Public pressure on the business and government is instrumental in demonstrating sustainable development.

While sharing his views, Minister for Corporate Affairs, Mr. Salman Khurshid said that the government foresees CSR credit as a tool to internalise sustainability commitments from enterprises. Furthermore institutional support will be instrumental in ensuring sustainable development with a rational, reasonable and humanist approach. The minister also said that an active society can play a key role in filling the gap between the Government and corporate.

Mr. B.J. Panda, Member of Parliament, Lok Sabha, also addressed the Summit. He said that the threat of climate change is frighteningly real and it is imperative that all nations strive to mitigate GHG emissions. At the same time he pointed out that in our country there are bottom up demands e.g. demands for electricity, which need to be given equal priority by the government. This leads to situation where difficult choices have to be made involving some kind of trade-off.





Mr. Deepak Gupta, Secretary, Ministry of New & Renewable Energy, while addressing the august gathering at the plenary on 'Balancing Economic Growth with Natural Resources' said that practices of energy conservation and energy efficiency are a moral imperative on businesses. Maximising the usage of renewable energy can be harnessed in a decentralized way, which ensures low emissions energy development pathway for the nation.

Mr. Ricardo Young, President of the Ethos Institute, Brazil delivered the

keynote address at the Summit. He stated that sustainable businesses are partners to build a sustainable and fair society. He outlined Brazil's efforts in reducing deforestation, saving the Amazon forests and proper utilization of water resources.

Mr. Y C Deveshwar, Past President, CII, Chairman, CII-ITC Centre of Excellence for Sustainable Development Advisory Council and Chairman ITC Ltd. said that global warming and climate change makes future progress unsustainable. Sustainability therefore should be made an integral part of economic development. Aligning the efforts of the government with the business community is imperative in drafting a setup for a low carbon, clean energy economy.

The other key speakers at the summit included Dr. Steve Howard, CEO, The Climate Group; Mr. Simon C Martin, Head – Group Corporate Sustainability, HSBC Holdings Plc.; Mr. Stephen Harper; Director – Environment & Energy Policy, Intel; Mr. Carlos Eduardo Lessa Brandao, Chairman of the Sustainability for Companies Study Group, Brazilian Institute of Corporate Governance; Mr. Marcel Engel, Managing Director, WBCSD Regional Network; Mr. David Hillyard, Director – Partnerships, Earthwatch Institute; Mr. Dennis Pamlin, Advisory, WWF and Senior Associate, Chinese Academy for Social Sciences; Mr. Hans Mielants, Regional HR Director for South Asia, Holcim Group Support Ltd.; Mr. Jitesh Khosla, Officer on Special Duty, Indian Institute of Corporate Affairs; Mr. M P Bezbaruah, Permanent Representative, WTO & Former Secretary, Ministry of Tourism; Mr. Rajesh Agrawal, Executive Director (Heritage), Ministry of Railways; Mr. A L Kapoor,

Managing Director, Ambuja Cement; Mr. Som Mittal, President, NASSCOM; Mr. Cyrille Jegu, Executive Director – The Natural Step in Asia; Mr. R N Mukhija, President (Operations) & Member of the Board, L&T Ltd.; Dr. Nik Senapati, Managing Director, Rio Tinto India; Mr. Ravi Singh, Secretary General & CEO, WWF India.

The summit was attended by over 400 delegates representing industry, government, diplomatic community, civil society organisations, academia, research institutes and individual entrepreneurs.



Building International Linkages for Sustainable Development

MoU signed between CII-ITC Centre of Excellence for Sustainable Development & The Ethos Institute of Business & Social Responsibility, Brazil

Himadri Mahajan, Executive
CII-ITC Centre of Excellence for Sustainable Development

Corporate Sustainability is becoming a key driver in making business and economic decisions; decisions both on the part of the corporations themselves and on the part of the public, the market, and on investors and shareholders. All these stakeholders expect to see Corporate Social Responsibility (CSR) and Corporate Sustainability Management (CSM) embedded in the fabric of all aspects of a corporation's business operations. In today's corporate world, disregarding one's corporate social responsibilities or sustainability requirements is a guaranteed way of alienating the market.

The CII-ITC Centre of Excellence for Sustainable Development is playing a proactive role in India's sustainable development process. The Institution creates a conducive, enabling climate for Indian businesses to pursue sustainability goals. It is



L to R - Mr. Ricardo Young Silva, President, The Ethos Institute of Business & Social Responsibility, Mr. Salman Khurshid, Hon'ble Minister of State for Corporate Affairs and Minority Affairs (Independent Charge), Government of India and Mr. Y C Deveshwar, Chairman, CII-ITC Centre of Excellence for Sustainable Development Advisory Council at the MoU signing ceremony at the 4th Sustainability Summit: Asia 2009 on November 26, 2009.

involved in promoting sustainable business operations in Indian industry through creating awareness, promoting thought leadership, training & technical assistance for capacity building.

In its continued efforts to establish global linkages in the field of sustainability management with an aim to bring the best knowledge resource on sustainability issues to India Inc., the Centre has signed a Memorandum of Understanding (MoU) with The Ethos Institute of Business & Social Responsibility, Brazil. The MoU aims to facilitate transfer of knowledge and sharing of experience on CSM & CSR and in advancing approaches on these issues through information exchange and networking between the partners. Through this MoU, it is proposed to understand, adopt and implement the Institute's expertise on Stakeholder Consultation and Engagement aimed towards deepening institutional relations with, and the partnership between, the business sector, civil society and other stakeholders.

The MoU was signed on by Mr. Y C Deveshwar, Chairman, CII-ITC Centre of Excellence for Sustainable Development Advisory Council and Mr. Ricardo Young Silva, President, The Ethos Institute of Business & Social Responsibility, in the presence of Mr. Salman Khurshid, Minister of State for Corporate Affairs and Minority Affairs (Independent Charge), Government of India at the 4th Sustainability Summit: Asia 2009 on November 26, 2009.

The Ethos Institute of Business and Social Responsibility, based at São Paulo, Brazil is a non-governmental organisation created with the mission of mobilizing, sensitizing and helping companies to manage their businesses in a socially responsible manner, making them partners in the construction of a fair, sustainable society. The Institute works to expand the corporate social responsibility movement, to deepen CSR practices, to influence markets to create a more favourable environment for CSR and articulate CSR with public policies

Key Highlights of the MoU

The scope of MoU between CII-ITC Centre of Excellence for Sustainable Development and The Ethos Institute includes:

- Mutual transfer of knowledge and experience on Stakeholder Consultation between the two partners.
- Sharing knowledge on tools and initiatives developed to deepen the CSR practices into core business strategies.
- Joint capacity building and training initiatives to expand the corporate sustainability movement by sharing best practices.
- Research on developing frameworks and tools to influence markets to reward sustainable business organisations.

Switch-Asia Programme on Sustainable Consumption & Production (SCP) to SMEs in the F&B Sector

Shikhar Jain, Senior Counsellor
CII-ITC Centre of Excellence for Sustainable Development

The CII-ITC Centre of Excellence for Sustainable Development is working as the Asian project partner on SWITCH-ASIA funded project (Sustainable Consumption & Production- Food & Beverage sector, with focus on SMEs) in Sri Lanka. Project is led by Ceylon Chamber of Commerce (CCC), Colombo. The Centre's role is to provide technical assistance for capacity building and training of CCC local partners project staff and selected SME's in Srilanka on Sustainable Consumption & Production in Food & Beverage sector.

As part of the project, a Study Tour was organised for Srilankan delegates from CCC Solutions and their local partners. A representative from IVAM- as a European partner also participated in the Study Tour. The tour was organised from Nov 23-27,

2009, wherein a one day workshop was organised for the participants on "Sustainable Practices (Food & Beverage sector) in India".

In order to demonstrate the F&B sector's Sustainable Practices in India, a visit was organised for the Srilankan delegates at one of the finest five star luxury resorts and business hotels in India, The Leela Kempinski, Gurgaon. The delegates visited the hotel's kitchen where they were demonstrated the best practices such as adopting colour coding for storage of different food items, segregation and stacking of food items in efficient manner, usage of energy efficient equipments etc. Delegates were also taken to the various restaurants in the hotel where they witnessed the sustainable F&B practices.

In addition to this, visits were

organised to reputed companies like GlaxoSmithKline Consumer Healthcare (GSKCH) Ltd and Devyani International Limited. GSKCH is one of the largest players in the Health Food Drinks industry in India. It is an industry leader, with an estimated 7% of the world's pharmaceutical market. During the plant visit, delegates were exposed to some of the Sustainable Best Practices that GSKCH incorporates in its F&B operations. A site tour was also planned which gave the delegates a chance to witness those practices. Devyani International Limited is an associate company of RKJ Group and provides services to COSTA Coffee, Pizza Hut, KFC brands at many locations in India. The site tour in their facility helped the delegates in understanding the best practices adopted by the organisation.



Release of Carbon Disclosure Project Report 2009 – India 200

3rd December 2009: Le Meridien, New Delhi

Esha Sar, Executive
CII-ITC Centre of Excellence for Sustainable Development

The Carbon Disclosure Project Report 2009 – India 200 was released in New Delhi on December 3, 2009 in an event attended by close to 150 senior leaders from Indian industry, government, academia and civil society organisations. In 2009, CDP, backed by 475 leading global institutional investors representing over \$ 55 trillion of funds under management, requested information from more than 3,700 of the world's largest corporations on their greenhouse gas emissions, the potential risks and opportunities climate change presents, and strategies for managing those risks and opportunities. The CDP India Report 2009 targeted 200 of India's largest companies. This third India CDP Report shares interesting and significant insights for the industry to integrate long-term value and cost of climate change into assessment of the financial health and future prospects

of their business. The CDP process has led many companies to adopt a climate change strategy, including emissions reduction targets.

The report was jointly released by the British High Commissioner to India, His Excellency Sir Richard Stagg, and Member of Parliament, Rajya Sabha, Mr. N K Singh. Also present in the distinguished panel were Mr. Anurag Behar, Chief Executive Wipro Infrastructure Engineering, Mr. Anupam Srivastava, Senior Director, IDFC, Mr. Paul Simpson, Chief Operating Officer, CDP.

His Excellency Sir Richard Stagg said, "I'm pleased, and hugely impressed, at the way Indian companies are seeing the benefits of measuring and managing their carbon emissions. On the eve of Copenhagen, it's worth remembering that this is not a politically-driven decision.

Rather, hard-headed and far-sighted businessmen are recognising that making money in the medium term will mean making a transition to a low-carbon model. And, as Indian business so often does, they're getting ahead of the pack. This can only be good for Indian business and for our shared, low carbon future." Releasing the report, Mr. N K Singh said, "We need to act with innovation and flexibility harmonizing national interest with global consensus for a satisfactory outcome". Mr. Anurag Behar spoke of the role that business needs to play in turning climate risks into opportunities and gave examples of Wipro's success story in reducing emissions and the associated benefits reaped by the company. Mr. Anupam Srivastava of IDFC commented that financial institutions such as his support initiatives like CDP because it brings the right information to a broad range of stakeholders.

The launch was followed by a stimulating discussion among the participants. Industry representatives were keen to know how financial institutions were using the information disclosed by respondents to CDP. Companies were also curious to learn what sets CDP apart from the numerous other initiatives which ask companies to disclose information related to GHG emissions. Mr. Paul Simpson, Chief Operating Officer, CDP responded to the query by saying that unlike the other initiatives, the CDP database is primarily for use by investors, both global and Indian,



making it an important resource which influences investment decisions across the globe.

The launch event and the CDP report received widespread press coverage in leading newspapers such as the Economic Times, The Hindu, Financial Express etc. The report release coincided with the landmark session in the Parliament where India's

environment minister, Mr. Jairam Ramesh announced that India will reduce its carbon intensity levels by 20-25% on its 2005 levels over the next 11 years. It is interesting to note that the Economic Times carried an article in the following week which quoted the findings of the CDP India Report and said that India Inc. is well positioned to achieve the 20-25%

emission intensity reduction targets given that companies are already voluntarily disclosing their carbon footprints and undertaking measures to reduce them. This article is a clear indication that voluntary initiatives such as CDP are influencing policy decisions and will in future play a significant role in India's climate change strategy. ■

IRCA Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course

15th-19th December 2009: New Delhi

Shikhar Jain, Senior Counsellor
CII-ITC Centre of Excellence for Sustainable Development

Following a successful India launch of CSAP training course in New Delhi in September 2009, CII-ITC Centre of Excellence for Sustainable Development conducted its second IRCA Accredited Certified Sustainability Assurance Practitioner (CSAP) Training Course (IRCA Reference Number A17495) in Mumbai from 15th – 19th December 2009, in collaboration with Inwent- Capacity Building International, Germany.

The course duration is of five days having series of IRCA certified training modules focusing on global sustainability standards like ISO 26000 on Social Responsibility, Revised AA1000 Assurance Standard & AA1000 Accountability Principles Standard, AA1000 Stakeholder Engagement Standard and GRI G3 Guidelines.

16 participants representing senior and middle level management from organisations like Reliance Industries Ltd., Titan Industries Ltd., Vedanta Aluminium Ltd., Tata Chemicals Ltd., Tata Motors Ltd., ITC InfoTech,

Wipro Waters, Essar Investments Ltd., and many consulting organisations participated in the training course and

acknowledged the emerging need of this kind of a professional training programme in India.



Exploring Business Opportunities in India

Japanese Innovative Technologies in Energy & Environment

12th December 2009: New Delhi

Vishwabandhu Bhattacharya, Executive Officer
CII-ITC Centre of Excellence for Sustainable Development

The eco-business market in Japan is projected to grow from 28.9 trillion yen in 2000 to 47.2 trillion yen in 2010. Eco-businesses provide technology, products, or services that contribute to the protection of the environment and play a vital role in the creation of a sustainable socioeconomic system with a low environmental impact.

To enhance the business linkages between Japanese and Indian businesses in the field of energy and environment technologies, Japan External Trade Organisation (JETRO) and CII-ITC Centre of Excellence for Sustainable Development jointly organised a Seminar on Exploring Business Opportunities in India on 12th December 2009 at The Claridges, New Delhi. The seminar was followed by exclusive business meetings (one to one) with the Japanese business delegation for companies in India.

The FDI inflow from Japan during April 2000 to November 2008 is

estimated as US \$ 2,349.31 million giving it a sixth rank. There are 27 FDI projects projected in Japanese media and it is estimated that if an estimate was taken in the year 2010 for the last five years (2006-2010) Japan's FDI to India will amount to US \$ 5.5 billion. There has been substantial increase in trade between India and Japan in the FY 2007-2008 and is almost 25% more than trade volume achieved in the FY 2006-2007. This is a positive sign as the average growth rate in the FYs 2003-2007 has been only 20%. Some of the major FDI projects are Maruti Suzuki, Toyota Motor Corporation, MCC PTA, Nissan Motor, Honda Siel Cars and Asahi Indian Glass.

JETRO, the trade and investment promotion organization of Japan under its Ministry of Economy, Trade & Industry (METI), is working to promote Foreign Direct Investment, cross-border business linkages, and also Japanese SME's business overseas. JETRO is also closely working in

various sectors with the developing economies to nurture industries and support their activities for investment facilitation.

Confederation of Indian Industry (CII) has actively encouraged Indian industry to work closely with Japan through its various initiatives. The CII Japan Desk serves to monitor and strengthens economic and bilateral trade relations between the two countries and broaden awareness and understanding in Japan of the changing economic scenario in India and encourage Japanese companies to look at India as an investment destination. CII has worked closely with the Japanese government and industry for up-gradation of technology of small and medium enterprises (SMEs).

CII's close networking and institutional partners include Japanese organisations like Association for Overseas Technical Scholarship (AOTS); International Friendship Exchange Council (FEC) of Japan;





Japan Association of Corporate Executives (KEIZAI DOYUKAI); Japan Business Federation (KEIDANREN); Japan India Business Cooperation Committee (JIBCC); Japan External Trade Organisation (JETRO); Japan Institute of Plant Maintenance (JIPM); Japan Chamber of Commerce & Industry (JCCI) and Japan India Business Cooperation Committee (JIBCC); Kansai Economic Federation (KANKEIREN); Organisation for Small and Medium Enterprises and Regional Innovation (SMRJ); Osaka Chamber of Commerce & Industry (OCCI); Union of Japanese Scientists & Engineers (JUSE).

The seminar was addressed by Mr. Hiroaki Ishii, Executive Vice President, JETRO, Mr. Amit Chugh, Founder & CEO, Cosmos Ignite Innovations Pvt. Ltd, Mr. Amit Ray, Vice President, Sharp Business Systems (India) Ltd, Mr. Priarpan Srivastava, Business Manager, Teijin India Pvt. Ltd, Mr. Mitoshi Kai, President, Koyo Giken Inc., Mr. Takeshi Yoshida, Chief Representative, New Energy and Industrial Technology Development Organisation (NEDO), New Delhi, Mr. Kiichi Suganuma, Secretary General, Japanese Business Alliance for Smart Energy Worldwide (JASE-World) and Mr. Naoyoshi Noguchi,

Director General, JETRO, New Delhi.

Mr. Amit Chugh, while making a presentation on the occasion – “India-Japan: Partners for a Sustainable Future”, enumerated the various initiatives that CII has taken to boost the trade and bilateral co-operation between the two countries. He talked about the emerging areas of future collaboration mainly in the fields of renewable energy technology development. He was of the view that given the present situation due to climate change threat and the growing energy demands of a rising population, nations shall be forced to adopt cleaner technologies and solar energy. It is going to be an area of particular interest to both the countries, considering the technological prowess of Japan in this field and India’s strong commitment in the form of Solar Mission under the National Action Plan for Climate Change to generate 20 GW solar power by 2020.

Mr. Hiroaki Ishii gave the participating delegates an account of the operations and outreach of JETRO across India. He mentioned about the organisation’s notable initiatives including the Neemrana specific investment zone in Rajasthan and the

“Indo-New Window” together with CII which serves as an online business match making site.

Presentations were also made by Japanese company representatives on some of the cutting edge technologies in the field of environment and energy. The technologies discussed were Solar Lighting by Sharp Technologies, Advanced Carbon Recycling by Teijin, Myspot Welding technology by Koyo Giken. Research bodies and industry association representatives like NEDO and JASE World gave a profile of their current activities.

Post seminar, the participating Indian companies showed great interest in the Japanese technologies and were found discussing ways to incorporate them in their operations with the Japanese members and further business ties in such areas during the B2B meetings.

The seminar was attended by over 100 Indian industry representatives including Tata BP Solar India Limited, Tata Steel Limited, PricewaterhouseCoopers, M.N. Dastur & Company (P) Ltd, etc., academia, research organisations and individual entrepreneurs, as well as members of the Japanese business and industrial research and development fraternity.



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