



# Prakalp - PMI Mumbai Chapter Journal

Volume 13 - Issue 1: January 2011



**PROJECT MANAGEMENT INSTITUTE - Mumbai Chapter**

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# PMI

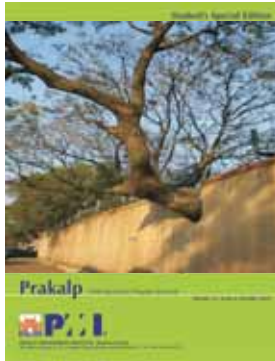
MUMBAI CHAPTER

## Vision

“To be recognized as the organization of choice by evangelizing Project Management”.

## Mission

- Evangelize project Management across industry, academia, community and government.
- Provide a forum for project management professionals to promote the principles and ethical standards of PMI.
- Promote networking among professionals, sharing project experiences and best practices, imparting training and enabling PMI certifications and ultimately enhancing quality of life.
- Provide infrastructural facilities like library, portal & knowledge repositories



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## PMI Component of the Year Award 2010 won by PMI Mumbai Chapter



L to R : Rakesh Gupta, Tejas Sura, & Kummar Vaalsalam

## PMI India National Conference



L to R : Raj Kalady, Vijay Prasad, Gregory Balestrero,  
Girish Kelkar, Tejas Sura



Key Note Session in progress

## Desk of the Chief Editor



esteemed PMI professionals,

Let me take this opportunity to wish you all a very happy and prosperous New Year! We are pleased to bring out this Annual Edition 2011 Magazine with the theme of Green Project Management. The whole idea of this issue was to highlight how we as industry management professionals can contribute as part of Corporate Social Responsibility towards a greener mother EARTH!

The cover page personifies this belief where you can see right here in India, Mumbai a tree saved! It is so much like adding a drop of water to the ocean. It appears to be a small idea but has long lasting impressions on our minds. Each one of us can save a tree and grow/sponsor a tree! In last year's annual edition we had the honor and privilege to invite Hari Kumar, Partner and Managing Director - Deloitte U.S. India to grace the cover of our internationally circulated and acclaimed PM Magazine PRAPALP. This year we have an equally precious and prestigious cover in the form of tree! The green tree is our cover page model for Year 2011! We are also planning to print this edition of the magazine using environment friendly printing paper namely Magno Star Elemental Chlorine Free (ECF) Paper. I hope that's what you have in your hand right now

Please share and show this cover page to your family members especially children and ask them what they feel about the depicted picture. Write back to me on what you hear from your near and dear ones! How can all of us play a part in the green revolution and help reduce carbon footprint world over. I want to highlight that this is a positive risk as there is also a commercial advantage to stay green and corporate and governments can make money in the process by selling carbon credits!

This editorial is also probably a thank you note from me to all of you who have been reading our editions regularly as I pass on the baton the function of VP Publications to the next elected volunteer in 2011 AGM. My stint lasted 4 years (Two full 2 year terms) and it was a pleasure to work with you and evangelize project management. I am available actively for handover in Q1 2011 and reachable via mail or call too. The PMI Mumbai Chapter volunteerism effort can get you connected with global leaders in your network and that is in itself is a great source of happiness to interact and learn from industry leaders.

Yours Sincerely,

**Kummar Vaalsalam**, PMP®, ITIL®  
Chief Editor PRAKALP & Vice President of Publications  
Editorial Team Head – Nilima Prabhu, PMP®.  
publications@pmimumbaichapter.org

**Nilima Prabhu PMP**



## President's Message

**D**ear Fervid Reader,

*Season's Greetings to all of you and your family!*

**O**n behalf of the board of Project Management Institute Mumbai Chapter, I take this opportunity to thank the membership for your extended patronage and support to the chapter activities. While we look forward to new pursuits in the coming times, it is time to reflect back on our achievements in the past year.

- ❖ Shifted to new office, library and training premises at Goregaon after completion of Interiors.
- ❖ Received recognition from PMI for Component of the Year Award – Category II 2010 for second consecutive year.
- ❖ Completed successful PMI's Project Management Conference India as Host chapter.
- ❖ Completion of draft of revised bylaws.
- ❖ Completed budgeting for next two years and got formal approval from PMI on business plan.
- ❖ Got approval for Ahmedabad branch and NMIMS University MPSTME Student branch from PMI.
- ❖ Conducted Strategic Meetings and Board Meetings.
- ❖ Increased membership to 1000+ for the first time.
- ❖ Consistent PMP Preparatory Training course every month.
- ❖ Library of 150+ titles in Project Management and Leadership.
- ❖ Free Project Management Training for NGOs.
- ❖ Corporate PMP Preparatory Training courses.
- ❖ Publishing of new chapter brochure.
- ❖ Regular Webinars.
- ❖ Social Networking through LinkedIn, Facebook, Twitter and Yahoo Groups.
- ❖ Weekly website updates.
- ❖ Regular Monthly updates.
- ❖ Annual Membership Survey confirming membership satisfaction of Chapter activities and services.
- ❖ Successful completion of Strategic Alignment Scorecard and Charter Renewal with PMI.
- ❖ Continuous activities at Ahmedabad Branch and NMIMS's MPSTME Student Branch.
- ❖ Monthly Knowledge Sharing sessions through PMP Club activities at Thane, Vashi, Matunga
- ❖ Monthly Soft skills and Project management tools programs.
- ❖ Quarterly Journals with a new revamped attractive look and layout.
- ❖ Volunteer Development Trainings.
- ❖ Board member attendance at Leadership Institute Meetings of PMI.
- ❖ Chapter level Volunteer of the Year Award for the first time.

I would like to place on record appreciation for assistance and co-operation received from various stakeholders of the chapter without which the above achievements would not have been possible. I take this opportunity to invite your constructive suggestions for continuous improvements in the services and activities of the chapter.

**Tejas Sura**, President - PMI Mumbai Chapter, India  
president@pmimumbaichapter.org

## A Carbon Footprint

By Prakash Mody & Arobindu Basu

**Global Warming-** There's been a ton of back-and-forth about whether global warming is a real problem, but increasingly the evidence seems to indicate that it is. (When it's 70 degrees in Philadelphia on Jan. 6, you have to admit that something strange is going on.) Will the corporate world, specially, CIOs, CTOs, who oversee enormous assets that consume massive amounts of energy and generate tremendous amounts of carbon emissions, bear some responsibility for finding more efficient ways to serve their businesses' technology needs without further damaging the environment? I believe they need to take a leadership role in this effort and, in doing so, place their enterprises on the side of the angels.

**Global warming** is the increase in the average temperature of Earth's near-surface air and oceans since the mid-20th century and its projected continuation. Record says, global surface temperature increased  $0.74 \pm 0.18$  °C ( $1.33 \pm 0.32$  °F) during the 20th century. Most of the observed temperature increase since the middle of the 20th century has been caused by increasing concentrations of Green House Gases (GHG), which result from human activity such as the burning of fossil fuel and deforestation. Global dimming, a result of increasing concentrations of atmospheric aerosols that block sunlight from reaching the surface, has partially countered the effects of warming induced by greenhouse gases creates The Greenhouse Effect, which is the process by which absorption and emission of infrared radiation by gases in the atmosphere warm a planet's lower atmosphere and surface.

**Carbon Footprint-** A carbon footprint is "the total set of greenhouse gases (GHG) emissions caused by an organization, event, product or person". For simplicity of reporting, it is often expressed in terms of the amount of carbon dioxide, or its equivalent of other GHGs, emitted.

The carbon footprint is basically an in-depth analysis of the amount of carbon dioxide is produced when people engage in certain activities. Carbon dioxide is a type of greenhouse gas that contributes to the greenhouse effect. The greenhouse effect is a major contributor in the issue of global warming. Carbon footprints are measured starting at the beginning of production of certain items, and then extends forward until use is ceased by humans.

An individual, nation, or organization's carbon footprint can be measured by undertaking a GHG emissions assessment. Once the size of a carbon footprint is known, a strategy can be devised to reduce it, e.g. by technological developments, better

process and product management, changed Green Public or Private Procurement (GPP), Carbon capture, consumption strategies, and others. The mitigation of carbon footprints through the development of alternative projects, such as solar or wind energy or reforestation, represents one way of reducing a carbon footprint and is often known as Carbon offsetting.

Several organizations have calculated carbon footprints of products. The US Environmental Protection Agency has addressed paper, plastic (candy wrappers), glass, cans, computers, carpet and tires. Australia has addressed lumber and other building materials. Academics in Australia, Korea and the US have addressed paved roads. Companies, nonprofits and academics have addressed manufacture and operation of cars, buses, trains, airplanes, ships and pipelines. Carbon dioxide emissions into the atmosphere, and the emissions of other GHGs, are often associated with the burning of fossil fuels, like natural gas, crude oil and coal.

**Measuring the Carbon Footprint-** There are actually several different methods in which the carbon footprint can be measured. The first method of measurement is the "Life Cycle Assessment". With this method, there are four particular phases that carefully work to measure the emissions of carbon over the life of a particular product. These phases consist of looking at the ultimate goal of the measurement, a gathering or "inventory" of the analysis and statistics regarding the study, determining the overall impact, and then the basic interpretation.

**Measure your Household Carbon Footprint-** Everyone's footprint is unique. The question is, how big is yours? By footprint we don't mean shoe size. We do mean the size of your personal imprint on our planet in terms of carbon emissions. With some basic information you can measure your household's carbon footprint.

- " What is your average monthly or yearly energy usage- electric, oil, and natural gas (by kwh or gallons)? Read your electric meter. Each day record your kilowatt-hours (kWh) used. Every kilowatt-hour produces 1.5 pounds of CO<sub>2</sub>. But for every kilowatt-hour used, 2.2 are wasted, or lost, during transmission over electrical lines.
- " How many miles do you drive monthly or yearly and how much gas does your car use per mile (mpg)? Driving your car is the largest portion of your carbon footprint - about the size of your heel and arch put together! Track your mileage and calculate how many gallons of fuel you use each day. For each gallon of gasoline consumed, add 19.6 pounds of

CO2.

" How much natural gas you consume daily? Record your daily usage of natural gas. Every 100 cubic feet belches out 12 pounds of CO2. Propane gas uses slightly more at 12.6 pounds per gallon.

**Carbon Reduction and Disclosure-** Some 3,000 organizations in some 60 countries around the world now measure and disclose their greenhouse gas emissions and climate change strategies through CDP. This data is made available for use by a wide audience including institutional investors, corporations, policymakers and their advisors, public sector organizations, government bodies, academics and the public.

**Carbon Currency-** On the world horizon looms a new global currency that could replace all paper currencies and the economic system upon which they are based. The new currency, simply called Carbon Currency, is designed to support a revolutionary new economic system based on energy (production, and consumption), instead of price. In a nutshell, Carbon Currency will be based on the regular allocation of available energy to the people of the world. If not used within a period of time, the Currency will expire (like monthly minutes on your cell phone plan) so that the same people can receive a new allocation based on new energy production quotas for the next period. Every citizen would be issued with a carbon "credit card" - to be swiped every time they bought petrol, paid an energy utility bill or booked an airline ticket - under a nationwide carbon rationing scheme. Under the scheme, everybody would be given an annual allowance of the carbon they could expend on a range of products, probably food, energy and travel. If they wanted to use more carbon, they would be able to buy it from somebody else.

**Carbon Reduction Roadmap-** Large emitters of carbon dioxide and other greenhouse gases, who will be regulated by federal cap-and-trade regulation face a range of new challenges and opportunities for gaining competitive advantage. A Carbon Shrinks Carbon Reduction Roadmap (CSCRR) provides detailed analysis of how federal cap-and-trade legislation can specifically affect YOUR business, and uses computer modeling to combine a

range of potential emission reduction projects with a cost model of YOUR specific business into an overall picture of quantitative strategy

scenario comparisons. CSCRR is an investment in an ongoing strategy framework, designed to be continuously updated as rules are defined and as market prices change.

Elements of an annually updated Carbon Shrinks Carbon Reduction Roadmap are:

- An up-to-date analysis of climate regulation as it affects YOUR business
- Candidate carbon reduction projects that relate to YOUR business
- Calculation of financial Return On Investment (ROI) using YOUR policy for ROI, for each candidate project using up-to-date ballpark estimates for costs and benefits.
- Computer modeling for comparison of different strategy scenarios that are based on the cost model of YOUR business.

#### **Recommendations for policy and action in the coming year.**

The Carbon Reduction Commitment (CRC), is a mandatory cap and trade scheme in the UK that will apply to large non energy-intensive organizations in the public and private sectors. It is anticipated that the scheme will cut carbon emissions by 1.2 million tons of carbon per year by 2020.

The CRC scheme will apply to organizations that have half-hourly metered electricity consumption greater than 6,000 MWh per year. Organizations including hotel chains, supermarkets, banks, central government and large Local Authorities, qualifying for CRC would have all their energy use covered by the scheme, including emissions from direct energy use as well as electricity purchased. Half-hourly meters (HHM) record electricity consumption for every half hour of every day, and generally provide this data to the supplier automatically via a telephone connection.

**Carbon Offsetting-**A carbon offset is a reduction in emissions of carbon or greenhouse gases made in order to compensate for or to offset an emission made elsewhere. Carbon offsetting is the process by which a successful emissions reduction is produced in one geographical location and claimed by another. For example, a hydro electricity generation plant established in South America with the financial assistance of the Japanese government displaces the more polluting local oil & coal fired power stations, thereby creating a sizable carbon emissions reduction.

Offsets are typically achieved through financial support of projects that reduce the emission of greenhouse gases in the short- or long-term. The most common project type is renewable energy, such as wind farms, biomass energy, or hydroelectric dams. Others include energy efficiency projects, the destruction of industrial pollutants or agricultural byproducts, destruction of landfill methane, and forestry projects.



Personal Carbon rationing-Inevitably, in going about our daily lives — commuting, sheltering our families, eating — each of us contributes to the greenhouse gas emissions that are causing climate change. Yet, there are many things each of us, as individuals, can do to reduce our carbon emissions. The choices we make in our homes, our travel, the food we eat, and what we buy and throw away all influence our carbon footprint and can help ensure a stable climate for future generations.

### Easy Things You Can Do To Help Our Climate:

- Travel light- Walk or bike instead of driving a car
- Teleconference instead of flying
- See the light. Use compact fluorescent light bulbs.
- Recycle and use recycled products
- Inflate your vehicle tires
- Turn down the heater/Air-Conditioners
- Buy renewable energy – Like solar panels, windmills and other technologies
- Do your weekly shopping in a single trip
- Act globally, eat locally

Humans can protect natural resources by recycling more and not destroying the ozone layers.

We need to use all of the three Rs, (Reduce, Reuse, Recycle) and add a fourth and fifth, Reinvent how we do things and Revise how much we want.

- Recycling 1 ton of paper saves the equivalent of 17 trees, saves enough energy to power an average home for six months, saves 7,000 gallons of water, and keeps 60 pounds of pollutants out of the air.
- Making recycled paper instead of new paper uses 64 percent less energy, and uses 58 percent less water.
- Recycling one aluminum can saves enough energy to run a television or operate a computer for three hours.
- Every glass bottle recycled saves enough energy to light a 100-watt light bulb for four hours.

**Green PMP-**A Project Management Professional or PMP has to be aware of standards set down in ISO 14000 for green environmental practices, so that he can help to run a project as per green standards. Following these practices at every stage of a project can make him a Green PMP. Project management professionals or PMPs are becoming increasingly aware that 'going green' is no more just a slogan, but has become an imperative need for all projects that they may be concerned with. It is immaterial whether the project concerns a large civil engineering structure, a software development or any other project that requires coordination of a number of activities to reach a specific target; but every project has the possibility of being executed through Green Project Management.

It broadly includes initiation of the project, planning the broad parameters for the project, executing the project, monitoring and controlling of the project and then finally closing the project to the satisfaction of the clients or owners of the project.

**Green PMP Initiating-**Even while initiating the project, green aspects like saving on stationery while preparing the Project Initiation Document can be practiced. The scope of the project gives ample room for planning green aspects, and the PMP can examine whether the required scope falls within environmental norms. While planning the project organization, location of the offices and staffing can be done in such a way as to reduce travel times so that the carbon footprint is reduced.

**Green PMP Planning-** While planning a project a green aware PMP would examine every aspect of the planning to see that it follows the required green standards. Recycling, water usage, reducing transport requirements and other such activities that could have a carbon footprint need to be looked at.

**Green PMP Execution-** Throughout the execution part of a project, the green PMP would keep strict control over his usage of resources and ensure that wastage is kept to a minimum.

**Green PMP Monitoring and Controlling-** Monitoring and controlling of a project requires a lot of reports to be prepared and a good PMP would ensure that these reports are comprehensive without being repetitive. Recycling, water and electricity usage, stationery and other carbon footprints would be constantly monitored to ensure green norms. Machineries should be properly maintained and utilized. Wastage would be constantly reviewed. Housekeeping activities need to be part of the items being monitored so that wastage is controlled.

**Green PMP Closing of a Project-** Closing of a project requires it to be handed to the client with all the necessary documentation. Proper cross referencing of documents can save repetitions while rendering the document usable.



Mr. Arobindu Basu (PMP)  
Project Director  
Hewlett-Packard India Sales Pvt Ltd



Mr. Prakash Mody (PMP)  
Project Manager  
Hewlett-Packard India Sales Pvt Ltd

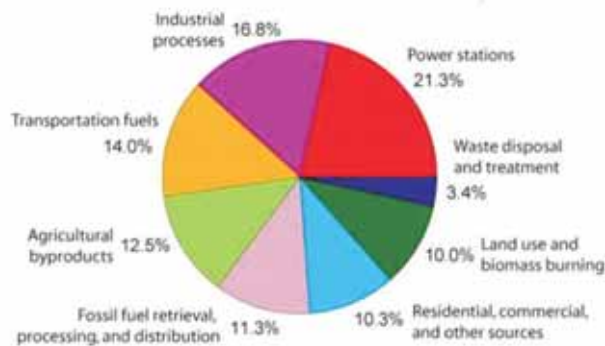


## Greener Environment through reduction in Carbon Emission

By Hemant G. Patil, PMP

### ❖ Contributors to Global Warming

Many factors contribute to global warming. Some are prominent while some are not so, but cannot be ignored. Each of them has to be looked at while considering measures to reduce the global warming process. The chart below depicts the factors and their contribution to the global warming process.



### ❖ Effects of Global Warming

Due to increase in the concentration of green house gases more and more of infrared radiation is re-emitted back to the earth's surface thereby causing increase in the average atmospheric temperature.

Other effects of global warming include rise in mean sea level, abrupt weather change and more frequent heat waves and tropical cyclones.

### ❖ The concept of Carbon Credit

National and international attempts are being made to mitigate the growth in concentration of green house gases. One such attempt is to give benefit to organizations who contribute positively in this endeavour of reducing the carbon emission. The term used for this is "carbon credit". Organizations can claim carbon credits for their efforts in this direction. One carbon credit is equal to one ton of carbon-dioxide equivalent. There are two distinct types of carbon credit markets - Regulated and Voluntary.

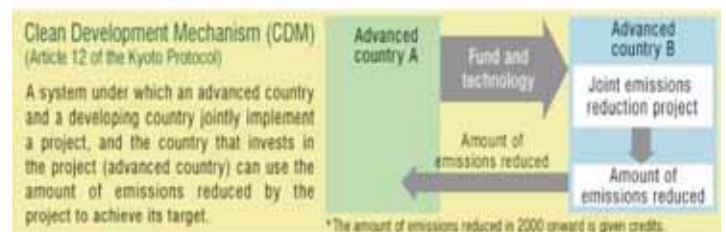
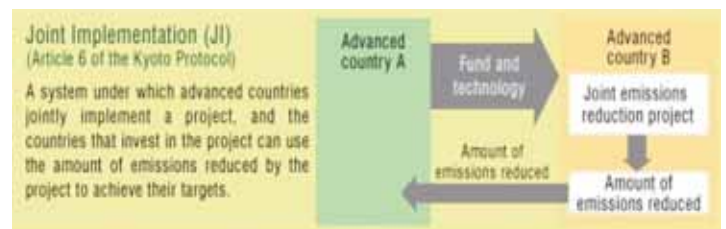
### ❖ The KYOTO Protocol

To promote participation in the carbon credit initiative an international environmental treaty as adopted on 11<sup>th</sup> December 1997 in conference of parties to the UNFCCC (COP-3). It came into force on 16<sup>th</sup> February, 2005. It was termed as the 'Kyoto Protocol'. It establishes legally binding commitment for the reduction of green house gases. It is an international

agreement between more than 170 participating countries. It has flexible conditions as depicted below.

### ❖ Conclusion

Many organizations have set target for reducing their carbon foot print. Various energy management products and services are being adopted. Renewable energy sources like solar and wind energy are being looked at. As an example, telecom infrastructure providers have already started implementing solutions like site sharing, free air cooling solutions, optimizing fuel usage by way of automation and designing shelters that are energy friendly. Likewise every other sector needs to look at innovative techniques to contribute to this green initiative, earn more carbon credits and trade them for improving revenues.



### About the Author

**Hemant Patil PMP** is a graduate in Electronics and Telecommunication Engineering and a certified PMP. He has been working in the field of telecom for the past 21 years. He is currently working with GTL Limited as General Manager – Centre of Excellence, New Technologies. He can be reached at [hemantpatil24@gmail.com](mailto:hemantpatil24@gmail.com)



## Carbon Disclosure Project (CDP)

By Kummar Vaalsalam, PMP

Carbon Disclosure Project (CDP) is an independent not-for-profit organization holding the largest database of primary corporate climate change information in the world. CDP was launched in the year 2000 to accelerate solutions to address climate change, by putting relevant information at the heart of business, policy and investment decisions. CDP furthers this mission by harnessing the collective power of corporations, investors and political leaders to accelerate unified action on climate change. In 2009, 2,500 organizations in some 60 countries around the world measured and disclosed their Green House Gases (GHG) emissions and climate change strategies through CDP. In 2010, even more companies are reporting through CDP and managing their emissions.

With every end product or service, there is an associated resource, energy and emissions footprint. Actions to reduce these footprints make business sense, as they can lower energy requirements and ultimately, the price of the end products/services. Whether from an energy intensive sector or not, most companies will be affected by climate change and its impacts in different ways. Businesses that have the vision to identify and act on the opportunities, while managing the risks, are going to be well placed to meet current and future market challenges. These early movers, with their actions and innovations, will not only reduce their overall carbon footprint, but will also have a competitive advantage.

The Carbon Disclosure Project (CDP) 2010 - India 200 Report presents the strategies adopted by Indian businesses in response to climate change. These strategies have been disclosed, as part of their response to the CDP 2010 questionnaire. The report illustrates how market leaders have positioned themselves to effectively deal with climate change, integrating long term value and costs of climate change impacts into their business decisions.

The CDP 2010 report focuses on the level of companies' understanding of risks and opportunities, carbon footprint, actions taken to reduce their carbon footprint, policy

engagement and finding strategic advantages. It also enables businesses to develop or transform their climate strategy in order to charter a low-carbon roadmap for the future.

### CDP 2010 – India 200

This is the fourth successive year for CDP in India, with each year getting a very encouraging response from the Indian corporate sector. Similar to past years, climate change and investment related information was requested from the top 200 companies in 2010. This year, the information request was backed by 534 institutional investors, with more than US\$64 trillion assets under management. Indian institutional investors such as HDFC Bank Ltd, IDBI, IDFC, Reliance Capital and Yes Bank Ltd. were part of these 534 global institutional investors. This article is an excerpt reproduced from the CDP report, prepared by WWF-India, in partnership with CII-ITC CESD and CDP that analyses the responses from these corporations. It provides an insight on how top 200 Indian companies, by market capitalization, are driving innovation and taking action to embrace a low-carbon future. Fifty one companies from diverse sectors, responded to the information request, representing 25.5 per cent of the top 200 Indian

companies. This year 12 new companies responded to CDP's information request. Responses from some sectors were particularly noteworthy, such as Energy,

Materials and Information Technology, leading both in terms of the quality of information disclosure as well as participation.

Some of the key domestic policy imperatives that have been introduced in India are detailed below:

- (a) Indian Network of Climate Change Assessment (INCCA)
- (b) Expert Group on a low carbon strategy and inclusive growth
- (c) Carbon tax on coal to fund clean energy
- (d) Perform, Achieve & Trade (PAT) Mechanism for energy efficiency
- (e) India's First CDM PoA - Bachat Lamp Yojana
- (f) REDD+

*"We need industry as partners in our efforts towards low-carbon development. India has announced a goal of reducing the emissions intensity of its GDP by 20-25% by the year 2020. We have set up an Expert Group on Low Carbon Strategies for Inclusive Growth, a multi-stakeholder group given the mandate to develop a roadmap for India to achieve low-carbon development."*



**Jairam Ramesh,**  
Minister Of Environment  
& Forests, India.

## **National Missions under the Prime Minister's National Action Plan on Climate Change (NAPCC):**

- (i) National Mission on Sustainable Habitat (NMSH)
- (ii) Jawaharlal Nehru National Solar Mission (JNNSM)
- (iii) Green India Mission (GIM)
- (iv) Sustaining the Himalayas
- (v) Enhanced Energy Efficiency
- (vi) National Water Mission
- (vii) National Mission for Sustainable Agriculture
- (viii) National Mission of Strategic Knowledge for Climate Change Governance

Climate change has become an important topic for the Indian corporate sector. This is clearly reflected by the growing responsiveness of senior management. The majority (84%) of the respondents have put in place or assigned a senior level committee or an executive body to develop their climate change strategy. This is in sharp contrast to the senior level engagement in CDP 2007, with only 39% of respondents assigning board-level responsibility to address climate change issues. In addition, companies are becoming more transparent and increasingly sharing information with stakeholders on their actions to mitigate climate change. Policy engagement at the national level also highlights the constructive role that businesses are playing in advocacy on climate change. Sixty-eight per cent of the respondents advocate policy engagement with the government, regulatory bodies and policy makers on possible responses to climate change.

## **Risks & Opportunities**

CDP 2010 responses from Indian companies suggest that there has been a shift in emphasis from an approach dominated by risk, to one that now embraces opportunity.

Nearly 97% of the respondents identify opportunities arising from addressing climate change, in comparison to 80% identifying risks, as a result of regulatory, physical or commercial drivers. Forty-four per cent of the respondents to CDP 2010 identify regulatory risks as one of the risks affecting them either directly or indirectly. Amongst the most frequently cited policy concerns are the Kyoto Protocol, National Action Plan on Climate Change (NAPCC), Perform Achieve & Trade Scheme and ECBC Guidelines. Sixty-seven per cent of the respondents identify direct or indirect physical risks arising from the physical consequences of climate change.

## **GHG Performance**

The CDP 2010 provides an important global platform for the Indian companies to share their climate change strategies and report their GHG emissions performance. This is clearly evident from the increasing number of companies disclosing their GHG emissions. In CDP 2008, 33% of the responding

companies shared their GHG emissions data. This number increased to 62% in CDP 2009 and to over 85% (33 companies) in CDP 2010.

With growing levels of participation, the total GHG emissions reported to CDP 2010 is 114 million tonnes, compared to 68.9 million tonnes in CDP 2009 and 36.3 million tonnes in CDP 2008.

## **Performance Targets**

India has not mandated any GHG emissions reduction targets for industrial sectors/activity yet. Despite this, Indian businesses have been proactive in setting their own voluntary reduction targets. This positive and transparent approach by the Indian industry will create a conducive environment for future regulatory policy discussions both at the national and international level. Thirty-three per cent of the responding companies report that they have set targets to improve their energy efficiency and emissions reduction performance, while 24% of the rest are in the process of developing one. A unique feature of CDP 2010 is that most of the targets formulated by the Indian industry focus on GHG emissions; this is different from CDP 2009 wherein the targets were more directed towards improving energy efficiency. Some of the key areas on which responding companies focus to achieve GHG reduction targets include, process and product improvements, adoption of clean fuel, technological innovations/improvements, green energy procurement, green buildings, renewable energy, energy audits, and robust planning. These initiatives reduce the dependence of these companies on conventional fossil fuels, helping them reduce their overall GHG footprint.

## **Monetary Savings Performance**

Adoption of best practices across systems and processes by Indian companies is well reflected in the reported emissions reductions and monetary savings achieved. While

describing their actions to reduce GHG emissions, 68% of the responding companies report energy savings and 74% report emissions reductions. Companies from the Materials and Energy sector report the highest monetary savings. Although, in total only 10 companies disclose monetary savings as a result of their actions, the reported amount stands at a staggering Rs. 3,933 million (ca. US\$85 million) and the achieved emissions reductions come to 6.2 million metric tonnes of CO<sub>2</sub>-e per year. These savings represent a significant potential for economic gains, an important focus area for companies while making their future investment plans.

## **What does a CDP carbon disclosure score represent?**

The carbon disclosure score is normalized to a 100-point scale. Generally, companies scoring within a particular range suggest levels of commitment to, and experience of, carbon disclosure. Indicative descriptions of these levels are provided

below for guidance only; investors should read individual company responses to understand the context for each business.

### High (>70)

A higher score typically indicates one or more of the following:

- Strong understanding and management of company-specific exposure to climate-related risks and opportunities
- Strategic focus and commitment to understanding the business issues related to climate change, emanating from the top of the organization
- Ability to measure and manage the company's carbon footprint
- Regular and relevant disclosure to key corporate stakeholders

### Mid-range (50–70)

A mid-range score typically indicates one or more of the following:

- Growing maturity in understanding and managing company specific risks and potential opportunities related to climate change
- Good evidence of ability to measure and manage carbon footprint across global operations
- Commitment to the importance of transparency

### Low (<50)

A lower score typically indicates one or more of the following:

- Relatively new commitment to understanding climate-related issues
- Limited ability to disclose known risks or potential opportunities related to climate change
- Limited ability to measure and manage the company's carbon footprint
- Possible reluctance to disclose certain requested information due to commercial factors.

## Carbon Disclosure Leadership Index (CDLI)

The Carbon Disclosure Leadership Index (CDLI) includes the companies with the highest disclosure scores and provides a valuable perspective on the range and quality of responses to CDP's questionnaire

The last four years have seen an increase in the quality of responses to the CDP questionnaire from Indian companies. In keeping with these trends and with an intention to further encourage and reward high quality responses, this year sees CDP India introduce the Carbon Disclosure Leadership Index (CDLI) in India. The CDLI disclosure scores are based on the methodology developed by CDP and ranks the organization in terms of the 'quality of its disclosure' response to the CDP information request. It is not a measure of the performance of the business or the effectiveness of their management plans. This year top 10 scores of Indian companies have been

disclosed under CDLI as below.

Company	CDLI Score
Wipro	87
Jubilant Organosys	77
Tata Consultancy Services	75
Tata Chemicals	72
Tata Steel	71
Larsen & Toubro	70
ACC	70
Mahindra & Mahindra	67
Ambuja Cements	64
Sesa Goa	64

## CDP India and Global Comparison

Participation in CDP in India, like any other developing economy, is gaining ground. Developed economies have much higher participation due to increased awareness and public pressure. However, the participation rate of CDP India is much higher when compared to other developing economies like China or Central and Eastern Europe. Moreover, the Indian companies that participate in CDP are those which are proactive and have started several initiatives. They are helping to shape the future of Indian business. In terms of involving senior management in addressing climate change concerns, CDP 2010 finds Indian companies not far behind in comparison with companies from developed economies. Similarly, CDP 2010 finds that a very high percentage of Indian responding companies are taking action to reduce GHG emissions and this trend is comparable with the best in the world. Indian companies have adopted a proactive approach and see future national and existing international regulations as an opportunity. However, some companies still feel the need to improve their measurement, reporting and verification (MRV) practices and systems for GHG emissions accounting. Companies that audit their data, generally tend to be companies that require it for meeting carbon markets regulations.

### Reference:

*This article compiled from Carbon Disclosure Project 2010 – India 200 Report (CDP), with due acknowledgement to the CDP researchers, authors, WWF-India, and CII-ITC CESD.*



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## Greenhouse Gas Protocol: A new way to manage your project's GHG emissions

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*"A greenhouse gas (sometimes abbreviated GHG) is a gas in an atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in the Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone."*

This is the technical definition of Greenhouse gas or GHG. What the definition doesn't describe is the way GHG is chomping away the earth's atmospheric layers and causing severe climate and temperature fluctuations around the globe.

As a project manager, stakeholder or even a project executive, it is our responsibility to strive towards incorporating sustainability in our projects.

Sustainability is an area often ignored during project planning as well as execution thus causing most projects to be unfriendly to planet earth. The Greenhouse Gas (GHG) protocol is one such tool that helps business leaders as well as project managers to understand, quantify and manage GHG emissions.

The GHG Protocol Initiative, a decade-long partnership between the World Resources Institute and the World Business Council for Sustainable Development, is working with businesses, governments, and environmental groups around the world to build a new generation of credible and effective emissions accounting and reduction programs for tackling climate change.

The GHG Protocol consists of two modules:

- 1. Corporate Accounting and Reporting Standards:**
- 2. Project Accounting Protocol and Guidelines:**

The GHG Protocol for Project Accounting (Project Protocol) provides specific principles, concepts, and methods for

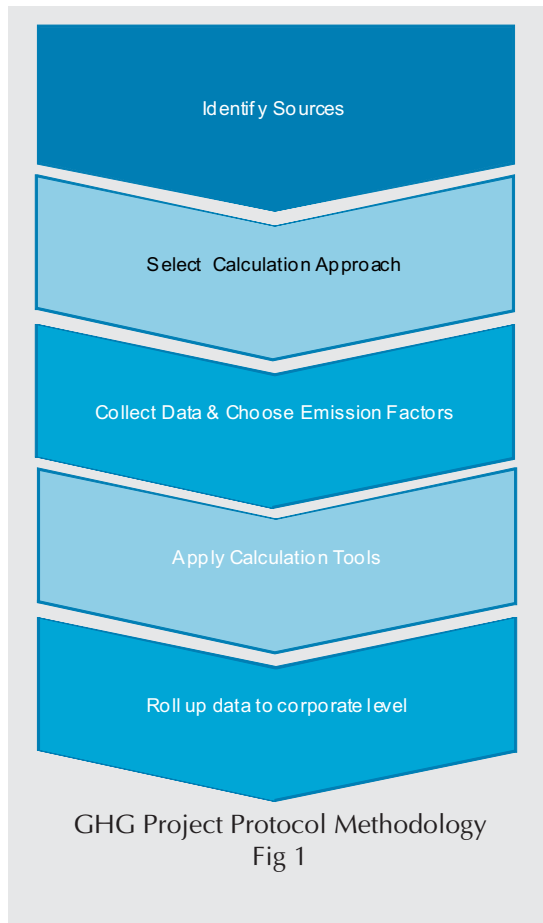
quantifying and reporting GHG reductions—i.e., the decreases in GHG emissions, or increases in removals and/or storage—from climate change mitigation projects (GHG projects).

A GHG project consists of a specific activity or set of activities intended to reduce GHG emissions, increase the storage of carbon, or enhance GHG removals from the atmosphere. A GHG project may be a stand-alone project or a component of a larger non-GHG project, and may be comprised of one or more project activities.

The GHG Project Protocol can be used to quantify GHG reductions for any project type. The protocol is supplemented by more specific guidelines for accounting GHG emission reductions in grid-connected electricity and land use, land-use change and forestry (LULUCF) projects.

Hundreds of companies around the world are using GHG Protocol standards and tools to manage their GHG footprint and make a difference for the climate by developing new products, improving energy efficiency, and participating in GHG programs and markets.

So, the next time you attend the project kick-off event, ask yourself one question: Have I planned for sustainability in my project?



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## Global warming and climate change -impacts on present global environment

By M.K.RAMESH B.E, M.B.A ,PMP

### 1.0 Introduction :

While attending a seminar on World Environment Day, one of my friends presented a slide show in which the first slide showed that the Polar Bears in the Arctic region are spending their normal life in Antarctica. In next slide due to increase in temperature in the region the ice glacier had begun melting and no icebergs were available for the comfortable stay of polar bears. Due to increase in temperature in these regions Polar bears were not in a position to bear the temperature and started shaving their skin. Seeing polar bear shaving their fur may make us laugh for a second but if we ponder about the real issues, we will realise that climatic change is creating global ecological imbalances.



Through early ice break up in arctic regions such as Hudson Bay in Manitoba, Canada (as a result of global warming) as well as through pollution, the polar bear has been deemed a threatened animal under the Endangered Species Act of the USA.

### 2.0 GLOBAL WARMING AND CLIMATE CHANGE :

Global warming is the increase in the average temperature of Earth's near-surface air and oceans since the mid-20th century and its projected continuation. Based on different data available it has been observed that the global surface temperature increased  $0.74 \pm 0.18$  °C ( $1.33 \pm 0.32$  °F) during the 20th century.

Climate change is one of our greatest environmental, social and economic threats. The warming of the climate system is unequivocal. Increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level are some of the impacts due to global warming and climate change. Global warming and climate change are due to the emissions of greenhouse gases by human activities and vast deforestation.

#### 2.1 Greenhouse gases

The greenhouse effect is the process by which absorption and emission of infrared radiation by gases in the atmosphere warm a planet's lower atmosphere and surface. Naturally occurring greenhouse gases have a mean warming effect of about 33 °C (59 °F). The major greenhouse gases are water vapor, which causes about 36–70 percent of the greenhouse effect; carbon

dioxide (CO<sub>2</sub>), which causes 9–26 percent; methane (CH<sub>4</sub>), which causes 4–9 percent; and ozone (O<sub>3</sub>), which causes 3–7 percent. Clouds also affect the radiation balance, but they are composed of liquid water or ice and so have different effects on radiation from water vapor. (Reference Wikipedia)

#### 2.2 Deforestation

Increased industrial growth due to population increase resulted in high level deforestation activities which in turn lead to increase in global temperature.

#### 3.0 CLIMATE CHANGE:

The vast differences in consumption patterns of industries of developed countries compared to other countries are responsible for the threat of climate change. The CO<sub>2</sub> emission level is around 60 -70 % by developed countries as compared to developing countries. In per capita terms, the disparities are also large: underdeveloped/developing countries emit less than 0.25 tonnes of Carbon per year whereas developed countries citizen emits more than 5.5 tonnes. These findings were well received by developing countries and are echoed in the UNFCCC, which recognised the rights of developing countries to economic development and also the "common but differentiated responsibilities" of different countries.

#### 4.0 Why Indians should be concerned about Climate Change?

We should be concerned about climate change since this phenomenon might have substantial adverse impacts on the following -

##### 4.1 Coastal areas (Submergence due to sea level increase):

Large-scale emigration from coastal zones is expected due to submergence of coast-lines after sea levels have risen. Impact of Tsunami and recent floods in coastal areas are example of the impact due to climate change. This will create large numbers of environmental refugees especially from low-lying delta regions.

##### 4.2 Agricultural production -

Due to climate change annual rainy season will be impacted resulting in drought in most of the areas. In addition, intrusion of sea-water in the ground water and changes in temperature can reduce agricultural and fishing incomes. Food security will become a crucial issue. The yield level of Rice and wheat production will decrease due to the impact of climate change.

##### 4.3. Use of coal as source for power generation

India's main energy resource is coal. With the threat of climate change, India is called upon to change its energy strategy based on coal, its most abundant resource, and to use other energy sources (e.g. oil, gas, renewable and nuclear energy) instead, which may turn out to be expensive.

## 5.0 How to mitigate the effects of Climate change?

The climate change cannot be stopped immediately but we can adopt various methodologies as detailed below to reduce the impact and climate change effects can be made less severe during coming years.

### 5.1 Emphasis on energy conservation.

By using alternative energy resources such as wind energy, solar energy we can reduce the consumption of conventional energy resources. The use of coal as resource can be reduced drastically thereby we can reduce the CO2 emission level. At the household level we can use energy saving appliances, solar energy for water heating, and develop rain harvesting system in societies to conserve water.

### 5.2 Promotion of renewable energy sources.

Apart from energy conservation and efficiency improvements, the need to find, develop and exploit nonconventional energy sources, many of them clean and renewable, has long been recognised by the Government of India. Considerable power capacity has been developed through various renewable energy sources, namely, wind farms, micro-hydroelectric plants, biomass & cogeneration power plants, biomass based gasifiers systems.

### 5.3 Reduction of Air Pollution:

The entire industrial and transport sector are required to ensure the control of emission of greenhouse gases to bring down the climate change effects. Use of CNG and use of high efficiency fuels in your vehicles will reduce the air pollution level to certain extent.

### 5.4 Afforestation and Wasteland Development

It is estimated that land-use change in developing countries could contribute to global emissions to the extent of 1.6 billion tonnes of carbon. However, indicators from India show that India's share of this contribution is minimal. Biomass is widely used even today in India for a variety of purposes including fuel, timber and feedstock. Concern for the consequences -- degradation of woods and forests and consequent degradation of soils -- was expressed as far back as 1974 (Fuel Policy

Committee, 1974). More recently, programmes for afforestation have found support from both governmental as well as non-governmental Organizations. These programmes aim not only to halt deforestation but to increase green cover.

Discussions are going on between 192 countries under KYOTO protocol to reduce the CO2 emission levels but no consensus is arrived between developed and developing countries. It is a global concern and in the absence of agreement under KYOTO proposal instead of waiting for the countries to act, we as individuals can contribute to the protection of our environment. This is a legacy which we must leave behind for our future generations as the nature looks like below without destruction.



Reference : Wikipedia site



#### About the author :

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## CSR and Carbon reduction roadmaps for Corporates

By Mohammed Babrawala

**I am just a drop of water in this deep ocean wide, but if I can make the water sweeter where else will I such satisfaction find. A saying that is so true, a bit of contribution from each of us can make a big difference.** Although the climate changes naturally on its own, humans contribute heavily to pollution of the environment. More people are wondering how they can do their part to help reduce the emission of greenhouse gases.

A **carbon footprint** is "the total set of greenhouse gases (GHG) emissions caused by an organization, event, product or person". It is often expressed in terms of the amount of carbon dioxide, or its equivalent of other GHGs, emitted. **The world's largest companies must double their efforts to reduce their emissions if we are to avoid dangerous levels of climate change, according to the CEO of Carbon Disclosure Project, Paul Dickinson.** According to the report published by the organization, which states that the rate at which the world's largest 100 companies are reducing their Carbon emissions, we will reach the recommended level of greenhouse gas cuts by 2089 – 39 years too late. If we want to meet the target deadline set as 2050, then the developed economies will have to make an annual reduction of 3.9% compared to the current rate of 1.9%. 73% of the global 100 companies have already taken some initiative and have already set some form of reduction targets, but that's not enough, the majority needs to be far more aggressive if they are to achieve the target.

Reducing Carbon footprint is just not a commitment, but also a corporate and social responsibility. We all agree that combating climate change and reducing greenhouse gases (GHG) emissions have become major challenges to the community. But it all starts within ourselves, the biggest question that we need to ask is that how do we reduce the Greenhouse Gas (GHG) emission or what role can each of us play in reducing the carbon footprint? A greenhouse gas (GHG) emissions assessment is one of the first and most important steps in any carbon management process. It will enable a business to have a fuller understanding of its carbon footprint; meet calls for disclosure from customers and shareholders; and help educate staff about carbon costs.

However, the data collection involved in the assessment process can often be complex and time-consuming for those involved. Here are some actions that companies need to take to ensure that getting right information is as painless as possible at every stage.

**Establish ownership:** The first item on any GHG assessment to-do list should be to select a project owner/leader. If you are conducting a GHG assessment across multiple

offices/sites/regions, it is useful to nominate a point person in each location who is responsible for the data collection from their site. At the beginning of the project, a global launch call or webinar presentation can help to outline the scope of the project and ensure that everyone understands their individual roles and responsibilities.

**Promote the business value:** It's important that the project leader understands and is able to communicate the drivers behind the company undertaking a GHG assessment and the business value it will deliver. If people are aware of the larger purpose behind why they are being asked for information and exactly how it will be used, they will be more willing to cooperate with the process in a timely and efficient way. Many assessment managers find it helpful to get someone senior within the business to visibly commit to the project and communicate this widely, to ensure those involved understand that it is a business priority.

**Write a clear plan** Finding out where to get the information you need is often the most time-consuming part of the assessment process. Your assessor will provide you with a list of potential sources of emissions data which you can use as a framework. It is recommended that you develop a clear plan which outlines where, when and how you are going to get the information required.

**Set realistic deadlines** In theory, a GHG assessment can be completed within 1 week if treated as a full-time project. However, those responsible for collecting data rarely have the capacity to do this outside their day-to-day responsibilities. Therefore it is important to set yourself and others realistic deadlines which allow for enough time to collect the data outside normal business activity.

**Communicate effectively** Communication is a critical part of procuring the right information from a variety of sources. Holding regular meetings/calls with those responsible will help to keep the project front of mind and it is worth investing the time to brief people properly at the beginning to save time chasing further into the project. If it is necessary to go outside the business to get emissions data, i.e. from third party suppliers, it is important to think carefully about who will approach them and how it will be positioned. Often suppliers can be reluctant to pass on information that they feel may disadvantage them commercially. Problems can be avoided by using a collaborative tone in communications and emphasizing the positive aspects of the project.

**Be creative When collecting certain emissions data** – particularly around employee commuting - it can be difficult to



engage employees to be pro-active around uploading the required data within a specific timeframe. Many clients find it useful to use interactive online tools, such as Survey Monkey, to make this more of a fun activity for employees. Rewards can be given to those that complete the survey within the shortest amount of time.

**Take it online** For companies dealing with a large number of data sets and numerous sites and suppliers, online assessment tools can significantly minimize data management complexity. Online assessment tools also allow for ongoing updates of data rather than having to conduct a static "one off" assessment on a yearly basis. This provides greater visibility of where there are

data gaps, allows you to see results as you go and delivers the information required to change processes accordingly.

Based on the above information companies know where they stand with respect to reducing carbon footprint and the actions that they need to take.



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## Green Office Green Home

By Nilima Prabhu, PMP

**W**ith pressure mounting on all of us to do our bit for the environment, every little step in this direction will count. In a typical office environment we should focus on conserving natural resources like water, paper and energy. Another area of focus should be reducing the use of plastic.

Today many organizations generate a lot of printouts. For example in software companies printouts of code, report formats, screen designs and system specifications are required for reviews, discussions, client meetings etc. Many of these are discarded as there are several iterations before the final stage is reached. At the same time employees in these organizations require notepads for writing all the time. Such companies can easily recycle the discarded printouts to make notepads as one side is blank and can be utilized for this purpose.

A large number of trees saved by such recycling will contribute significantly towards reducing global warming.

Computers have become ubiquitous in today's offices. Humans take breaks and leave their computers on either working hard processing something or in wait mode. If we take the trouble to switch off our monitors then the amount of electricity saved will lead to significant savings and it will also benefit the environment.

Organizations should have a "green" audit done by a person who is qualified to conduct it and identify areas and practices which will reduce their use of paper, plastic, water etc. Use of plastic cups for serving tea, coffee etc can be avoided. Employees can be requested to get their own ceramic mugs which they can take along to the vending machine and they can then rinse and reuse these mugs. Similarly they can utilize their own bottles for filling drinking water and thus the company can avoid using plastic cups/bottles for drinking water purposes.

Project managers who ensure timely deliveries and completion of projects are in fact doing their bit for the environment. Delayed projects means employees have to work overtime to complete the work and this leads to more power utilization at

the workplace. This has become an accepted fact especially in software companies where employees normally work long hours to meet their deadlines.

Nowadays many employees charge their mobiles in the office. If they unplug their chargers immediately after charging, this could result in saving precious electricity. Awareness about this and other ways of saving electricity in the office should be extended to all employees.

Appointing an employee as a "Green champion" to monitor the activities of his/her group mates related to use of paper, power etc. will probably prove effective. These monitoring activities will be over and above the employee's normal duties.

Commuting to work can be a problem if the work location is far from a railway station and also not reachable by bus. Many people prefer to drive to work in such circumstances. Companies should encourage and facilitate car pooling amongst their employees as this results in saving precious fuel and reduces pollution.

Once the employees of an organization become sensitive to environmental issues they will surely take this knowledge home and apply the same at home. More can be done at home as there is more flexibility. Use of CFL lights instead of tubelights to save electricity. Segregation of garbage. Making compost out of wet garbage. Recycling plastic bags and containers. Car pooling or sharing rickshaws while dropping children to school or on shopping trips.

The knowledge is there and it can be easily implemented. A little conscious effort from each one of us is all that is required for a truly green home and office!



#### About the author

**Nilima** has 15 plus years experience in IT. Executed projects in the Insurance and banking domains on client-server and J2EE platforms. Managed multiple projects as a Senior Project Manager. Currently taking a break from working for personal reasons

## Global warming - an over view

By PS Babu

### Introduction

Climate change is a major environmental problem that is affecting the Earth. The global community has recognised the need to combat climate change. The challenge is to adopt a long term strategy to mitigate the emissions & to develop cleaner technologies that protect the environment without affecting the economic development. Global platforms like UNFCCC1 is working towards this objective & succeeded in developing documents & methodologies like Kyoto Protocol, CDM2, Copenhagen Accord etc. in consensus with the member countries.

### Global Warming, Green House Gases and GHG effect

In 1908, a Swedish scientist, Svante August Arrhenius argued that the greenhouse effect from coal and petroleum use is warming the globe and this is considered to be the first such warning from the scientific world on the issue.

Life on earth is made possible by energy from the sun, which arrives mainly in the form of visible light. About 30 percent of the sunlight is scattered back into space by outer atmosphere and the balance 70 percent reaches the earth's surface, which reflects it in form of infrared radiation. The escape of slow moving infrared radiation is delayed by the green house gases. A thicker blanket of greenhouse gases traps more infrared radiation and increase the earth's temperature. Greenhouse gases makeup only 1 percent of the atmosphere, but they act as a blanket around the earth, or like a glass roof of a greenhouse and keep the earth 30 degrees warmer than it would be otherwise - without greenhouse gases, earth would be too cold to live!

Human activities that are responsible for making the greenhouse layer thicker are emissions of carbon dioxide from the combustion of coal, oil and natural gas; by additional methane and nitrous oxide from farming activities and changes in land use; and by several man made gases that have a long life in the atmosphere.

The increase in greenhouse gases is happening at an alarming rate. If greenhouse gases emissions continue to grow at current rates, it is almost certain that the atmospheric levels of carbon dioxide will increase twice or thrice from pre-industrial levels during the 21st century. Even a small increase in earth's temperature will be accompanied by changes in climate such as cloud cover, precipitation<sup>3</sup>, wind patterns and duration of seasons. In an already highly crowded and stressed earth, millions of people depend on weather patterns, such as monsoon rains, to continue as they have in the past.

Even minimum changes will be disruptive and difficult. Carbon dioxide is responsible for 60 percent of the "enhanced

greenhouse effect". Humans are burning coal, oil and natural gas at a rate that is much faster than the rate at which these fossil fuels were created. This is releasing the carbon stored in the fuels into the atmosphere and upsetting the carbon cycle (a precise balanced system by which carbon is exchanged between the air, the oceans and land vegetation taking place over millions of years). Currently, carbon dioxide levels in the atmosphere are rising by over 10 percent every 20 years.

Most abundant Green House Gases are: Carbon Dioxide, Water vapour, Methane, Nitrous Oxide, Ozone & Chloroflouro Carbons.

### Current Evidence of Climatic Change

Numerous long-term changes in the climate have been observed, including extreme weather such as droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.

Trends towards more powerful storms and hotter, longer dry periods have been observed and are assessed in the IPCC's4 Fourth Assessment Report. Warmer temperatures mean greater evaporation, and a warmer atmosphere is able to hold more moisture -- hence there is more water aloft that can fall as precipitation. Similarly, dry regions are apt to lose still more moisture if the weather is hotter; this increases the severity of droughts and desertification.

The frequency of heavy precipitation events has increased over most land areas. Significantly increased precipitation has been observed in eastern parts of North and South America, northern Europe and northern and central Asia. There is also observational evidence for an increase of intense tropical cyclone activity in the North Atlantic since about 1970.

Drying has also been observed over large regions, i.e. the Sahel<sup>5</sup>, the Mediterranean, southern Africa and parts of southern Asia.

In Africa's large catchment basins of Niger, Lake Chad, and Senegal, total available water has decreased by 40 to 60 per cent, and desertification has been worsened by lower average annual rainfall, runoff, and soil moisture, especially in southern, northern, and western Africa.

The Rhine<sup>6</sup> floods of 1996 and 1997, the Chinese floods of 1998, the East European floods of 1998 and 2002, the Mozambique and European floods of 2000, and the monsoon-based flooding of 2004 in Bangladesh (which left 60 per cent of the country under water), are examples of more powerful storms.

Average Arctic temperatures increased at almost twice the global rate in the past 100 years. Temperatures at the top of the permafrost<sup>7</sup> layer have generally increased since the 1980s by

up to 3°C. In the Russian Arctic, buildings are collapsing because permafrost under their foundations has melted.

Snow cover has declined by some 10 per cent in the mid- and high latitudes of the Northern Hemisphere since the late 1960s. Mountain glaciers and snow cover have declined in both hemispheres and widespread decreases in glaciers and ice caps have contributed to sea level rise. New data evaluated by the IPCC shows that losses from the ice sheets of Greenland and Antarctica have very likely contributed to sea level rise from 1993 to 2003. The average global sea level rose at an average rate of 1.8 mm per year between 1961 and 2003, but between 1993 and 2003 it rose by 3.1 mm per year.

Almost all mountain glaciers in non-polar regions retreated during the 20th century. The overall volume of glaciers in Switzerland decreased by two-thirds. Glaciers high in the Himalayas are dwindling faster than anyone thought, putting nearly a billion people living in South Asia in peril of losing their water supply.

### **Future Effects**

Even the minimum predicted shifts in climate for the 21st century are likely to be significant and disruptive. Predictions of future climatic changes are wide-ranging. The global temperature may climb from 1.4 to 5.8 degrees C; the sea level may rise from 9 to 88 cm. Thus, increases in sea level this century are expected to range from significant to catastrophic. This uncertainty reflects the complexity, interrelatedness, and sensitivity of the natural systems that make up the climate.

### **Severe Storms and Flooding**

The minimum warming forecast for the next 100 years is more than twice the 0.6 degree C increase that has occurred since 1900 and that earlier increase is already having marked consequences. Extreme weather events, as predicted by computer models, are striking more often and can be expected to intensify and become still more frequent. A future of more severe storms and floods along the world's increasingly crowded coastlines is likely.

### **Food Shortages**

Although regional and local effects may differ widely, a general reduction is expected in potential crop yields in most tropical and sub-tropical regions. Mid-continental areas such as the United States' "grain belt" and vast areas of Asia are likely to become dry. Sub-Saharan Africa where dry land agriculture relies solely on rain, the yields would decrease dramatically even with minimum increase in temperature. Such changes could cause disruptions in food supply in a world that is already afflicted with food shortages and famines.

### **Dwindling Freshwater supply**

Salt-water intrusion from rising sea levels will reduce the quality and quantity of freshwater supplies. This is a major concern, since billions of people on earth already lack access to

freshwater. Higher ocean levels already are contaminating underground water sources in many parts of the world.

### **Loss of Biodiversity**

Most of the world's endangered species (some 25 per cent of mammals and 12 per cent of birds) may become extinct over the next few decades as warmer conditions alter the forests, wetlands, and rangelands they depend on, and human development blocks them from migrating elsewhere.

### **Increased Diseases**

Higher temperatures are expected to expand the range of some dangerous "vector-borne" diseases, such as malaria, which already kills 1 million people annually, most of them children.

### **A World under Stress**

Due to the ongoing environmentally damaging activities such as overgrazing, deforestation, and denuded agricultural soils, nature will be more vulnerable than previously to changes in climate. Similarly, the world's vast human population, much of it poor, is vulnerable to climate stress. Millions live in dangerous places such as floodplains or in slums around the big cities of the developing world. Often there is nowhere else for population to move. In the distant past, man and his ancestors migrated in response to changes in habitat. There will be much less room for migration in future.

Global warming almost certainly will be unfair. The industrialized countries of North America and Western Europe, and other countries such as Japan, are responsible for the vast amount of past and current greenhouse-gas emissions. These emissions are incurred for the high standards of living enjoyed by the people in those countries. Yet those to suffer most from climate change will be in the developing world. They have fewer resources for coping with storms, with floods, with droughts, with disease outbreaks, and with disruptions to food and water supplies. They are eager for economic development themselves, but may find that this already difficult process has become more difficult because of climate change. The poorer nations of the world have done almost nothing to cause global warming yet is most exposed to its effects. If global warming continues, say scientists, our neighbouring country, the Maldives could sink beneath the Indian Ocean within 100 years!

### **Acid Rain**

Acid rain is caused by release of SO<sub>x</sub> & NO<sub>x</sub> from combustion of fossil fuels, which then mix with water vapour in the atmosphere to form sulphuric and nitric acids respectively.

The effects of acid rain are as follows:

- Acidification of lakes, streams, and soils
- Direct and indirect effects (release of metals, For example: Aluminium which washes away plant nutrients)
- Killing of wildlife (trees, crops, aquatic plants, and animals)

- Decay of building materials and paints, statues, and sculptures
- Health problems (respiratory, burning- skin and eyes)

## Conclusion

Commitment & voluntary actions to tackle the issues from international community like United Nations, Corporate world, Institutions, NGOs & individuals are necessary to yield the desired results from time to time, in order to save our planet by creating awareness among the general public, measurement of emissions, setting a reduction target, actions to reduce GHGs, reporting and developing environment friendly technologies.

### Notes:

1. UNFCCC – United Nations Framework Convention on Climate Change.
2. CDM – Clean Development Mechanism.
3. Precipitation – One of the three main processes that contribute the hydrologic cycle.
4. IPCC – Intergovernmental Panel on Climate Change, United Nations.
5. The Sahel – An ecoclimatic and bio geographic zone of transition in North Africa between the Atlantic & the Red Sea.
6. The Rhine – One of the longest rivers in Europe.
7. Permafrost – Soil at or below the freezing point of water (0 °C or 32°F) for two or more years.
8. Rangelands – Vast natural landscapes in the form of grasslands, shrublands, woodlands, wetlands and deserts.
9. Vector-borne – Transmitted by an insect or any living carrier.
10. SO<sub>x</sub> & NO<sub>x</sub> – Sulphur Dioxide & Nitrogen Oxides. Sulphur Dioxide is not a GHG.

### References:

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4. Bureau of Energy Efficiency, India
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### About the author

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## Personal Carbon Rationing

By Shreeta R, PMP

We come across the keywords “Go green” & “reducing CO<sub>2</sub>” very frequently in the media of late. One of concepts, *personal carbon rationing*, was introduced to limit the amount of carbon that we use each year. This idea was developed by environmental writer, David Fleming in 1996. In simple terms, this means that each person will get a maximum permissible carbon units i.e. ration or quota. This initiative involves making individual members of society stakeholders in the objective of reducing greenhouse gas emissions. The end objective is that human sources of carbon dioxide emissions would reduce and eventually stabilize at some pre-defined levels by allocating quotas.

Carbon emissions from the oxidation of organic fuel sources make up around 70% of the world’s greenhouse gases. These can now be accurately measured and attributed to the specific quantity of energy usage (i.e. per unit of fuel, electricity, heating, cooling, etc). Individual carbon emissions are thus assigned a value that can then be traded on an open market, like any other commodity.

Every individual will receive an identical personal carbon allowance. They can then utilize these carbon units when they pay for petrol or electricity. Suppose at the end of the designated period (e.g. after 1 year), if the individual has adopted solar energy or started using public transport to work

more frequently, it will lead to reduced petrol & electricity bills which means his quota of carbon units will have some surplus. He can then carry forward these credit units or get some other form of incentive on these units. However if the individual exceeds his quota, all goods & services would become expensive for him due to an associated carbon cost. Every year, the national carbon allowance would be reduced towards a long-term target level; that would in turn reduce the personal allowance, and this over time, overall emissions would fall.

Historically rationing has always been based on supply and demand, for a commodity which was in scarce supply rationing was used to ensure equitable distribution. If done the right way, rationing is a positive and people friendly policy. But loopholes in the system can lead to the development of a black market thus defeating the very purpose for which rationing originated and depriving the very sections of society for whom the policy exists.

The rationing concept has started making headways in a lot of local government bodies, rationing of water has been started in some parts of South-west America, Australia and closer home in Mumbai in response to extended dry spells. One of the assumptions decision makers make about rationing is that it will be always resisted and resented. In fact, that’s not the case - generally speaking, rationing, if done fairly, is taken up as an

being avoided.

Carbon rationing action groups (CRAGs) have spearheaded initiatives amongst community based groups to reduce carbon footprints through the creation of individual carbon targets. The members of each CRAG decide on a CO2 target per person at the beginning of a 'carbon year'. Each Cragger then records his / her personal carbon emissions from air and car travel plus home energy use (electricity and heating), using the same metrics. On fixed dates members share their results with others in the group. At the end of the year, members exceeding the agreed personal target pay a financial penalty for non-compliance, i.e. price per kg of emissions above target. The penalty amount is paid into a bank account and then redistributed to Craggers who saved carbon as agreed by participants. Two main goals of the CRAG system are to make individuals more aware of their carbon emissions and to build a sense of support amongst like-minded individuals in a particular community. The latter goal includes both encouraging others to remain committed to a low carbon lifestyle, and sharing knowledge with others about how to do so more effectively.

Norfolk Island, a former British penal colony in the middle of the Pacific Ocean, became the first place in the world to trial a personal carbon rationing program in Oct 2010. Under the program, which was devised by researchers at Southern Cross University in northern New South Wales, Australia, the island's residents received a carbon card, which operates like a credit or debit card, containing a set number of carbon units. During the trial, residents will use the card when they pay for petrol and power. The monthly mailbag will include carbon statements along with bank statements. Those who use fewer units will be able to exchange any remaining credit at the end of the year for cash. Over time the number of carbon units handed out on the cards will go down, forcing individuals to work harder to maintain a low-carbon lifestyle.

This leads to questions about the technicalities of creating a system that ensures equitable allocations, also we need to consider how the floating population will be accounted for in this system. Also the bureaucracy involved in administering millions of records could give rise to errors, tampering, and even fraud.

#### Conclusion:

We have briefly discussed the concept of personal carbon rationing, specifically issues of measurement, perception of society, roles and responsibilities of individuals as well as society.

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About the author:

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