

India's National Action Plan on Climate Change

A Civil Society View

"If that's where you want to go, sir, I wouldn't start from here."

– An Irish proverb

There is

LITTLE

HOPE

here

Himanshu Thakkar

A guide to the lost traveler:

If that's where you want to go, sir, I wouldn't start from here.

An Irish Proverb

India's National Action Plan on Climate Change

A Civil Society View

**There is
LITTLE
HOPE
here**

February, 2009

Himanshu Thakkar



South Asia Network on Dams, Rivers & People

c/o 86-D, AD block, Shalimar Bagh, Delhi 110 088, India
Ph: +91 11 27484655 • Email: ht.sandrp@gmail.com • www.sandrp.n

India's National Action Plan on Climate Change: A Civil Society View
THERE IS LITTLE HOPE HERE

First Edition: February 2009

Published by:

South Asia Network on Dams, Rivers & People
86-D, AD block, Shalimar Bagh, Delhi 110088
Email: cvaterp@vsnl.com
www.sandrp.in

Price: Rs 100/- (India and South Asia)
USD 10/- (elsewhere)

Designed & Printed by:

Systems Vision
A-199, Okhla Phase-I, New Delhi 110020
systemsvision@gmail.com

Cover Photo:

A sea beach on the Western Ghats, India by Vinay Aditya

The publication is dedicated to the communities around all over India and the world whose lives have been disrupted by the climate change brought around due to the high consumption life styles of the elite all over the world. There is no copy right for the contents of this publication. Please acknowledge the source where appropriate.

Contents

| | |
|--|----|
| Acknowledgements | 4 |
| List of Acronyms | 5 |
| Executive Summary | 6 |
| Introduction | 8 |
| Why This Report | 8 |
| Climate Change | 8 |
| The Kyoto Protocol | 9 |
| Climate Change and India | 9 |
| India's National Action Plan on Climate Change | 11 |
| Coordination Mechanism | 13 |
| Himachal Pradesh Tries to Grab the CDM opportunity | 13 |
| Corporate Response | 14 |
| South Asia Response is being Guided Foreign Aid | 14 |
| NAFCC: A Critical Assessment | 15 |
| The Water Sector | 17 |
| Groundwater: India's Threatened Water Lifeline | 19 |
| Glaciers | 20 |
| Basin-wise Areas and Volumes of Indian Glaciers | 21 |
| National Water Mission | 23 |
| Unjustified advocacy for Big Projects | 25 |
| Water Security for Some, Insecurity for Many | 28 |
| Agriculture | 31 |
| The Energy Future | 35 |
| The CDM Projects | 42 |
| Adaptation | 46 |
| In Conclusion | 49 |
| Some Useful Sources: | 52 |
| End Notes | 53 |

Acknowledgements

This report was made possible because of generous grant from the Swedish Society for Nature Conservation (SSNC) to South Asia Network on Dams, Rivers & People (SANDRP) which is a project of YUVA (Youth for Unity and Voluntary Action). The author would specifically like to thank Goran Ek and Hanna Wolf from SSNC, whose encouragement made the author take up this task. I would also like to thank KT Sweda and Dilip Bhadange from YUVA for readily agreeing to make the necessary arrangements to allow me to take this up. At SANDRP I would like to thank Sumit Bhattacharya. There are many others who contributed in making this report a reality, but specifically I would like to thank Lawman Singh ji and Jagveer Singh ji at GVMML (Gramin Vikas Nayaywale Mandal, Laporia in Jaipur District in Rajasthan), Dr Sudhivendrar Shanna, Nafisa D'Souza and Walter Mendoza at INECC are a few that immediately come to my mind. Thanks are also due to Vinay Aditya of Systems Vision who promptly agreed to design it in reader friendly way and help getting it printed.

However, the complete responsibility for all the limitations of this report is that of the author. India's Prime Minister Dr Manmohan Singh said on July 30, 2008, while releasing India's National Action Plan on Climate Change, "The Plan should be the subject of national debate. It will evolve and improve through a much wider interaction than has been possible so far". We hope this document adds some valuable resource for that debate.

Himanshu Thakkar

List of Acronyms

| | |
|--------|---|
| ABC | Atmospheric Brown Clouds |
| BCOSAP | Bangladesh Climate Change Strategy and Action Plan |
| BCM | Billion Cubic Meters |
| BCSD | Business Council for Sustainable Development |
| CBA | Cost Benefit Analysis |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| CFL | Compact Fluorescent Lamps |
| CWC | Central Water Commission |
| DFID | Department for International Development |
| EIA | Environment Impact Assessment |
| GHG | Green House Gases |
| GOI | Government of India |
| GM | Genetically modified |
| IEA | International Energy Agency |
| IITM | Indian Institute of Tropical Meteorology |
| INECC | Indian Network on Ethics and Climate Change |
| IPCC | International Panel on Climate Change |
| MU | Million Units |
| MoEF | Ministry of Environment and Forests |
| MT | Million Tonnes |
| MW | Mega Watts |
| MoWR | Ministry of Water Resources |
| NAPCC | National Action Plan on Climate Change |
| NREGA | National Rural Employment Guarantee Act |
| NWM | National Water Mission |
| NWP | National Water Policy |
| PM | Prime Minister |
| REC | Renewable Energy Certificate |
| RTI | Right to Information |
| SANDRP | South Asia Network on Dams, Rivers & People |
| SEZ | Special Economic Zones |
| SIA | Social Impact Assessment |
| SRI | System of Rice Intensification |
| SSNC | Swedish Society for Nature Conservation |
| TERI | The Energy Research Institute |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VER | Volunteer Emission Reduction |
| YUVA | Youth for Unity and Voluntary Action |

Executive Summary

The purpose of this study is to provide an Indian civil society view on the contents of the Indian government's national action plan to confront the threat posed by climate change. The study aims to highlight the equity issues, the options assessment for energy production and the needs for sustainable adaptation practices. The study also aims to give an overview of the available information resources about the impact of climate change on India and tries to map out various actors & their roles. However this is vast issue and this brief study cannot include all the aspects in this regard. The focus is more on water, agriculture and energy related issues, since these are the focus areas of the work of the South Asia Network on Dams, Rivers & People (SANDRP).

The Prime Minister of India released India's National Action Plan on Climate Change on June 30, 2008. The 47 page document, prepared by the Prime Minister's Council on Climate Change, is available at <http://pmindia.nic.in/Pg01-52.pdf>. In the NAPCC document the Government of India presents the challenges of a low carbon pathway through its eight missions: Solar Mission, Mission for Enhanced Energy Efficiency, Mission on Sustainable Habitat, Water Mission, Mission for Sustaining the Himalayan Ecosystem, Mission for a "Green India", Mission for Sustainable Agriculture and Mission on Strategic Knowledge for Climate Change. The Plan says "each mission will be tasked to evolve specific objectives spanning the remaining years of the 11th Plan and the 12th Plan period 2012-13 to 2016-17.... Comprehensive Mission documents detailing objectives, strategies, plan of action, timelines and monitoring and evaluation criteria would be developed and submitted to the Prime Minister's Council on Climate Change by December 2008".

However, the government has not consulted the public in general or even specific stakeholders while formulating the action plan or the mission documents. Even in the third week of February 2009, it is not known if (except in case of the National Water Mission) the mission documents have been submitted to the PM's Council by December 2008 as stated in the NAPCC. The NAPCC starts on a wrong foot with continued emphasis on "sustaining its rapid economic growth". India's huge majority of rural population and the poor, who depend on natural resources for their livelihood, would be most at risk due to the climate change. However, the National Plan is likely to work only to the advantage of the already privileged elite, with all the adverse impacts going to the share of already disadvantaged. This is particularly evident from the way the so called Clean Development Mechanism projects have progressed so far here.

In Water Sector, the lip service to conservation of wetlands, increasing groundwater recharge and irrigation efficiency notwithstanding the plan is status quoist in attempting to push for more big dams, irrigation projects, hydropower projects, interlinking of rivers and such other long distance water transfer projects. This is in spite of the increasing evidence of non performance of such projects. On the other hand, there are many examples where the community driven processes have shown that through local water systems, it is possible to achieve equitable, sustainable and pro poor development, but such systems have no worthwhile place in the plan. This is particularly true for Agriculture sector, where India's lifeline is groundwater, and which can only be sustained through local water systems. Here the emphasis on GM crops is completely misplaced and unjustified, in stead, what is required is sincere efforts to push organic farming and promoting water and resource efficient and also high yielding methods like the System of Rice Intensification. In Energy sector, while the emphasis on energy efficiency is welcome, the continued and increased reliance on mega thermal power plants, big hydropower and nuclear projects cannot be termed environment friendly or carbon friendly. Particularly when there is so little emphasis on peak hour power demand management.

For some of the key sectors and overall, this document also provides detailed recommendations from Civil Society groups, including from two widely attended meetings and from a discussion on Solution Exchange platform on water sector. The central message of the analysis of the process of formulation and content of India's National Action Plan is reflected in the title: *There is Little Hope here*. NAPCC lacks proper perspective, urgency and sincerity in taking note of contributions of various sectors and classes in India's current and future emissions. The plan is not based on any democratic process of assessing least cost options before the society. While there are a number of positive suggestions in the plan, they are not sufficient in inspiring confidence since we have yet to see effective action or action plans to ensure their implementation. It seems India is going to miss an opportunity to push for a people friendly and environment friendly development path.

Introduction

"Today, climate change, generated by the cumulative accumulation of greenhouse gas emissions in the atmosphere, through human economic activity, threatens our planet. There is a real possibility of catastrophic disruption of the fragile life-sustaining ecological system that holds this world together. Science is now unequivocal on this assessment... Without a careful long-term strategy, climate change may undermine our development efforts, with adverse consequences, across the board, on our people's livelihood, the environment in which they live and work and their personal health and welfare. It is also a challenge which encompasses the interests of both present and future generations."

Dr Manmohan Singh, Prime Minister of India¹

"The science is beyond dispute and the facts are clear. Sea levels are rising. Coastlines are shrinking. We've seen record drought, spreading famine, and storms that are growing stronger with each passing hurricane season."

Barack Obama, the then US President elect

Why this report

The purpose of this study is to provide an Indian civil society view on the contents of the Indian government's national action plan to confront the threat posed by climate change. The study aims to highlight the equity issues, the options assessment for energy production and the needs for sustainable adaptation practices. The study also aims to give an overview of the available information resources about the impact of climate change on India and tries to map out various actors their role. However this is vast issue and this brief study cannot include all the aspects in this regard. The focus is more on water and energy related issues, since these are the focus areas of the work of the SANDRP.

Climate Change

Climate change in IPCC (Inter-Governmental Panel on Climate Change) usage refers to any change in climate over time, whether due to natural variability or as a result of human activity. This usage differs from that of United Nations Framework Convention on Climate Change (UNFCCC) which defines climate change as, "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".² Recently³, according to Professor Chris Field, one of the

authors of the 2007 Intergovernmental Panel on Climate Change (IPCC) report, which predicted temperature rises between 1.1C and 6.4C over the next century, the IPCC report had seriously underestimated the scale of the problem and the future temperatures “will be beyond anything” predicted. The concentration of carbon dioxide rose to 392 parts per million in the atmosphere in December 2008, the highest in at least 800 000 years, and up by about a third since the Industrial Revolution.⁴

The contribution to the different countries towards climate change is different, currently and historically. The plea of the developing countries has rightly been that the climate change should also be seen from the per capita norm. Thus, the US per capita accumulated greenhouse gas emissions stand at 1100 Tons and India’s at 23 T, said an Indian official⁵. However, the situation is more complex than these numbers indicate. “If you look at the non-Annex I countries, 50 of them have higher per capita income than the poorest Annex I countries”, Robert Stavins of the Harvard Project on International Climate Agreements says⁶. This division of Annex-I (developed) and Non Annex-I countries comes from the UNFCCC protocol documents.

The Kyoto Protocol

The Kyoto protocol, agreed in 1997, came into force in 2005 with the signing by Russia. It agreed that the developed world will reduce the emissions by 5% from 1990 levels by 2008-2012. The protocol introduced carbon trading, was instrumental in putting in place an architecture that includes monitoring and verification systems, carbon markets, technology transfer funds and adaptation funds, the UNFCCC, among others. The protocol ends in 2012 and for the period after 2012, negotiations are to culminate in a meeting in Copenhagen in Dec 2009.

“Monitoring and verification systems, carbon markets, technology transfer and funds for adaptation have all been mobilized by Kyoto Protocol. I think this is a fabulous architecture that we can build on, on the road to Copenhagen.”

Evo de Boer, executive secretary of the UN climate secretariat

The Kyoto protocol is hopelessly flawed.

Prof Gwyn Prins, Director, LSE’s Mackinder Centre for the Study of Long Wave Events⁷

Numerous reports indicate that the Kyoto protocol has largely been a failure in curbing the emissions, not only because major polluters like the US and Australia were not signatory to it, but also because the mechanism that has been created neither had the strong enough norms nor the will to implement the norms that were in place. The emissions of the 40 industrialised countries are down 5% compared to 1990s levels, largely because of the collapse of the former Soviet Union and the Eastern Europe countries. If the decline due to these is subtracted, the emissions have grown by about 10% since 1990s. Even for the Eastern Europe economies, the emissions have gone up by about 7.4% during 2000 to 2008. The worst offenders in the Annex 1 countries include Turkey (95% increase), Australia (27.3%), US (14.4%). Some countries have managed to reduce their emissions during this period, including Germany (18.2%), UK (15.1%)⁸.

Climate Change and India

The historical share of India in the cumulative global emissions, measured over the period 1900-2005, amounted 2%. For 1900-2050 period, this is likely to double to 4%.¹⁰ According

to the World Bank¹¹, "on average, emissions have risen at about 3.3 percent annually in the (South Asia) region since 1990 – more rapidly than in any other region, except the Middle East."

Not much work has been done in terms of predicting the impact of climate change in India. The more severe impacts would be in terms of melting of Himalayan glaciers, the rise in the sea levels and impacts on the coastal areas. From some preliminary work, it is projected, based on a combination of global and regional climate models, that over the inland regions of the Indian sub-continent, the mean surface temperature may rise by 3° C by 2050 and between 3.5 - 5.5° C by 2080. The annual precipitation may increase by 2.16 - 5.97 % by 2020 by 5.36 - 9.34 % by 2050 and by 7.48 - 9.9 % by 2080. The monsoon rainfall may increase to even greater extent, as winter rainfall is expected to fall. The maximum increase is expected in central India. Most of the river basins have experienced decreasing trend in annual rainy days with maximum decrease in the Mahanadi basin. A combination of increase in heaviest rainfall and reduction in the number of rainy days suggest the possibility of increasing severity of floods.¹² (The following cartoon is from Nov 2007 issue of Eco-ethic newsletter dated Nov 2007.¹³)



India's National Action Plan on Climate Change

"This week, in Britain, we committed ourselves to a low carbon future. A Climate Change Act, the first of its kind, means that greenhouse gas emissions must legally be cut by 80% by the middle of the century. The commitment recognizes that a shift of this scale needs action now. So on the path to 2050, there will be "carbon budgets" for every five year period, and like the 2050 goal, they will be legally binding."

David Miliband, Former Secretary of State for Energy and Climate Change, currently Secretary of State for foreign and commonwealth affairs, UK¹⁴

The fabricated carbon market with CDM at its heart has helped EU to claim success in achieving emission reduction while actually increasing its emissions by 13%. By purchasing so called offsets from countries such as China, Britain, for example, proclaims itself leader in the fight against climate change.

Dominic Lawson¹⁵

"India needs local efforts to fight climate change, not expensive methods being advocated by the European Union."

Kapil Sibal, India's Science and Technology Minister¹⁶

India's National Action Plan on Climate Change (NAPCC) was released by India's Prime Minister on June 30, 2008. The 47 page document, prepared by the Prime Minister's Council on Climate Change, is available at <http://pmindia.nic.in/Pg01-52.pdf>, though strangely, this is massive 18.1 MB file which most people among the tiny minority of internet connected and English speaking people in India would find difficult to download. The PM's Council on Climate Change was formed a year earlier, and includes only one person who can be called a civil society representative. In the NAPCC document the Government of India presents the challenges of a low carbon pathway through its eight missions: Solar Mission, Mission for Enhanced Energy Efficiency, Mission on Sustainable Habitat, Water Mission, Mission for Sustaining the Himalayan Ecosystem, Mission for a "Green India", Mission for Sustainable Agriculture and Mission on Strategic Knowledge for Climate Change.

The Plan says "each mission will be tasked to evolve specific objectives spanning the remaining years of the 11th Plan and the 12th Plan period 2012-13 to 2016-17... Comprehensive Mission documents detailing objectives, strategies, plan of action, timelines and monitoring and evaluation criteria would be developed and submitted to the Prime

Minister's Council on Climate Change by December 2008". However, the government has not consulted the public in general or even specific stakeholders while formulating the action plan or the mission documents. As we finalise this note on February 17, 2009, it is not known if the mission documents (except the National Water Mission) have been submitted to the PM's Council by December 2008 as stated in the NAPCC.

The wrong priorities of the governments in India got highlighted when a Bench of the Delhi High Court asked the local government agency on February 4, 2009, "Why are you so enthusiastic in banning cycle rickshaws? Why do not you issue guidelines limiting the number of cars a person can have in the city?"

That unsustainable consumption is the cause of the climate change is accepted by most people. Reducing and diminution of such consumption should be a priority when the frightening consequences of climate change are staring at large sections of people in India, particularly the poor people who are much more and directly dependent on the natural resources at risk. In such a situation, India's NAPCC starts on a wrong foot when the opening lines say, "India is faced with the challenge of sustaining its rapid economic growth" and also keeps repeating this.

For example, on the next page it says, "Maintaining a high growth rate is essential for increasing living standards of the vast majority of people and reducing their vulnerability to the impacts of climate change." This sounds contradictory when it is well known that the current model of "rapid economic growth" of India is unsustainable, as the natural resource base of that growth is fragile and is at great risk already and is making the "vast majority of people" more and not less vulnerable "to the impacts of climate change". Such growth model is in fact hastening the impact of climate change. The NAPCC thus contradicts the famous quotation of Mahatma Gandhi (Need versus Greed) used on page 1 of the report and also its advocacy for "sustainable lifestyles across the globe". There is nothing in the report that shows that NAPCC is serious about this within India. At several places in the Plan, the Government of India (GOI) talks about "qualitative change in direction that enhances ecological sustainability", but there is nothing in the plan or other actions of the GOI to indicate how this qualitative change in direction is going to be achieved.

The NAPCC rightly acknowledges, "Climate change may alter the distribution and quality of India's natural resources and adversely affect the livelihood of its people. With an economy closely tied to its natural resource base and climate sensitive sectors such as agriculture, water and forestry, India may face a major threat because of the projected changes in climate."

The NAPCC has been quite appropriately described by the well known economist and author of the report on economics of climate change Nicholas Stern¹⁷ as "the only course that was available before" the Indian government. Clearly, this opportunity seems to have been lost, looking at the NAPCC in the context of various plans, projects and practices of the government. The "action plan" is a misnomer. It has no specified emission goals, no defined outcomes for a gamut of missions. China, in contrast, in 2007 set voluntary quantitative targets for 2010¹⁸.

In an open letter addressed to the Prime Minister, 27 civil society groups have said no information was shared on the draft plans till date and there had been no process of consultation with civil society or independent scientists, researchers and experts¹⁹. "In this context, we demand that the draft plan be opened up for public debate, this

matter be discussed widely with all stakeholders and a process for regional public consultations be set in place. This will ensure that the resulting document reflects the broader views of the Indian people and not a few highly placed officials or experts", the letter said.

In a strong critique of the NAPCC, Hadida Yasmin²⁰ has said, "Reading the NAPCC report, it seemed that the government is very much reluctant to let the nation know the devastating effects of climate change" and that the report lacks perspective and urgency. Indeed the only commitment that the report makes (page 2) about restricting India's emissions is a non commitment: "In this connection, India is determined that its per capita greenhouse gas emissions will at no point exceed that of developed countries even as we pursue our development objectives." The idea of India's per capita emission ever reaching the level of developed countries is a toxic, nightmarish and impossible thought.

The government does not even deny that the NAPCC formulation process was non participatory and non transparent. In fact, at a public meeting on climate change²¹ on Nov 10-11, 2008, there was a clash between two ministers of GOI. Speaking at the meeting in Delhi, Mami Shankar Aiyar, Union Minister for Panchayati Raj questioned the usefulness and effectiveness of such "bureaucratic" plans, as they do not involved local communities or panchayats. He categorically stated that his ministry 'was not consulted' during the formulation of the plan. "It reflects a major lacuna in what we want to do to mitigate the adverse impact of climate change on local communities", he said.

At this meeting the view of the Union Minister for Science and Technology, which is a nodal ministry on climate change issues, was shocking "till scientific data is collected and the causes and impacts of climate change is established, it would be difficult for the government to involve panchayats or local communities". This notion that the panchayats and local communities and for that matter anyone outside the government have nothing to contribute in the process reflects an undemocratic, elitist mindset.

Coordination Mechanism

The NAPCC ends with mentioning that an advisory council on climate change, headed by the Prime Minister has been formed, in order to set out broad directions and provide guidance to coordinate national actions and review of the NAPCC. In addition, a coordination unit for the implementation of NAPCC will be set up in the Ministry of Environment and Forests and another in the Ministry of Science & Technology for the research and development work. This coordination mechanism does not inspire great confidence, considering the experience so far, where the whole process of NAPCC has gone on without any transparency and without any participation of the people of the country. Moreover, the absence of coherence between the actions of the government and the plans in NAPCC and also absence of key issues in the NAPCC raises further doubts about this mechanism.

Himachal Pradesh tries to grab the CDM opportunity

On August 29, 2008, the government of the North Indian state of Himachal Pradesh, in a pioneering effort, formed a state level governing council on climate change under the chairmanship of the Chief Minister²². On Sept 19, 2008, the state govt made the Dept of

Environment and Scientific technologies as the nodal agency "for routing the proposals for further approvals under the CDM regime in the state".²⁵ On October 16, 2008, this department held a workshop on "Climate Change: Perspectives and Opportunities in context of Himachal Pradesh".²⁶ Earlier in May 2008, Himachal Pradesh govt came out with a draft state policy on climate change, largely to take the benefit of the CDM and carbon trade opportunities. The Policy is likely to be finalised by March 2009. The state chief minister wants to make the state first carbon neutral state of India²⁷. Manshi Asher, a Himachal Pradesh based researcher activist said about these efforts, "It is shocking and ironic that, that the Himachal government, instead of addressing these issues (of impact of climate change on people), is looking to assist the private companies in green washing the real impacts of these projects through CDM".²⁸

Corporate response

The Business Council for Sustainable Development has reportedly submitted a *white paper* to the Prime Minister's Council on Climate Change in response to the NAPCC. A Press Release²⁹ issued on February 4, 2009, at the World CEO Forum, organised by TERI (The Energy Research Institute) Business Council for Sustainable development, a partner of the World Business Council for Sustainable Development, Geneva, the most pertinent statement came from Nitin Desai, Chairman, TERI-BCSD India & Former Under Secretary General of the United Nations, who, in his address said, "Private and public enterprises will have to move beyond this opportunistic use of the Kyoto Protocol's flexibility mechanism and beyond feel-good CSR (Corporate Social Responsibility) projects. First, they must test their entire growth strategy against the emerging reality of carbon constraining policy regimes and the social compulsion to restrict GHG emissions. They may not face this constraint now. But they will in the lifetime of the plants and facilities and market presence they are establishing. Second, enterprises dependent on energy, water, biotic products or those located on a coast or near a river or water body will face environmental and economic conditions that are radically different from what they have faced in the past."

South Asia Response is being guided foreign aid

As preamble to the *Conference on Climate Change and Re-examination of Bangladesh's Development Strategy*, organized by Bangladesh Poribesh Andolon and Bangladesh Environment Network held on January 2, 2009 said, "Instead of domestic introspection, Bangladesh's response to climate change is getting shaped largely by foreign advice and funding and incorrect ideas are often being promoted as response to the climate change challenge. For example, Bangladesh Climate Change Strategy and Action Plan (BCCSAP), the document that Bangladesh government prepared with help from DFID in preparation of its participation in the "UK-Bangladesh Climate Change Conference: Bangladesh Facing the Challenge" held in London in September 2008 puts a lot of emphasis on embankments and polders as adaptation measures. Yet the geology of the Bengal delta shows that sedimentation caused by Himalayan rivers is the most important bulwark that this delta can have against the rising sea level caused by global warming. Embankments and polders

unfortunately harm this natural bulwark by obstructing the process of sedimentation. Also the likelihood of the Himalayan Rivers having excessive flow in the monsoon months and becoming completely dry in the non-monsoon months makes even more imperative for Bangladesh to make it easier for the river water to spread over the floodplains in the summer and to be able to retain much of this overflow for use in the winter. Embankments that cordon off floodplains from the river channels do exactly the opposite. Thus the climate change challenge suggests that instead of the Cordon approach to rivers, Bangladesh should adopt the Open, ecological approach. By emphasizing embankments and polders, BCSSAP is therefore pushing the country in the wrong direction. This example shows that just seeking and getting outside financial assistance will not solve climate change challenge that Bangladesh faces."

Similarly, the Nepal response is also funded by the foreign aid²⁸. The government of Nepal and the United Nations Development Programme (UNDP) signed a \$ 13 million project for the preparation and implementation of National Adaptation Programme of Action (NAPA) to climate change on Nov 14, 2008. The Department of International Development (DFID) of the United Kingdom is providing \$ 375,000 for the project, while the government of Denmark and UNDP/Global Environment Facility/Least Developed Country Fund are chipping in \$ 0.2 million and \$ 0.25 million respectively. "One of the objectives of the project is to enable the government to respond strategically to the challenges and opportunities posed by climate change through the preparation of National Adaptation Programme of Action, a strategic framework of action", the release stated. The foreign aid by itself may not be a problem as long as it is allowing democracy, local people and environment due place in the process.

NAPCC: A Critical Assessment

Issues of Process: As we saw above, there was no participatory or transparent process in formulation of NAPCC or even the specific mission plans. In fact the India's minister in charge of nodal ministry for this effort says there is no use of such a process. This is shocking and unacceptable. When this issue was raised before the joint secretary, Union Ministry of Environment and Forests in September 2008, he said that participatory process should be taken up during formulation of the mission plans, but that too has not happened.

Hiding behind the Poor: The Indian government, as also other developing country governments say that they have no obligation to reduce GHG emissions, following the 'common but differentiated responsibility' as described in the United Nations Framework Convention on Climate Change. The question is, why should the same principle not be followed while considering the differentiated contribution of the different sections of the people within India?

Limited solutions: All the solutions offered so far suffer from the limitation in that they do not advocate reduction in consumption. They all seem to suggest the current consumption levels and even further growth in the same is possible to be sustained just by shifting to renewable sources of energy and electricity and by adopting some new technologies. However, can the earth's environment sustain this if all the people of the earth were to

aspire for the level of consumption now being used by the US and Western Europe? That question is neither raised, nor answered by the solutions proposed so far. Similarly for a country like India it may be better to develop a model where villages or a cluster of villages develop self-reliant economies, including energy and electricity, suggests Bharat Dogra, well known Indian columnist.²⁹

In lighter vein: The cartoon below³⁰ highlights some of the absurd work that is done in the name of addressing climate change.



The Economic Times Nov. 4, 2008

The Water Sector

It is regrettable that India is not basing its climate policy on sound scientific and economic analysis.

Prof N H Ravindranath, Indian Institute of Science, Bangalore

India is going to be most affected by climate change, and in our perspective, much more vulnerable than China, Europe and the United States.

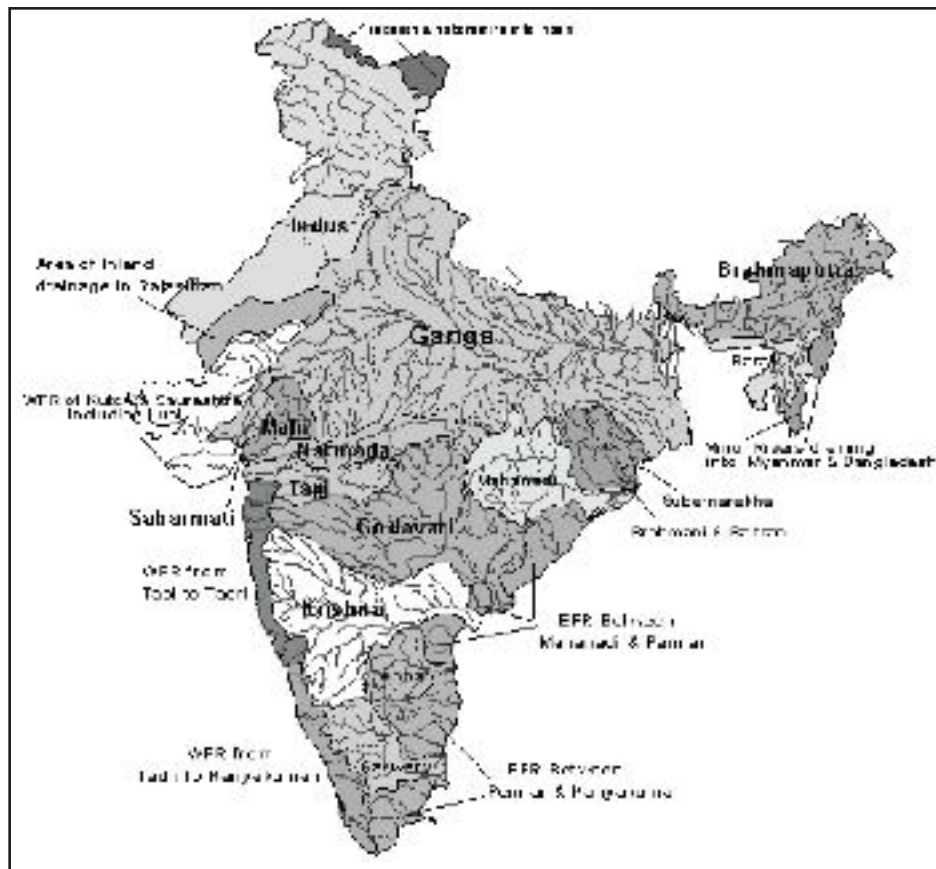
Erik Solheim, Norway's minister for environment and international relations³⁷

Impacts: Broadly, the climate change is likely to affect the hydrological cycle, which will result in (i) more rainfall in lesser time; (ii) decrease in number of rainy days; (iii) overall increase in precipitation; (iv) increased glacial melt-runoff initially and then afterwards decrease; (v) increase in runoff but less ground water recharge; (vi) increase in flood events particularly of flash floods; (vii) increase in drought like situations; and some other related issues like (viii) increase in landslide events in hilly areas etc. (The map of India on the next page, showing the various river basins is taken from the NWM of GOI.)

Impact on Monsoon: The south-west monsoon season in India is the primary source of water. There is increasing evidence that the monsoon is getting affected due to the global warming and also due to the Atmospheric Brown Clouds³⁸.

According to a National Institute of Hydrology study, "Seasonal analysis shows maximum increase in rainfall in the post-monsoon season followed by the pre-monsoon season. There were least variations in the monsoon rainfall during the last century and winter rainfall has shown decreasing trend. Most of the river basins have experienced decreasing trend in annual rainy days with maximum decrease in the Mahanadi basin. The heaviest rain of the year has increased by 9 - 27 mm per 100 years over different river basins, being maximum increase for Brahmani & Subarnarekha river basin. A combination of increase in heaviest rainfall and reduction in the number of rainy days suggest the possibility of increasing severity of floods."³⁹

According to the projections by this study, "The increase in annual mean precipitation over the Indian sub-continent is projected to be 7 - 10% by 2030s. Winter precipitation may decrease by 5 - 25% in the Indian sub-continent. An increase of 10 - 15% is projected in area average monsoon rainfall over the Indian sub-continent. Over northwest India, during monsoon season an increase of about 30% or more is suggested by 2050s. The western semiarid margins of India could receive higher than normal rainfall in the warmer atmosphere. It is likely that date of onset of summer monsoon over India could become more variable in future. IPCC (2001) has indicated that variability in Asian summer monsoon is expected to increase along with changes in the frequency and



intensity of extreme climate events in this region. All climate models simulate an enhanced hydrological cycle and increases in annual mean rainfall over South Asia".³⁴

The working group report on water resources for the 11th five year plan has said among other things, "the rainfall will shift towards winter... An increase in mean temperatures would increase the energy flux for evapo-transpiration. The increased potential evapo-transpiration in the forests could trigger major changes in the environment, and in the farms it would result in an increased crop water requirement. The changes in seasonal temperatures could change the crop seasons."³⁵

According to Dr PV Joseph, former Director of the India Meteorological Department, "A new finding is that the sea surface temperature of the equatorial Central Indian Ocean has had a phenomenal increase of about 1.5 degrees Celsius during the last 50 years, this might weaken the monsoon heat engine". He went on to say that due to this, the monsoon rainfall in Kerala over the last 100 years have shown falling trend.³⁶

Impact on River Water Flow: According to India's Initial National Communication³⁷ to UNFCCC in 2004, a decline in total runoff for all river basins, except Narmada and Tapi is projected (NAPCC page 14). An assessment of the implications of climate change for hydrological regimes and water resources in the Brahmaputra basin using scenarios indicates that, once the snow melt effect has passed, by the year 2050, the average annual runoff in the Brahmaputra River will decline by 14%.³⁸

The Indian Institute of Science has taken up a study on "Assessment of Water Resources under Climate Change Scenarios at River Basin Scale" in Feb. 2006 for Mahanadi and Krishna basins, with the objective "To provide guidelines to the policy makers regarding adaptation of water resource projects to mitigate the impact of climate change".

The findings of a study by IITM (Indian Institute of Tropical Meteorology) for impact of climate change on water resources including annual rainfall as well as annual flows in the three basins (Ganga, Krishna, Godavari) are given in the table here.³⁹

| River Basins | Baseline (1961-1990) | | Future (2071-2100) | |
|--------------|----------------------|------------------|---------------------|------------------|
| | Annual Rainfall, cm | Annual flow, BCM | Annual Rainfall, cm | Annual flow, BCM |
| Krishna | 91 | 60 | 112 | 67 |
| Godavari | 166 | 98 | 201 | 116 |
| Ganga | 134 | 482 | 120 | 343 |

A study by the Govt of India's Central Water Commission⁴⁰ of the historical data of the river flows in Ganga basin gives positive trend line during non monsoon season at Rishikesh, Bhimgoda, Kanpur, Varansi, Patna and Farakka barrage. The figures at these locations give negative trend-line during monsoon and over annual figures (except in case of Patna site). The positive trend-line in non monsoon months can be due to number of reasons, including glacier melt due to climate change and due to the releases from the upstream storages. The negative trend line during monsoon can be attributed to increasing storages and use in the upstream as these factors have not been taken care of in the analysis.

The changed river flows will have many implications, one of the significant one is the impact on dam safety. The operations of the existing projects will have to be revisited to assess it from the dam safety perspective and also the implications of the change in flows on the upstream submergence and downstream floods.

GROUNDWATER: India's threatened Water lifeline

The real water lifeline of India is groundwater. Over two thirds of foodgrains production coming from the irrigated lands is contributed by lands irrigated by groundwater. Over 85 % of rural and over 50% of urban and industrial water supply comes from groundwater sources. That water lifeline is in precarious situation. To illustrate, in Rajasthan, 20% of the total of 236 blocks were safe (where the groundwater use is below 70% of the natural recharge) in 1984. In 2007, only 32 blocks remained safe. In fact the number of overexploited blocks (groundwater use above 100% of potential) in the period went up from 12 to 140, number of critical blocks (where the groundwater use is above 90% level) went up from 11 to 50 and number of semi critical blocks went up from 10 to 14⁴¹.

"India has over leveraged its groundwater for many years to help sustain economic growth. The hydro debt is now so large in many areas that this bubble is coming dangerously close to bursting" says Dominic Waughray, senior director at the World Economic Forum in charge of Environmental Initiatives⁴².

"It is obvious that the projected climate change resulting in warming, sea level rise and melting of glaciers will adversely affect the water balance in different parts of India and quality of ground water along the coastal plains. Climate change is likely to affect ground water due to changes in precipitation and evapo-transpiration. Rising sea levels may lead to increased saline intrusion into coastal and island aquifers, while increased frequency and severity of floods may affect groundwater quality in alluvial aquifers. Increased rainfall intensity may lead to higher runoff and possibly reduced recharge."

"India's Initial National Communication to the United Nations Framework Convention on Climate Change" published by Ministry of Environment and Forests, GOI⁴³

Besides over exploitation, a major cause for the plunging groundwater levels is the destruction of the systems that were leading to groundwater recharge, including the rivers, the tanks, the wetlands, the forests, the flood plains and so on. Climate change would put this lifeline under greater threat.

The Seawater ingress with the rising sea-levels is also impacting groundwater quality. According to a recent report⁶⁶, the sea levels in some areas in the Bay of Bengal are rising at a rate of 3.14 mm a year against the average rise of 2 mm per year. The rising sea levels are causing salt water to flow into the Ganga River, threatening its ecosystem and turning vast farmlands barren in the country's east. A study revealed surprising growth of mangroves along the Ganga River. Pranabes Sanyal and the department of Oceanography at the Kolkata-based Jadavpur University spotted the mangrove plants, a rare phenomenon along the Ganges river belt, where east India's biggest city of Kolkata with 12 million people lies. "This phenomenon is called extension of salt wedge and it will salinate the groundwater of Kolkata... and we have already spotted more saline water fish in the river," said Sanyal. Such impacts are likely to increase all along the Indian coast.

Quality problems: The govt of India informed the Supreme Court in an affidavit in November 2008⁶⁷ that 0.217 million villages were facing serious problems of contamination of their drinking water sources. Fluoride affected 31305 villages, salinity affected 23495 villages, iron contamination affected 118088 villages, arsenic affected 5029 villages, nitrate affected 13958 villages and multiple factors affected 25092 villages. These problems are likely to increase with the climate change impacts as groundwater recharge decreases, groundwater use increases due to increased temperatures and due to irregular rains and as the sea levels rise.

Glaciers

The Himalayan region, called the "Water Tower of Asia", supports 9575 glaciers in India (Indus basin: 7997; Ganga basin: 968; Teesta: 449; Brahmaputra 161) having an area of about 18054 km² and a volume of about 1291 km³. The main river basins fed by glaciers are the Indus, which rises near Mansarovar in Tibet; the Ganga that originates from Gangotri glacier in Uttarakhand; and the Brahmaputra, which also starts its journey from Mansarovar in Tibet but eastwards. During lean season, river flows in these basins largely depend on the glacier melt which is vital for all kind of human and environmental activities. The temperature rise is going to affect the natural process of glaciation and de-glaciation and thus the human and environmental activities.⁶⁸

"In fact, about half of the warming (of atmosphere at higher elevations like the Himalayan-Tibetan region) that is causing the melting (of the glaciers) in the region is likely due to ABC (Atmospheric Brown Clouds)", according to Prof Veerabhadran Ramanathan, chair of the UNEP's Project ABC⁶⁹. Another recent study⁷⁰ suggests that biomass combustion contributes 70% of the soot in the brown cloud. However, the Indian

"Our food security comes largely from irrigated areas of Punjab, Haryana and Uttar Pradesh whose rivers are fed by glacier melting in the Himalayas. The Himalayas are rightly called the "Water Tower of Asia" and contain the largest body of ice outside the polar regions providing critical dry season and long term water storage. 1.5 billion people live in the basins of rivers that rise in the Greater Himalayas. There is a gap in our understanding of the Himalayas and we need to build a knowledge-based partnership of affected countries".

*Dr Manmohan Singh, Pma Minister of India*⁷¹

minister for science and technology and some other experts dismiss the claim that ABC could be affecting glacier melt.²⁰

Specifically about the Himalayan glaciers, the IPCC has predicted, "Glaciers in the Himalayas are receding faster than in any other part of the world and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming at the current rate. The total area of the glaciers will likely shrink from the present 500 000 to 100 000 sq km²¹ by the year 2035." However, MWR, Govt of India, in its report in June 2008 has said that this IPCC prediction is overly pessimistic and does not seem to be realistic considering GSI studies.²²

The UNDP report of 2007-08 has said about India:

- The flow of the Indus, which receives nearly 90% of its water from upper mountain catchments, could decline by as much as 70% by 2080. This is likely to be for the flow in non monsoon months.
- The Ganges could lose two-thirds of its July–September²³ flow, causing water shortages for over 500 million people and one-third of India's irrigated land area.
- Projections for the Brahmaputra point to reduced flows of between 14-20% by 2050.

Basin-wise areas and volumes of Indian glaciers

| Basin | | No. of Glaciers | Area (sq km) | Volume (cubic km) |
|-------------|-------------|-----------------|--------------|-------------------|
| Indus | Ravi | 172 | 192.74 | 8.04 |
| | Chenab | 1278 | 3058.99 | 206.15 |
| | Jhelum | 133 | 94.18 | 3.30 |
| | Beas | 277 | 599.06 | 36.94 |
| | Sutlej | 926 | 1250.86 | 60.99 |
| | Indus | 1796 | 2163.46 | 104.60 |
| | Shyok | 2638 | 7105.66 | 601.71 |
| | Kishanganga | 222 | 174.28 | 5.93 |
| | Gilgit | 535 | 8240 | ND |
| Basin Total | | 7997 | 14723.63 | 1027.66 |
| Ganga | Yamuna | 52 | 144.47 | 12.21 |
| | Bhagirathi | 238 | 735.43 | 67.02 |
| | Alaknanda | 407 | 854.59 | 90.72 |
| | Chagra | 271 | 729.42 | 43.77 |
| Basin Total | | 968 | 2483.91 | 213.72 |
| Brahmaputra | Teesta | 449 | 705.54 | 39.61 |
| | Arunachal | 161 | 223.37 | 9.96 |
| Basin Total | | 610 | 928.91 | 49.57 |
| Grand Total | | 9575 | 18054.05 | 1290.95 |

(Source: Preliminary Consolidated Report on Effects of Climate Change on Water Resources, Ministry of Water Resources, June 2008)

Note: The area total (and sub total for the Indus basin) does not include the Gilgit glacier area, the volume of the Gilgit basin glaciers is also not given in the above document.

According to the Geological Survey of India, the observed retreat in the Indus basin glaciers is varying from 2.5 m/year to 40 m/year. However, average annual retreat of the majority of the glaciers is about 0.30% of their total length.³⁶ The glaciers in the Ganga basin are retreating at the rate of 3.0 to 48.8 m/year. The largest glacier in the Ganga basin is the Gangotri glacier with the glacier area of 286 sq. km.

According to the report "The Melting Himalayas" by the International Centre for Integrated Mountain Development in Kathmandu, "Many Himalayan glaciers are retreating faster than the world average and are thinning by 0.3–1 m/year. The rate of retreat for the Gangotri glacier over the last three decades was more than three times the rate during the preceding 200 years. Most glaciers studied in Nepal are undergoing rapid deglaciation... in the last half-century, 82 percent of the glaciers in western China have retreated. On the Tibetan plateau the glacial area has decreased by 4.5 % over the last 20 years and by 7% over the last 40 years... One concludes that with a two degree Celsius increase by 2050 35% of the present glaciers will disappear and runoff will increase, peaking between 2030 and 2050... Flow for the most glaciated subcatchments (glaciation greater than or equal to 50 percent) will attain peaks of 150 and 170% of initial flow around 2050 and 2070 in the west and the east respectively before declining until the respective glaciers disappear in 2086 and 2109."³⁷ Increased threat of Glacier Lake Outburst Floods and increased sedimentation are some other implications of the melting glaciers.

China's glaciers have shrunk by 5% since 1950s. The volume of China's nearly 47 000 glaciers has fallen by 3000 sq km in the last 25 years, according to the Chinese Academy of Sciences.

Water Sector in NAPCC: The nodal ministry for the National Water Mission (NWM) under the NAPCC is the Union Ministry for Water Resources. The information about the NWM is very brief in the NAPCC document. It generally maps a business as usual approach. There are some welcome statements about increasing water use efficiency, recycling urban waste water, protecting wetlands, etc, but these have been declared intentions for about two decades without significant serious action. It talks about "regulatory mechanisms with differential entitlements and pricing", which can possibly create more problems than solutions for the poor. Strangely, it mentions low temperature desalination as the only "new and appropriate technologies". NWM section of the NAPCC mentions that National Water Policy will be revisited, but only "in consultation with states" and only to "ensure basin level management strategies". It advocates "special effort to increase storage capacity". This fortunately includes a mention of underground storages, but in absence of clear plans, programmes, resources and implementation mechanisms, it could end up paying lip service to underground storages and instead continue the current overwhelmingly dominant strategy of storages through BIG DAMS.

The NWM section in NAPCC document (and also NWM itself, see the NWM section below) has nothing about the best options available for different agro-geo climatic situations, about a credible participatory process to arrive at appropriate NWM, about learning from the rather abysmal and deteriorating performance of past big projects, about prioritising for best options for the water needs of already water scarce people and areas, about right based approach for the basic needs of the people and so on.

Looking at the broader NAPCC, we also see that the cross sectoral linkages are missing. Thus, in the section on "National Mission for Sustainable Agriculture", there is nothing about water efficient methods like the system of rice intensification and how these can be

promoted with greater sincerity and could also be tried for other crops. Similarly, while the section on "National Mission for Sustaining the Himalayan Ecosystem" mentions increased vulnerability of 45 million residents of Himalayan ecosystem due to climate change, it does not go into the dos and don'ts for the kind of projects that should or should not be taken up in these areas and how the massive plans for the hundreds of big hydropower projects in these regions would actually increase this vulnerability, both for the hill people and the downstream plain people.²⁶

Among the desirable aspects of the NAPCC is the section 3.4.4 (page 31) on "Conservation of wetlands". One hopes that this more urgently necessary aspects will indeed be taken to its logical conclusion. The trouble, here is likely to be the turf war between the Ministry of Water Resources (MoWR) and the Ministry of Environment and Forests (MoEF). Indian water resources establishment, led by the MoWR, sees no role for itself in such conservation issues. On the other hand, the MoEF, which has a role and which has come out with a set of draft guidelines²⁷ for regulation of wetlands in India, is not likely to be given in role in NWM by the MoWR. This turf war is not likely to help the cause of wetlands, which is supposed to include the rivers, among other wetlands.

National Water Mission

NWM is one of the eight missions under the NAPCC, and the nodal ministry for the same is the Union Ministry of Water Resources (MoWR). The ministry put up the two volume DRAFT report of the NWM on its website some time during February 2009, before that the website of the ministry had no information about the NWM. Needless to add, there was no participatory process, not even in the namesake, in formulation of the NWM.

According to the DRAFT report, a High Level Steering Committee was set up in the MoWR. The High Level Committee, in its meeting on Aug 7, 2008, had in turn set up six sub committees to prepare the NWM, as under²⁸:

- a. Policy and institutional Framework;
- b. Surface Water Management;
- c. Ground Water Management;
- d. Domestic and Industrial Water Management;
- e. Efficient Use of Water for Various Purposes; and
- f. Basin Level Planning and Management.

There is no information in the report about who all were the members of many of these subcommittees, who were the members of the High Level Steering Committee, what was the criteria for selection of the members of these committees, and what was the process of formulation of the reports of the sub committees or that of the NWM. The entire process

"Water bureaucracy or water professionals in public service in India tend to put the procedures and regulations far above the professional knowledge and professional propriety. The universal principles of hydraulics could be over-ridden by an old circular of the concerned authority, and so on. Departments of the state may change from Irrigation to Water Resources, but the personnel of the line Department are unlikely to get unshackled from the history...A large programme for re-training, complete re-building of attitudes, etc. would become necessary."

Report of the NWM's sub committee on Policy and Institutional Framework²⁸

remain non transparent and non participatory for anyone outside the government. For some mysterious reasons, the ministry chose call this "a consultative process".

The NWM gives a long laundry list of strategies, which have been divided into four sections:

1. Assessment of Impact of Climate Change;
2. Changes in Policies and Practices;
3. Measures for Mitigation; and
4. Measures for Adaptation.

Some noteworthy points in regard to the suggested strategies include the following

- "Water harvesting provided this is socially desirable and provided that corresponding water saving is possible elsewhere in the region". This recommendation came from the sub committee on policy and institutional framework, particularly for "closed basins". At the outset this seems like an unacceptable proposition, since it says that the existing water use (irrespective of its justifiability or lack of it) will get priority over rainwater harvesting for the deprived sections.
- Review of National Water Policy in consultation with all the stakeholders (however, the ministry does not seem to include the farmers, civil society organisations or other water using citizens of the country among the stakeholders), not just states, as recommended by NAPCC.
- An important recommendation of the sub committee on policy and institutional framework on the environmental flows is, "In view of the additional stress which climate change may cause to both hydrology and to the ecology of the affected area, maintaining aquatic ecology through environmental flow requirements as decided after considering the needs of various uses and the trade-offs, will become even more important. Much work needs to be done for deciding an acceptable methodology." And "Improved management of wet lands has to be a part of the water policy."
- Most of the strategies are on the lines of business as usual approach. Thus it includes building more major and medium irrigation projects, additional and carry over storages, inter linking of rivers (inter-basin transfer of water), among others. There are no credible suggestions for addressing the issues of (mis)governance.

The NWM has also proposed a monitoring and evaluation mechanism for "for identification of the most appropriate measures from the national perspectives and for ensuring effective implementation of the identified activities". A Board under the chairmanship of Union Minister of Water Resources is proposed to be apex body for framing the policies and guidelines for implementation of the NWM. The proposed Board will have representative from States and Central Ministries / Organizations, experts, representatives from professional organizations etc. A High Level Steering Committee headed by the Secretary, Ministry of Water Resources and comprising of members representing concerned Ministries, Experts, Non-Governmental Organisations etc. has been constituted. MoWR has also constituted a Technical Committee on Climate Change & Water Resources under the Chairmanship of Chairman, Central Water Commission.

MoWR proposes to have a Mission Secretariat headed by a Mission Director, to be supported by two Advisors – one Advisor to be fully devoted to technical evaluations and

the other for co-ordination and monitoring. The three cells created in NIH, CWC and Brahmaputra Board and the one proposed at Central Ground Water Board for research and studies on impact of climate change on water resources is to provide necessary input and assistance to the Mission Secretariat. State Governments would be requested to set up Monitoring Committee and Climate Change Cell at appropriate level. According to the NWM, The total estimated additional fund required during XI plan (April 1, 2007 to March 31, 2012) for addressing the specific issues related to impact of Climate Change on water resources works out to be Rs 286.56 billion.

Attempts to push misgovernance under the carpet called climate change: In recent times, a number of events show that climate change is being used by some of the agencies in India to push the misgovernance under the carpet. Two recent examples in this regard are the flood disaster in the Kosi basin in North Bihar starting from August 18, 2008 and the flood disaster in Mahanadi basin in Orissa starting from September 18, 2008. In both the cases, the disasters were man made and could have been avoided if those in charge of the embankment maintenance in case of Kosi and Hirakud dam operation in case of Orissa had done their job as required. Unfortunately, neither did and we had these unprecedented man made disasters. However, many reports including from reputed agencies like the BBC and TERI, talked about these disasters in the context of climate change.

Specifically, for example, a news report⁶⁰ quoted Dr M R Bhutiyani, a scientist at the College of Military Engineering Pune, saying "The Kosi phenomenon occurred mainly because of very high precipitation in the upstream areas". This statement is completely wrong. When the embankment on the eastern side of Kosi river breached on August 18, 2008, the flow of water in Kosi river was 0.144 million cusecs (cubic feet per second), when the embankment and the downstream barrage are supposed to have a designed capacity of 0.95 million cusecs⁶¹. This quantum of 0.144 million cusecs is normal flow in the river during monsoon and in fact way below the peak flood of upto 1 million cusecs observed in the river. So there was no question of "very high precipitation in the upstream area" that the report quoted above mentions. There were also some reports quoting a Nepal minister saying that the Kosi disaster was due to climate change.

This kind of misinformed statements helps those responsible for the misgovernance to escape accountability and also helps misleading advocates of such projects to push the issues of accountability under the carpet of climate change. Everyone needs to be careful on this front.

Unjustified advocacy for Big Projects

The advocacy for Big Dams to combat climate change in the NWM is not entirely new, it is part of a series of such attempts going on for the last three years. The government's Water Resources establishment sees climate change as an opportunity to push its questionable agenda of Big Dams. Thus, a national workshop was organized by National Water Academy of Ministry of Water Resources on Dec 5-6 2007 at Pune. One of the main recommendations of the workshop was, "Existing storages require enhancement and provision of carry over", which essentially translates as more big dams.

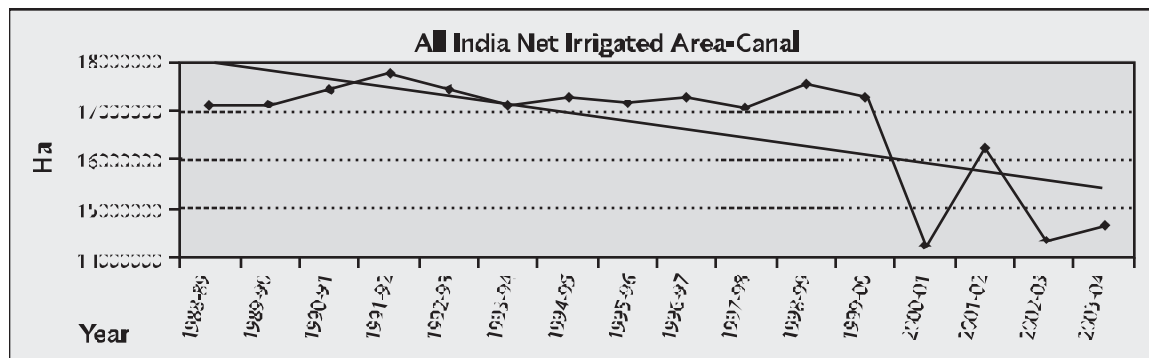
Similarly, a brain storming session on the "Effect of Climate Change on Water Resources and Adaptation Strategies" was organized by the National Institute for Hydrology on April 24, 2008 at New Delhi and among its conclusions was, "Additional storages are needed

for meeting various demands particularly for the rain-fed areas of the country in the light of the possible impacts of climate change.”²² Similarly a World Bank study on impact of climate change on hydropower projects concluded without substantiation, “The amount of energy generated would be affected to a certain extent (due to climate change), but the project viability may not change so much.”²³

The working group on water resources for the 11th Five year plan also put in its advocacy on similar lines, “It is an accepted fact that even in the post climate change scenario, systems that are more controlled will fare better than systems that are less controlled. In water resources parlance, control means engineering infrastructure that enables the water managers to store and transfer water with greater certainty, thus reducing the impact of uncertainty. Therefore dealing with climate change is going to require more infrastructures.”²⁴

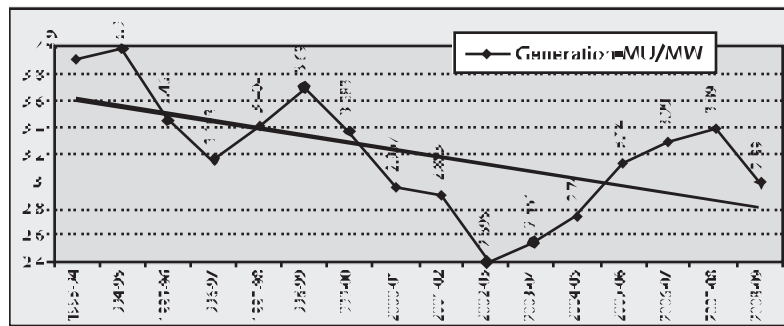
Why big dams should not part of the solution: There are many problems with this opportunistic advocacy for big dams to combat climate change. Firstly, we need to note that advocacy come from the usual suspects: the World Bank, the Union Ministry of Water Resources and so on. More importantly, this advocacy is not informed or backed by any performance appraisal of the currently existing big dams of India. Let us look at this aspect first. In the following paragraphs, we have tried to give a bird’s eye view of the analysis on this aspect that has been done by a number of independent research groups in India, including SANDRP.

Big Irrigation Projects Not delivering SANDRP’s analysis shows that in twelve years from 1991-92 to 2003-04 (the latest year for which figures are available), there is been absolutely no addition to net irrigated areas by canals as reported by Union Ministry of Agriculture, based on actual field data from states. In the period from April 1991 to March 2004, the country has spent Rs 996.1 billion on Major and Medium Irrigation Projects (most big dam based irrigation projects would come in these categories) with the objective of increasing canal irrigated areas. What the official data shows is that this whole expenditure has not lead to addition of a single ha in the net irrigated area by canals in the country for the whole of this twelve year period. In fact the areas irrigated by canals have reduced by a massive 3.18 million ha during this period. This should be cause of some very serious concerns and the Ministry of Water Resources (MoWR), the states and the Planning Commission will have to answer some difficult questions.²⁵



Big Hydro: Dropping performance, destroying ecosystems SANDRP analysis of performance of big hydropower projects of India shows that 89% of the operating hydropower projects do not generate power at the promised rates at which the projects

were sanctioned. In fact, half of the under performing projects were performing at below the 50% of the promised generation. Moreover, over the last 16 years, the generation per MW of installed capacity has reduced by over 20%. There are many reasons for this situation. Overdevelopment, optimistic hydrological projections, poor project appraisals, lack of proper maintenance, silting up of reservoirs and precious little being done on ground to reduce that are some of the reasons. One of the most important Unique Selling Propositions of the hydropower projects is supposed to be that it can provide peaking energy. However, there is no assessment as to how much of the power generated by the existing hydropower projects is providing peaking power. Unless we know that, we cannot even start to see as to what can be done to improve that performance. There is sufficient evidence to show, even from the official agencies like the Central Electricity Regulatory Commission, that a lot of hydropower projects are indeed acting as base load stations when they could have been used for peaking power. More importantly, unless we do this exercise and see that we get the optimum benefits, where is the justification for more hydropower projects?



Big Dams and Flood Control: Big storage reservoirs are also justified in the name of flood control. While there is no case for building big reservoirs for flood control benefit alone, there is no doubt that if operated properly, the existing reservoirs can help in achieving some flood moderation in the downstream areas. However, experience in India²⁶ has shown that the wrong operations of big dams have in fact led to flood disasters in the downstream areas. The most recent case in this regard is what happened in the Mahanadi basin in Orissa in September 2008²⁷, where due to the wrong operation of Hirakud dam, there were worst floods of the last 25 years, affecting lives of millions of poor people. That flood, in fact could have been completely avoided if the Hirakud dam would have been operated as recommended and if the dam operators had used the available information on the flows in Mahanadi and the anticipated storm. Thus the advocacy for big dams as flood control measure in the climate change scenario has no justification.

Big Reservoirs source of Green House gas emissions: Big hydropower projects are also pushed as an climate friendly option for electricity. This advocacy does not take into account that big reservoirs can be significant source of methane, whose green house gas potency is about 21 times that of carbon dioxide. While there has been no attempt at assessing contribution of big hydropower projects towards climate change, an assessment by SANDRF²⁸ showed that they could be contributing upto a fifth of India's total contribution towards climate change. Such emissions, as yet are not part of the decision making process, cost benefit analysis, environment impact assessment or the calculations of country's total contribution to climate change.

Big Storages: Siltation, unused and unfilled capacities: We need to ensure that the storage capacity loss due to siltation is minimized. Today precious little is happening on this on ground, as stated above. So old capacity equal to about two thirds of the new storage capacity we are adding each year is getting silted up⁶⁹. Secondly, 26% of the monitored (by Central Water Commission) storage capacity does not get filled by the end of the monsoon each year on an average, based on last 15 years' figures, majority of these years had average or above average monsoon. Moreover, if we subtract the water already stored at the beginning of the monsoon, the effective use of the storage capacities come down by further 14%. We need to see how we can improve this performance. Studies show that if there is better coordination across the states at river basin level, the storage capacities can be better utilized. Lastly, 90% of India's existing storage dams do not have hydropower component. We need to explore what is the potential of adding hydro capacities at existing storages.

Water security for some, insecurity for many

It is true that big dams where they exist, can provide better water security for the big water consumption points like the cities, commercial establishments and industries. However, it may also be added that this comes at a cost of insecurity for many others, in addition to the huge social and environmental costs. Such intensive consumption points also do not use the alternatives available to them, nor do they treat the wastewater generated, thus creating more hazards for the downstream areas. Considering all this, the best option in the climate change scenario may be to ensure that such intensive consumption points first exhaust the local options, including recycling of the wastewater, before looking for options far away. In any case, they must be made to treat the wastewater to adequate level.

BETTER OPTIONS: Local storages, groundwater storages, optimum benefits from existing projects: If indeed water security for the vast majority of people in the context of climate change is the issue of concern, than there is no doubt that local water systems, small storages, groundwater recharge and ensuring optimum benefits from the existing water infrastructure should be the top priority. Unfortunately, the NAPCC or the NWM is mostly silent in this regard, or is only paying lip service.

A more balanced conclusion came from Food and Agricultural Organization (New Delhi), "In the event of Global Climate Change, rapid glacier melt and erratic and frequent rainfall, more storage facilities would be required to meet the challenges of adaptability by farmers. Storage however does not necessarily mean large dams. A large number of smaller surface water storage facilities harvesting rainwater can bring more distributive benefits than a few large storage structures. Substantial storage is also to be made within the existing groundwater reservoirs through artificial recharge."⁷⁰

There are hundreds of practical examples from all over India that shows how local efforts can ensure water, food and livelihood security, but also help avoid drought and floods and also help mitigate climate change. One striking example in this regard is shown by the work at Latoria and surrounding villages, where the Gram Vikas Navyuvak Mandal of Latoria is active for now two decades under the leadership of Laxman Singh. The work of GVNML includes water harvesting through construction and rejuvenation of small local tanks, pasture land development through a remarkable, innovative scheme called chaulka system, organic farming and biodiversity conservation, among others. These efforts

collectively led to drought proofing flood mitigation, soil carbon build up, thus having elements of mitigation, adaptation, justice and sustainability in the climate context. After a couple of extensive visits to their area, Mr Laxman Singh told this author confidently that the people of Laporia will not suffer the big adverse impacts of droughts and floods, even in the context of climate change. Such efforts need to be recognized and lessons learnt from them and included in the policies and programmes.

Among the other notable success stories of local efforts include: Hirware Bazaar (Maharashtra)⁷⁴, Raj Samadhiyala (Rajkot district, Gujarat)⁷⁵, among others. The consolidated reply on the debate on NWM on the UNDP's solution exchange platform in Dec 2008 –Jan 2009 (see: <http://www.solutionexchange-un.net.in/environment/cr/cr-se-wes-29120801.pdf>) carries a lot of useful such references.

The forests and wetlands can help in mitigation and adaptation efforts to the impact of climate change, but as FAO report notes, "The trends however indicate the reverse with forests and wetlands being degraded and their capacity to regulate flow regimes and providing buffer to the impacts of the climate change declining in several parts of the country."⁷⁶

Carbon footprints of different sources of water: NAPCC or other climate change efforts do not mention that carbon footprints of the different sources of water should be assessed. A liter of water that comes from rain water harvesting from a dam after a long distance transfer and from a deep aquifer, would each have different carbon foot print. While assessing future water options, it may be useful to look at this issue, with a view to minimize the climate change contribution from water resources development. There has been no known attempt in this direction, even the virtual water advocates do not seem to have looked at this issue.

Civil Society views: Some important recommendations in this sector sent to the GOI from civil society, including from the consultations in Delhi in Sept '08 & in Vishakhapatnam in Nov '08 included the following.

- The approach towards water must not be a purely targeting an increase in the resource base, in any case not through more large projects. Equity and access to water for all through rights based regime must be a central plank for any plans that the government implements.
- In this light, suitable changes must be made to the National Water Policy. For the formulation of a new NWP, a detailed participatory exercise should be started immediately. The NAPCC recommends such review only in consultation with states, but this process has to start from the people and would have to be aimed at a new NWP.
- Stop the ongoing destruction & neglect of natural, local and traditional water harvesting systems (including tanks, wetlands, forests, johads, flowing rivers) & rehabilitate the systems that have been already destroyed, create new systems where possible, as a first priority.
- Emphasize through prioritization, programmes and institutional mechanism, on groundwater recharge and rainwater harvesting strategies. Groundwater is India's water lifeline and that lifeline can be sustained only through direct recharge where appropriate and through protection, rejuvenation and creation of local water systems.
- Make available adequate funds in the budget as a first priority to maintain the existing water related infrastructure before spending money on new schemes. For example,

there is a need to ensure that dams and canals do not get silted up and therefore there is a need to make adequate investments for catchment area treatment of existing large, medium and small dams and also for regular desilting of canals and smaller systems. Similarly maintenance of the canal infrastructure to ensure optimum use of created infrastructure should be given first allocation of available resources. To ensure that all this actually gets done in a transparent and accountable way, the governance in water sector will have to be changed so that the local people have decisive say in planning decision making implementation and operation of the systems.

- To ensure proper and optimum functioning of the existing and under construction reservoirs in the interest of the people, each reservoir should have a reservoir operation committee, in which at least 50% members should come from the local communities. As a first step in this direction, the reservoir operation rules and actual reservoir operation details (inflows, outflows, levels, capacities, and anticipated inflows) should all be made public on daily basis for each large dam in India.
- Similarly for embankments, canals, pipelines, and other related water infrastructure. Such committees should be formed right from planning stage of the projects and they should be statutory bodies with powers to make necessary mandatory orders with respect to the functioning of the projects.
- While considering new schemes, the priorities should be in following order:
 - i. for ensuring sustainable use of created capacities.
 - ii. For ensuring optimum use of the created capacities, in large number of cases it has been found that huge quantities of water remain unused till the next monsoon arrives
 - iii. For groundwater recharge
 - iv. For creating local water systems through tanks, lakes, wetlands, watershed development
 - v. Only after all this has been shown to be exhausted in a credible way, should a larger project be considered.
- There are a very large number of ongoing big irrigation projects, many of them are non viable or amounting to zero sum game as the basins or sub basins where they are situated are already over exploited. They are a drain on the economy & there is a need for a credible independent process to ensure that unviable & undesirable projects may be weeded out or scaled down appropriately.
- The objective of increasing the irrigation efficacy is much needed and laudable, but such attempts in the past has not succeeded because of the top down, unaccountable governance systems. Unless this is changed fundamentally, such attempts won't succeed.
- The waste water treatment systems would work only when it is more decentralized, and not centralizes as is the norm now. The decentralized systems would also be less energy intensive, less cost intensive, more efficient and is actually likely to lead to more recycling of the treated water.
- Need for a participatory process, including Environment Impact Assessments (EIAs) in local languages and public hearings for all irrigation projects and hydro projects above 500 KW.

Agriculture

"India has to worry about its own crop productivity; it also has to worry about migration from other regions of South Asia, notably Bangladesh, when sea level rises and wipes out a large share of their agricultural region."

Prof Rosamond Naylor, Stanford University's Program on Food Security and the Environment²⁴

We don't know about so many indigenous solutions that are prevalent in our country – like organic farming in Andhra Pradesh, or using neem and garlic as pesticides or the kind of recycling in slums.

Deepa Gupta, co-founder of 'Indian Youth Climate Network'²⁵

According to India's Initial communication to the UNFCCC in 2004 for the base year of 1994, the contribution of agriculture was 379.723 Million Tonnes (MT) (30.91%) in the total national emissions of 1228.54 MT CO₂ equivalents. The entire contribution from agriculture sector was supposed to have come in the form of methane 14.175 MT and Nitrous oxide 0.151 MT²⁶. The methane emissions were dominated by emissions from enteric fermentation in ruminant livestock and rice cultivation. The major contribution to the total N₂O emissions came from the agricultural soils due to fertilizer applications.

For Agriculture sector, where India's lifeline is groundwater, and which can only be sustained through local water systems, since these also help protect the soils and biodiversity in the local area in a participatory, democratic way. Here the NAPCC's emphasis on GM crops (see section 3.7.4, page 34) is completely misplaced and unjustified, in stead, what is required is sincere efforts at promoting organic farming and water and resource efficient and also high yielding methods like the System of Rice Intensification.

The NAPCC talks (section 3.7.1 and see also section 3.7.3 page 33-34 and section 3.8.3 on page 35) about "stakeholder consultations, training workshops and demonstration exercises for farming communities, for a pro-climatic information sharing and dissemination", but unfortunately, the India Meteorological Department, the apex organisation in India on meteorological information, refuses to share even monthly and annual rainfall data even at district level²⁷.

IMPACTS: The climate is an important determinant of agricultural productivity. The impact of climate change on agriculture is dependent on two factors: first, the rate and magnitude of change in climate attributes and the agricultural effects of these changes; and second, on the resilience of agricultural production to adapt to changing environmental conditions.

Moreover, the main climate change attributes- rainfall, humidity, temperature, atmospheric carbon dioxide content, the frequency of extreme events and raising sea level- all affect agricultural production and productivity. Other major sector impacts mentioned include:

- Reduction in soil moisture due to increase in temperatures
- Changes in Fauna and flora in agriculture
- Changes in useful insect species and pests in agriculture- climate change has altered their occurrence, space and time distribution, and population dynamics making their appearance unpredictable
- Crop pollinators and agriculturally useful microorganisms- increases or sharp falls in temperature, drought and rains affect their contribution.

According to a recent paper published in *Science*¹⁹, high temperatures can be expected to cut yields of the primary food crops like rice and maize by upto 20-40%. This does not include the impact this will have on the water supplies and soil moisture stressed by the higher temperatures. Even if there seems to be some exaggerations in these projections, this should be disturbing as, according to the latest report from the Food and Agriculture Organisation of UN *the State of Food Insecurity in the World 2008*, the largest number of the chronically hungry people in a single country in the world happens to be in India²⁰.

According to another recent report, that situation is much grimmer if we take a closer look at the states and rural and tribal areas.²⁰ The report quotes the Manifesto on Climate Change and the Future of Food Security', which was written and distributed this year by the International Commission on the Future of Food and Agriculture: "In material, physical, and biological terms the industrial agriculture economy is a negative economy that requires huge energy inputs. The cost of energy inputs are externalised and the financial calculus is dependent upon subsidies. Current financial and trade regimes continue to perpetuate and enlarge this negative economy. Instead of rewarding long-distance, uniform, centralised food systems, policies should support the principle of subsidiarity. In other words, local production for local consumption should be the first tier of food security. This means shortening the food chain and food miles."

SANDRP had recently filed some applications under the Right to Information Act to Ministry of Agriculture on contribution of chemical, organic and SRI crops to climate change. The answer from the ministry was that no such assessment has been done. Fertiliser industry in India is hugely subsidised and they are significant contributors to climate change. SANDRP had also asked what alternative incentive are provided to the farmers going for organic farming since they are useful in the process reducing climate change contribution. The answer again was, none.

Organic and conservation Agriculture can lower emissions: According to a report from Food and Agriculture Organisation²¹, Organic agriculture contributes less to climate change in every way and importantly for a country like India, generates more employment. These conclusions are well known, but as they come from a mainstream UN organisation, they are very important. One hopes the Indian govt, Agriculture Ministry, Food Processing Ministry and state governments take a note of this and devise systems to encourage organic farming in a big way as a way to address the climate change impacts. An important conclusion of the report is, "Typically, organic agriculture uses 30-50% less energy in production than comparable non-organic agriculture. Though organic agriculture on average uses energy

more efficiently, it often requires an indirect trade-off of energy intensive inputs with additional hours of human labour—about 33% more than conventional agriculture.”

Similarly, director of India’s National Centre for Agricultural Economics and Policy Research said²³ after the 4th World Congress on Conservation Agriculture in Delhi during February 4-7, 2009, “The no or zero till fields have been reported to act as carbon dioxide sinks, which are thus helping effort to check global warming. Moreover, reduced disturbance to soil also reduces soil run off that reduces the silting of water bodies... Scientists have been saying that by only 10% increase in water use efficiency, the country can grow an extra 50 million tonnes of foodgrains from the existing irrigated areas.” Unfortunately, no or zero tillage farming does not even get a mention in the NAPCC.

System of Rice Intensification: The SRI method of cultivation of rice and other crops can significantly increase the rice yield and at the same time reduce the use of inputs²⁴. This way, SRI can help in both mitigation front (reducing the contribution to climate change from such lands) and also on adaptation front (SRI plants are more resilient to drought and floods). And yet institutes like the International Rice Research Institute (Manila, Philippines) are making efforts in looking for new high yielding and genetically modified varieties, rather than promote SRI. Similarly the multinational companies are pushing dubious claims about climate resistant varieties. The governments, like the Indian govt (through NAPCC and otherwise), rather than pushing traditional varieties and practices and methods like SRI, is also pushing biotechnology and genetically modified varieties, whose claims, at best, are dubious.

Impact on Horticulture: According to a study²⁴ by the scientists from the CSK Himachal Pradesh Agricultural University, “New areas of apple cultivation have appeared in Lahual and Spiti and upper reaches of Kinnaur district as is evident from farmer survey and analysis of secondary data”. This is seen by the scientists as an impact of the global warming where the lower reaches of existing apple areas in Himachal Pradesh in North India are unable to get viable yields and farmers are moving upwards due to increasing temperatures and decreasing number of chilling days that crops like apple require. Agronomy scientists have noted a decrease of more than 9.1 units per year in the cumulative chill units of the coldest months of the last 23 years, which roughly corresponds to a spike of about 1.2 degrees C. Similar impact is also felt in Theog in Shimla district of Himachal Pradesh. The findings are reportedly being studied by the Mission on Sustainable Agriculture under the NAPCC.

Biofuels: The NAPCC says (page 18) that India’s Bio-diesel Purchase Policy mandates bio-diesel procurement by the petroleum ministry. This is likely to have serious impacts on the people, as according to a Guardian report²⁵, “up to 10.7 million people in India alone would be pushed over the poverty line as a result of the projected price increases” for biofuels.

At the function launching the Swiss Aid campaign against biofuels on February 11, 2009 in Bern, Indian agricultural scientist Devinder Sharma said that 11 million hectares in India are earmarked for jatropha cultivation destined for the production of biodiesel.²⁶ For example, on February 11, 2009, the Chhattisgarh legislative assembly was informed by the state Forest minister that the forest department had planted about 100 million jatropha saplings in about 40 000 hectares of land in the last three years at an expense of Rs 740 million to help the state emerge as a leading bio-fuel state of the country. The state government has set a target to plant jatropha in at least one million hectares of “fallow or barren land” by the year 2012.²⁷

Civil Society Views: For this sector, important recommendations from the civil society, including from the consultations held in Delhi in Sept 2008 and Vishakhapatnam in Nov 2008 and sent to GOI included:

- The current strategy of higher production in agriculture through increased use of inputs isn't sustainable.
- Recognise the differences in agro-ecological zones in the country and allow and encourage the farmers to cultivate local/ indigenous crops that are not input intensive and are compatible with the agro-ecological zones in which they have been bred/grown traditionally. (Low input sustainable agriculture approach)
- Policy changes required to facilitate this include Incentives for farmers for protecting local agro-bio-diversity, and saving or eliminating high input use (water, chemical fertilizers etc)
- A complete shift in subsidy from chemical fertilizer to rewarding farmers for taking up low-input sustainable practices, such as millet based and organic farming systems.
- Appropriate and adequate price incentives for traditional crops.
- A shift of focus from intense irrigation based farming systems to rainfed indigenous farming systems needs. An example of such systems is the Millet based farming systems
- Wherever possible, rely on rainwater harvesting to provide water for irrigation and avoid large-scale canal irrigation schemes that have high social, economic and environmental costs. Also, adopt watershed management practices to conserve soils and moisture for the future. Increased build up of carbon in the soil should be rewarded as it not only reduces net carbon emissions; it also increases the moisture conservation capacity of the soil.
- Setting up of a decentralized Public Distribution System that rewards farmers for producing traditional/ local food grains and get rid of excessive reliance on wheat and rice.
- The application of GM technologies is not a solution for developing drought or other kinds of climate resilience of seeds as claimed in NAPCC (see section 3.7.4, page 34). Climate resilience of seeds is a function of many genes, and GM technology cannot handle such engineering. Instead, reliance on traditional farmers' practices of crop improvement and other conventional scientific methods would be more reliable for developing climate resilience of seeds.
- Support the conservation of agro-biodiversity at the local level and ensure that farmers continue to have the rights to use their seeds and other natural resources
- Make appropriate changes to drought and flood codes in order to make them compatible with the unfolding impacts of climate change across the country. For example, such codes could include appropriate and timely distribution of seeds that would produce food in a given weather/climatic situation at a given location
- Undertake disaster risk reduction measure especially to protect crops and farmers from the impacts of natural disasters
- System of Rice Intensification should be adopted in widest possible area with maximum possible resource allocation and incentives, not only for rice, but also other crops where appropriate. This has potential to reduce the seed use, fertilizer use, water use and yet increase the yields without any new technology or seeds.
- There should be an assessment of contribution of GHG (Green House gases) emission by various crops, the organic, the SRI (System of Rice Intensification) and non SRI and chemicals based crops.

The Energy Future

'Almost no other country has succeeded as well as Germany in decoupling economic growth and the consumption of the natural resources: although economic power in Germany is continuing to grow and people are consuming more than ever before, resource consumption and environmental pollution are now only increasing moderately.'

Sigmar Gabriel, German Federal Minister for Environment, Nature Conservation and Nuclear Safety⁴²

The NAPCC is strong in its advocacy on equity, "We're convinced that the principle of equity that must underlie the global approach must allow each inhabitant of the earth equal entitlement to the global atmospheric resource" Unfortunately, there is nothing in NAPCC that shows that the GOI is ready to extend this principle of equity at national level. GOI's Report of the Expert Committee on the Integrated Energy Policy⁴³ in fact pushes for huge increase in thermal, big hydro and nuclear power plans over the next 25 years, using as a major justification the fact the some 56% of rural families and 12% of urban families do not have access to electricity. It says the installed power capacity in India would rise to 800 000 MW by 2022 from the current level of 147000 MW. The trouble is, if access to electricity to this population is indeed the end then these mega power plans are not required, there are other better options. But the NAPCC does not even mention a process of arriving at least cost options. Ironically, the NAPCC mentions (page 16) this same Integrated Energy Policy as part of India's mitigation programme for climate change impacts!

It is interesting to note that NAPCC accepts (page 18), "Just 1% of India's land area can meet India's entire electricity requirements till 2020." Unfortunately, the movement towards realizing this enormous potential is very slow and priority for its R&D very low. Thus, the aim of the National Solar Mission under the NAPCC (page 20) is to develop just 1000 MW of solar photovoltaic and 1000 MW of concentrating solar power projects by 2017.

While NAPCC has welcome emphasis on a National Solar Mission and a National Mission for Enhanced Energy Efficiency, there is no link that the NAPCC has with the National Energy Plans or Policies. This cannot help achieve a comprehensive approach to climate change. (The cartoon below is from the Nov 2007 issue of Eco-ethic.)

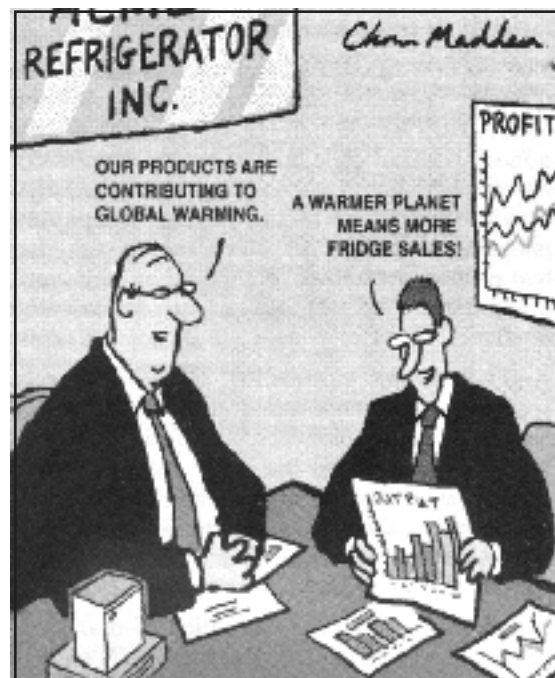
Thus while the NAPCC has a National Mission for Sustaining the Himalayan Ecosystem, the National Energy Plans talks about adding 120 000 MW of hydropower

projects by 2032, most of them in the Himalayan regions, which will completely destroy the Himalayan ecosystem. Similarly, the National Plan is heavy on massive thermal power plants and nuclear power plants (earlier target of 20000 MW by 2020 raised to 60000 MW by 2030²⁰ according to Shyam Saran, special envoy to the Prime Minister on Nuclear deal), which cannot be called climate friendly by any stretch of imagination. The performance of India's existing nuclear power stations is poor and has been diminishing in recent years²¹.

Yet, in section 4.1.4 NAPCC says, "Promotion of nuclear energy through enhancing the nuclear capacity and adoption of fast breeder and thorium based thermal reactor technology in nuclear power generation would bring significant benefits in terms of energy security and environment benefits, including GHG mitigation." Similarly section 4.1.6 describes India's massive hydropower potential and says "Large scale hydropower with reservoir storage is the cheapest conventional power source in India". These statements are factually wrong and these discredit the NAPCC. They completely ignore the track record of India's past experience with such projects.

The World Bank's role here is also insincere. The Bank's climate strategy document for South Asia²² makes tall claims: "The Bank's energy portfolio in the region has been moving towards promoting energy efficiency, renewable energy and institutional reforms aimed at improving energy service and efficiency. The strategy envisions that the World Bank will continue to play a key role in facilitating South Asia's transition to a low-carbon-growth trajectory while promoting climate-resilient development." However, the Bank has recently renewed and accelerated funding for destructive large hydro projects in the Himalayan region, and International Finance Corporation, the Bank's private sector arm is funding the first of the series of India's largest 4000 MW thermal power project at Mundra, in Kutch in western India. It seems even this 4000 MW giant emitter also hopes to get CDM credits!

In fact, as a report by the Bank Information in February 2009 concluded²³, "World Bank Loans Exacerbate Climate Change". Firstly, the World Bank fossil fuel lending is on the rise. During 2008 fiscal year, the World Bank and International Finance Corporation (IFC) increased funding for fossil fuels by 102% compared with only 11% for new renewable energy (solar, wind, biomass, geothermal energy, small hydropower). On average, fossil fuel financing by the Bank is still twice as much as new renewable energy and energy efficiency projects combined and five times as much as new renewable sources taken alone. The Bank thus shares the blame – and the shame – for the global climate change crisis, the report rightly concludes. These conclusions are as valid for India, as they are for the rest of the world.



Similarly, the Bank's document on climate strategy for South Asia says (page xxiv) that the Bank's role in response to the climate change related issues in water sector would be, "Lending and financing for hydropower and storage". This again exposes that the Bank is more interested in pushing its agenda of mega projects rather than exploring real solutions of local systems.

Specifically, the NAPCC says that as a result of the schemes for energy efficiency already undertaken, a saving of 10000 MW by the end of March 2012 is expected. However, greater urgency is required in taking up energy efficiency measures and in taking up measures to reduce the huge transmission and distribution losses (page 38 of NAPCC). Similarly, urgent measures are required for Demand Side Management in peak hour power consumption and ensuring optimum peak hour power generation from hydropower projects.

Impact of climate change on Hydro projects: The NAPCC talks very positively about hydropower projects, which is not justifiable as mentioned above in the section on Water Sector. The NAPCC on page 38 says that installed capacity of hydropower projects in India is 28000 MW and the same figure on page 40 is given as 35000 MW. The actual current figure is 37825 MW⁶⁶. Such inaccuracies and internal contradictions on the basic figures does not reflect well on the quality of the document.

The World Bank has published a Working Paper on "Estimating Global Climate Change Impacts on Hydropower Projects: Applications in India, Sri Lanka and Vietnam" wherein from India it particularly studied the under construction Vishnugad Pipalkoti Hydro Electric Project, which is also being funded by the Bank. The report states that the results are still tentative in terms of both methodology and implications; but the analysis shows that the calibrated dynamic forecasts of hydrological series are much different from the conventional reference points in the 90 percent dependable year. The paper also finds that hydrological discharges tend to increase with rainfall and decrease with temperature. The rainy season would likely have higher water levels, but in the lean season water resources would become even more limited.⁶⁷

India and Denmark signed climate change agreement in Oct 2008, which largely seems to be a standard bilateral agreement to provide opportunities to Danish companies in the CDM projects in India⁶⁸. It would however, be useful if the agreements helps India to follow the Danish example of not increasing the per capital energy consumption since 1980 and yet the economy growing by 70% in the period.

Renewable Energy⁶⁹: The Indian government is in the process of preparing a law for renewable energy development. The GOI's ministry of new and renewable energy sources has appointed a consultant to draft a renewable energy law for India. The focus in the new law is likely to be on generation of power rather than installed capacity, as earlier stress on installed capacities had created

Arguments for Carbon Tax⁷⁰ Carbon tax is required because the price of fossil fuels does not reflect their climate costs. The carbon tax should reflect the cumulative negative effect that fossil fuel creates.

There are good reasons for making carbon emissions expensive. Firstly, this would make future investments more climate friendly. Second, the capacity to do new things is driven by practice. The more Indian industry explores low carbon technologies, the more it will be competitive for a huge set of production opportunities at home and abroad. The sooner India starts acting, the easier the future political economy. The consumer preferences of the importing economies will increasingly penalise carbon intensive productions.

some gross misappropriations. On January 30, 2009, the consultant made a presentation in the meeting of forum of regulators. The Forum of regulators has formed a task force on Renewable Energy Certificate (REC) mechanism, headed by the chairman of the Central Electricity Regulatory Commission. The Task Force is to evolve model regulations for state electricity regulatory commissions to adopt and implement the market based REC trading mechanism, including eligible technologies, eligible developers, pricing methodologies for the electricity and the renewable energy component, operational mechanism, etc, as part of the NAPCC¹⁰.

China already has a renewable energy law, endorsed in 2005, which aims to boost its renewable energy capacity to 15% by 2020 and envisages investment of USD 180 billion. Germany has a law since the year 2000 that mandates utilities to buy power from renewable sources and introduced feed in tariff rates.

End Use efficiency: The GOI and the state governments have taken a number of initiatives in encouraging more efficient electricity devices. Examples of such initiatives include incentives for use of the compact fluorescent lamps (CFL), energy efficient pumps, introduction of standards and ratings for electricity appliances, among others. While these are generally welcome steps, but "there is a massive weakness and an urgent need for policy change in the regulatory framework of this (CFL) industry", says Sunita Narian of Centre for Science and Environment¹¹.

IEA is biased against renewables: The International Energy Agency, the international body that advises most major governments across the world on energy policy is obstructing a global switch to renewable power because of its ties to the oil, gas and nuclear sectors, Energy Watch, a group of parliamentarians and scientists said in a report released on January 9, 2009. The experts from the Energy Watch group say the IEA publishes misleading data on renewables and that it has consistently underestimated the amount of electricity generated by wind power in its advice to governments. They say the IEA shows "ignorance and contempt" towards wind energy, while promoting oil, coal and nuclear as "irreplaceable" technologies. The report concludes: "The IEA outlook remains attached to oil, gas, coal and nuclear, and renewables and seem to have no chance to reverse this trend. This organisation... has been deploying misleading data on renewables for many years [and is still doing so]... One has to ask if the ignorance and contempt of IEA toward wind power and renewables in general is done within a structure of intent."¹²

Civil Society Views: On this sector, the important recommendations sent to the GOI by the civil society, including from the consultations held in Delhi in Sept 2008 and in Vishakhapatnam in Nov 2008 were:

- The integrated energy policy of the Government of India is based largely on current sources of energy: coal and petroleum and is inconsistent with the policy of reducing GHG emissions.
- As long as our energy policy emulates the energy profligacy of the developed countries, which is based on consumerism, we cannot hope to meet the unabated energy needs of the burgeoning population or even the energy greed of the urban elite population.
- The Indian electricity sector is currently besotted with a number of problems such as huge transmission and distribution losses, poor generation and end use efficiency,

very low renewable energy uptake, lack of demand side and peak hour power demand management measures, unrealistic pricing systems and so on and yet very high per capita consumption by a few.

- If ensuring access to electricity in an affordable way for the 400-450 million people who do not have access currently is the priority, then the capacity addition programmes that are proposed for the 11th and the 12th Plan are not necessary, an entirely different plan needs to be formulated.
- The energy growth should be de-coupled from GDP growth, with energy growth projections being made using a sustainable pattern of consumption. Energy Projections should factor in efficiency, energy conservation and demand side and peak hour power demand management measures, while also taking into account a change in focus in the economy – for instance from the manufacturing to say the services sector, which consumes comparatively less electricity, while contributing immensely to the GDP.
- There should be a shift in emphasis from “Centralised Energy systems” to de-centralised energy systems. There are clear advantages from the de-centralized system which include: Reduced Losses, Increased efficiency, Reduced infrastructure cost, Better quality, Rural development and livelihood generation, Inclusive growth and energy secure communities, Potentially more democratic systems with participation of the people at all levels. The policies should be put in place to incentivise decentralised systems.
- Energy Efficiency and energy modesty needs to become the center piece of the national and state energy policies.
- Starting with the areas of highest energy consumption, the government should put legislation in place to promote innovations towards energy efficiency and phase out wasteful uses and practices. Specifically, the government should implement a progressive and mandatory energy efficiency standards cutting across all energy applications in the country. These standards should have clear time lines.
- Policy measures to incentivise energy efficiency would include: Reforms in the banking sector to ensure that energy efficiency projects are made bankable, substantive government investment, especially in enabling the small and medium enterprises sector to change over from energy inefficient production and products to efficient ones, Regulatory systems to implement and monitor efficiency.
- As starters, the government should ensure that the Transmission and Distribution Losses are reduced to a maximum of 10% by 2012. Yet another crucial area is the low plant load factor of thermal power plants. The government should ensure the plant load factor improve to 85-90% by 2012.
- Currently, the hydropower project developers have no obligation to ensure that the projected generation at 90% dependability as assessed at the Detailed Project Report stage is actually achieved. This is unacceptable. The revenues to the developers should reduce proportionally when they fail to generate at projected levels. Similarly when they fail to generate peaking power as per project design, their revenues should again be proportionately reduced.
- There should be an assessment as to how much of the power generated by large hydro projects is during peaking hours and what can be done to increase this share.

- There should be an assessment of the existing large reservoirs to assess how much emissions to green house gases they are contributing.
- It is imperative that we have in place, a dual pricing mechanism, which is based on the usage and consumption patterns and specially with regard to “free electricity”, it should be strictly on the basis of “farm size based pricing policy”.
- Only a few states have put in place a special tariff scheme for renewable energy (feed in tariff)
- There should be a national renewable portfolio standards for renewable energy of 25% of total installed capacity by 2020. The renewable energy should only include: solar (PV, Concentrated Solar Power and Solar thermal), Wind, small-micro-mini-pico hydro, bio-energy, tidal energy and geo-thermal.
- We support only very small scale, farm and community level tapping of bio-based energy sources for use within communities to facilitating their energy sovereignty and not for export outside the communities. Hence, we demand the repeal of the national bio-fuel policy 2008, for the reason that it has targets for bio-fuel blending. (Refer to page 29 of NAPCC for details on bio fuel plans.)
- As an incentive for our building sector to opt for solar photovoltaics on their roof tops, as a policy measure, the feed-in-tariff should be made applicable even for small quantum of supply to the grid.
- The government should increase the Research and Development expenditure to Solar.
- The deployment of any new large scale project should made only after: All viable alternatives of reduction of T&D losses, energy efficiency, optimizing generation from existing projects, demand side management (including peak hour demand management) and renewable energy have been explored, implemented and exhausted and after a comprehensive cost benefit analysis in full participation with the people. The planning and decision making process should follow the guidelines of the World Commission on Dams (<http://www.dams.org/report/>).

Historically, Cost Benefit Analysis (CBA) has proved inadequate to accurately measure social and environmental impacts of large conventional power projects (Coal, Hydro and Nuclear). Therefore, their deployment must be done only after a rigorous and proper assessment of all risks and costs. This would involve

- (a) considerable strengthening of the Environment and Social Impact Assessment regulations that have remained largely on paper and the assessments are unaccountable and pathetic. It is appalling to see the NAPCC claiming (Page 17) that National Environment Policy 2005, the EIA notification of 2008 as provisions that “strongly promote environmental sustainability”. Nothing can be farther from the truth. These policies have been strongly criticized by all concerned for diluting even existing norms¹⁸.
- (b) Extensive stake-holder consultation right from the stage of beginning of project formulation.
- (c) The EIA and SIA should be formulated in full consultation with the local people.

The EIA should include an assessment of the potential contribution of the project to the green house gas emissions during its entire life cycle, right till the stage of decommissioning.

- (d) Full EIA and SIA should be available to the local people in the language and manner they can understand, at least two months before the public hearing date
- (e) The public hearings should be conducted by an independence panel, which would also certify to what extent the EIA and project proponent have addressed the issues raised at the public hearing and what next steps are required, including a new or improved EIA and fresh public hearings, better options rather than the proposed project.
- (f) If the public hearing committee finds that EIA has been incomplete or doctor ed, or giving wrong biased or tendentious information, the independent panel can order black listing of and stoppage of payments to such EIA agencies and consultants.
- (g) There should be a legally mandatory committee for each project in which at least 50% of members should be from the local area, for monitoring and ensuring that the EIA-SIA is implemented as required, pari passu with the project and when that is not the case, the committee has the power to order stoppage of construction till the EIA-SIA implementation catches up. Such committee should also continue to function during the project operation.

The CDM Projects

"Carbon trading is just greenwash ... We have just four years (from Jan 2009) to save this planet, possibly only global carbon tax can save us."

Jim Hansen, Director of NASA's Goddard Institute for Space Studies and known as grandfather of climate change concept¹⁰³

Most of the "green" stuff (read CDM) is verging on a gigantic scam. Carbon trading, with its huge government subsidies, is just what finance and industry wanted. It's not going to do a damn thing about climate change, but it'll make a lot of money for a lot of people and postpone the moment of reckoning.

James Lovelock, originator of the gaia hypothesis¹⁰⁴

"I think there is general agreement that in Copenhagen significant reforms of the CDM, uh Collective Development Mechanism, ah Cooperative Development Mechanism, have to be implemented."

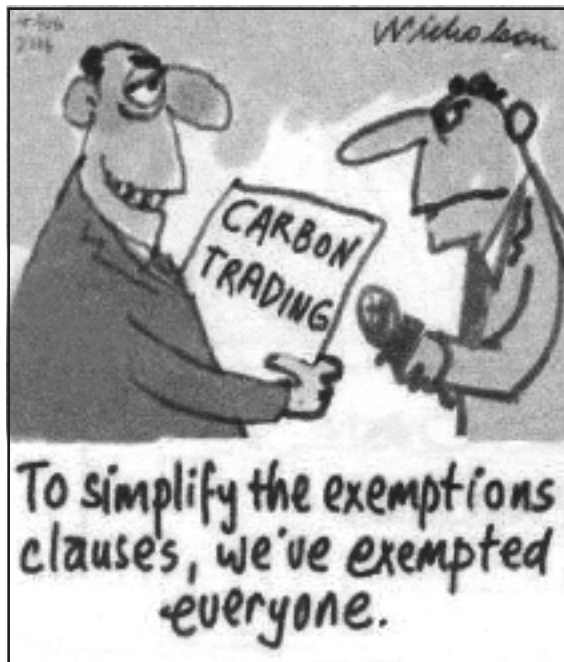
Al Gore (head of the US delegation in Kyoto that pushed through the CDM)¹⁰⁵

The NAPCC notes that 32 % of the projects registered with UNFCCC's CDM Executive Board come from India and 28.3% of the Certified Emission Reductions (CERs) issued came from India. The expected investment from the 753 projects approved would be Rs 1 089 billion. The NAPCC also notes that CDM has not led to technology transfer from the developing countries. It also notes that high transactions costs prevent the small scale sector from participating in CDM. Despite this, the NAPCC is happy that "there is encouraging response from the Indian entrepreneurs to the CDM across different sectors and is hopeful that the market in the VERs (Verified Emission Reductions) also will grow in future.

The latest assessment¹⁰⁶ suggests that India ranks No 2 (after China) in terms of developing CDM projects and generating carbon credits. India leads in developing the largest number of unilateral CDM projects. This indicates that most of the Indian promoters have not actively engaged with a developing country buyer for transaction of their carbon credits. Indian promoters seem to prefer to sell the credits in open market and in any case few have done even that, most of them are holding on to the credits, awaiting better market conditions.

However, the trouble with CDM projects in India is that the government only sees them as free gifts and is not bothered if the projects indeed qualify to be a CDM project from climate point of view, from environment impacts point of view, from social impacts point of view, from technology transfer point of view or from equity point of view. SANDRP had asked the Ministry of Environment and Forests, the Designated National Entity of

India under the UNFCCC under RTI as to how many of the applications for CDM projects the ministry had rejected and on what grounds. The answer from the Ministry was that they have not kept any record for such rejections! In reality, to the best of our information they have rejected none. (The cartoon on this page has been taken from the November 2007 issue of the eco-ethic newsletter.)



SANDRP has been monitoring and commenting¹⁰⁷ on some of the CDM hydro projects during the validation process that the UNFCCC allows. SANDRP's experience has been very frustrating. We have found that none of the hydro projects deserve to get CDM credits, for they all are business as usual projects (no additionality), they all adversely affect the local people, they all adversely affect the environment, the local people get no benefit from the project, they have no role in the CDM project cycle, the Project Design Documents of most of the hydro CDM projects are full of dishonest and unsubstantiated statements, the developers are doing nothing special on technology, social impact or environment impacts aspects. We have also found that even after making strong comments based

on official documents, the UNFCCC process is completely non responsive as the only thing the designated operating agency and the developer has to do is to file some replies to the comments made. UNFCCC has no credible process to ensure that the replies are credible or truthful.

A classic case in this regard is the under construction 192 MW Allain Duhangan hydropower project in Himachal Pradesh¹⁰⁸. Under current circumstances, this project will get CERs worth 75 million dollars for doing *nothing* for a project that is positively harmful for the environment and for the local people; this is clearly a fraud on the whole world. If this is how we are going to tackle climate change, there is no hope, either for the climate or for the poor people who are dependent on the natural resources that would be affected by the climate change. Worse, the environment and the poor people are again asked to suffer in the name of tackling climate change.

Even further shockingly, now even coal fired power projects are applying for CDM status! For example, the proposed 1320 MW coal based thermal power plant in the North Indian state of Haryana is intending to apply for CDM credits, claiming that the supercritical boiler technology being used by this project to be funded by the Asian Development Bank¹⁰⁹ will save emissions compared to a conventional plant. In Para 75 of the EIA of the project it is stated, "This technology, more expensive than subcritical plant, becomes economically viable when compared to subcritical technology if Clean Development Mechanism (CDM) under the Kyoto Protocol carbon credits are granted for the reduction in CO₂ emissions that will result." This claim is misleading claim as "construction of several supercritical

coal based power projects is in progress" as noted by the NAPCC (section 4.1.1, page 36). If the project manages to get CDM status, it would only create further outrage about the CDM.

How big corporate houses of India are reaping the CDM windfall could be guess from this snapshot provided by the inaugural issue of *Mausam*¹¹⁴ magazine. "Till early 2008, the Jindal group made Rs 11 billion (and perhaps more) from selling supposedly 'reduced emissions' (1.3-million CERs) at their steel plant in Karnataka. According to company sources, this boosted other incomes, and helped the Jindal Steel Works to record their best ever quarter in terms of profit. The Tata Motors sold 163,784 CERs from wind projects at 15.7 euros/CER in 2007. Tata's sponge iron projects in Orissa are set to yield 31,762 CERs every year. Reliance publicly boasts of its CDM Kitty—with 7 projects registered with 88,448 CERs per year (till 2007 December), four more CDM projects under validation with 149,533 CERs per year, and seven more potential CDM projects with about 400,000 CERs per year. By far, however, the biggest profits have been made by the SRF (Rajasthan) and the GFCL (Gujarat Fluoro-chemicals Ltd), both by selling carbon credits from their HFC (hydro-fluoro-carbons) reduction projects. In 2006-07 alone, the GFCL group's earning from carbon money was twice its total corporate assets." These big companies are not known for clean, green or sustainable development image and yet they cornering the lion's share of the CDM credits speaks a lot about for whom this CDM bell tolls. The inaugural *Mausam* issue has many detailed accounts of many stories that high light how most of the CDM projects are not helping reduce the GHG emissions.

However, in a first of its kind efforts to include rural poor in the current Clean Development Mechanism (CDM), the GOI's ministry of rural development ministry requested the Ministry of Environment and Forests in January 2009 for developing some pilot projects to include the works undertaken under GOI's National Rural Employment Act (NREGA). Since its launch in February 2006, the government has spent over Rs 400 billion under NREGA, out of which over Rs 260 billion has been spent towards payment of wages to rural poor. Over 2.1 million jobs, mostly relating to water conservation and tree plantation has been taken up. These works "results in substantial reduction in carbon emissions", said secretary of GOI's Rural Development Ministry. She added that if this materializes, than for the first time it would ensure that poor people who have mostly been "defending the environmental sustainability get their due share".¹¹⁵

Civil Society Views: On this issue, the important recommendations sent to GOI from civil society including from the consultations in Delhi in Sept 2008 and in Vishakhapatnam in Nov 2008 included the following:

- Currently, the government seems to see the CDM projects as free gifts and the designated national Entity of India, Union Ministry of Environment and Forests seems to certify any and every project as sustainable project, without following any credible norms. (Without such certificate by MEF, UNFCCC won't even consider any project for CDM credits.) Many of the CDM projects so certified by the MEF have proved to be unsustainable, and some are actually scams in terms of not contributing any net benefits to the climate. There is no new technology, they are business as usual projects, being implemented even without the CDM credits and most importantly, they also adversely impact the local society and environment, without any say for the local people at any

stage, leave aside the question of share in the climate change benefits. This is unacceptable and MEF should stop certifying any further projects as sustainable.

- MEF should form a transparent and credible set of norms for planning, decision making, implementation and operation of the project proposals in which local people have decisive say.
- Projects without new technology or which would have happened in any case without the CDM credits should not be considered for CDM credits. Projects where local people do not get majority of the additional revenue from CDM credits should also not be considered.
- Review legal framework for implementation of CDM projects: CDM projects impact the land use pattern and also leads to loss of ownership and control of common property resources like community forests. Such initiatives are defeating the very purpose of CDMs as tool for ensuring sustainable development.
- Enforce tribal protective laws in the scheduled areas: Giant firms are diverting food crops/ forest land for monoculture of jatropha or fast growing trees like eucalyptus to earn carbon credits without sharing the benefits with the farmers.
- Empower local bodies: Mandatory requirement of local bodies like the gram sabhas and panchayats for clearing CDM projects in their areas.

Adaptation

"While mitigation is global, adaptation is local. This is why a new climate agreement must place adaptation on equal footing with mitigation. Furthermore, it must address the issue of climate justice and human rights in a development perspective."

Mary Robinson, Margot Wallström, Gro Harlem Brundtland¹¹²

"Recognizing that climate change is a consequence of damaged and diminished eco-services, the remedial measures need to be aimed at protecting and restoring ecosystem integrity. Indeed, maintaining ecosystem integrity can provide a cost-effective way of building climate resilience and a buffer against climate impacts."

The World Bank¹¹³

NAFCC describes (section 2) adaptation as, "Adaptation comprises the measures taken to minimize the adverse impacts of climate change". It goes on to say that current government expenditure on adaptation to climate variability is 2.6% of GDP, but this includes all the expenditure in agriculture, water resources, health, sanitation, forests, coastal zone infrastructure and extreme weather events. This is clearly erroneous. As K.R. Viswanthan of Swiss Agency for Development and Cooperation (New Delhi) said, "This is something which is open to question"¹¹⁴. For example among the measures listed under water resources in this regard include measures like inter basin transfer of water, which is one of the most destructive mega projects ever undertaken by India and cannot be described as adaptation project.

The fundamental goal of adaptation strategies is the reduction of the vulnerabilities to climate induced change in order to protect and enhance the livelihoods of poor people. Unfortunately, this concept is used in a very misguided, narrow sense internationally. We 'will have to go beyond "adaptation" as commonly understood in the international conference circles, where it is used in a narrow sense, referring to certain specific projects, and as a way of asking for donor support.

The Government of India's Ministry of Water Resources sees the need for adaptation in view of changes in water resources due to climate change, "there are needs for developing rational adaptation strategies and enhancing the capacity to adapt those strategies. Thus, due considerations are required to be given to the effect of climate change while planning, designing and operating the water resources projects. Accordingly, the present practices being followed in the water resources sector are required to be reviewed and revised considering the change in climate for different agro-climatic zones of India. It would provide the means

for alleviating the negative impacts of climate change. The risk, reliability and uncertainty analysis must be carried out before deciding the adaptation strategies.”¹⁴³

Specifically, for the safety of the major and medium dams the MoWR notes, “due to climate change the basin response transfer function itself would be modified. Thus, the existing methodologies for the computations of Standard Project Storm, Probable Maximum Precipitation, design storms, basin response and other design parameters are required to be reviewed and, wherever it is necessary, those are required to be suitably modified... In view of intensification of hydrological cycle, the parameters for dam safety review for the existing structures should also be modified and put into practice. Inflow warning systems need to be developed... The demand patterns are also likely to be affected because of climate change... As the characteristics of the flood are likely to be affected due to climate change, hence this aspect will also have to be considered while formulating the policies for real time operation of the reservoir for flood control” as also the long term flood management policies. Similarly, “the impact of climate change on the supply and demand is required to be properly considered for evolving the drought management strategies.”

However, the disaster management section of the NAPCC (section 4.3, page 42) has no mention about ensuring safe operation of the reservoirs in view of the likelihood of the increased frequency of extreme climate events due to climate change. The operations of the dams in fact need to be made transparent and accountable, so that there are consequences for wrong operation. Currently, there are no norms for transparency and accountability in operation of the big dams in India.

Moreover, “Due to predicted climate change, it is expected that the availability of water would be significantly affected in time and space. Accordingly, in long run, cropping pattern and other land uses are likely to change. Thus, the revised assessment of water for irrigation has to be made in view of these changes.”

However, the conclusion drawn by the ministry does not have a basis, “It would be necessary to design bigger water storage volumes at higher costs to accommodate larger flood waves and to fulfill the growing demand for water during the prolonged and more frequent droughts of increasing severity.”

Gender issues related to adaptation: The NAPCC says (page 12), “The impacts of climate change could prove particularly severe for women... All these would add to deprivations that women already encounter and so in each of the Adaptation programmes, special attention should be paid to the aspects of gender.”

Experience shows that vulnerability is differentiated by gender. Women face worse consequences of disasters than men, as noted by the World Bank’s South Asia Strategy on climate change¹⁴⁴, “In natural disasters female mortality vastly outnumbers that of males. Women accounted for 90 percent of the 140,000 people killed in the 1991 cyclone in Bangladesh. Likewise in the Asian tsunami of 2004 more women than men perished across India and Bangladesh.” With increased frequency of disasters under climate change, women would thus be more vulnerable to the impacts of such disasters.

Adaptation to climate change is dependent on issues such as access to information, resources and technology in all these areas, women are at a disadvantage. Effective adaptation strategies would need to address the fundamental gender disparities. That way, women can be key agents of adaptation and mitigation to climate change¹⁴⁵. More detailed discussion on the Gender and climate change related issues can be found at the file containing the debate

on this issue at the UNDP's solution exchange forum at: <http://www.solutionexchange-un.net.in/gender/or/or-se-gen-wex-global-15120701.pdf>.

Seed Exchanges among women farmers in Kalimpong, W Bengal: As reported by Ruchi Pant from the UNDP, the Women farmers are resorting to the practice of exchanging seeds to procure seeds as an adaptation strategy to grow a different variety of rice growing at a lower altitude. With the temperatures rising across altitudes, rice varieties at 2,500 ft can now grow at 4,000 ft.

GoI - GEF/UNDP project on "Climate Resilient Development and Adaptation"³⁴ The Priorities of this programme are:

- Implementation risk reduction strategies and measures at pilot sites
- Integrating concerns into policies and planning processes at the state and national levels
- Strengthening technical capacity to integrate climate risks into management frameworks in agriculture, water and coastal regions
- Disseminating lessons learned to key stakeholders, both nationally and internationally

The project targets specific local interventions and broader enabling frameworks by linking demonstration activities directly to national and sub-national level policy making processes, and will help integrate climate risk reduction into planning, policies and programs in six sites with growing climate vulnerability: two drought-prone (in Rajasthan and Uttar Pradesh), two flood-prone (in Bihar and Uttar Pradesh) and two susceptible coastal areas (in Gujarat and Tamil Nadu).

In Conclusion

Domestically, India has blazed a trail by drawing up an ambitious National Action Plan... The question is now how India can dovetail its existing actions with international cooperation in such a way that national development and the fight against climate change become two sides of the same coin.

Yvo de Boer, Executive Director of the UNFCCC¹¹⁹

We cannot solve problems by using the same kind of thinking we used when we created them.

Albert Einstein

CIVIL SOCIETY VIEWS: For some of the key sectors and overall, this document has provided detailed recommendations from Civil Society groups. The central message of the analysis of the process of formulation and content of India's National Action Plan on Climate Change is reflected in the title: There is Little Hope here. NAPCC lacks proper perspective, urgency and it lacks sincerity in taking note of contributions of various sectors and classes in India's current and future emissions. The plan is not based on any democratic process of assessing least cost options before the society. While there are a number of positive suggestions in the plan, they are not sufficient in inspiring confidence since we have yet to see effective action or action plans to ensure their implementation. It seems India is going to miss an opportunity to push for a people friendly and environment friendly development path.

This whole document contains the various civil society perceptions, besides the analysis by SANDRP, about the GOI's NAPCC and issues around it. This includes the perceptions gathered at some of the civil society meetings and a discussion on the NAPCC on the UNDP administered Solutions Exchange Platform on water issues in India, following a query raised by the author of this report²⁰.

January 2009: Solution Exchange for the Water Community: Some of the main recommendations that the members on the Solutions Exchange debate on NWM of NAPCC are given here. This debate happened before the NWM draft of NAPCC was made public.

Local level initiatives for water modding and management at the basin and sub-basin level, that mark a departure from the approach in earlier water policies, is one of the important activities members suggested for the NWM. The restoration of existing local water management and storage structures can take precedence over creation of large new ones. Communities can be part of the planning, executing and monitoring process for activities

to mitigate the impact of climate change. There is a need for region-specific initiatives based on the agro-climatic conditions to govern water use by different sectors in line with water availability and seasonal variations. Further, a basin-level approach to water management is more desirable than a territorial one, but will require closer and better coordination between different ministries and state governments. NWM may establish agro-metrological stations at the local level to monitor the impact of climate change. Growing less-water intensive crops and soil and water conservation, as has been demonstrated by Baif Institute for Rural Development in Karnataka can mitigate the impact of climate change.

Members felt the process of drafting the Action Plan and Mission has tended not to be very participatory or open. A larger number of public consultations, along with information campaigns using the mass media, would create an effective dialogue with people and help elicit their inputs. NGOs and academic institutions can facilitate this using their linkages with local people in their areas of operation. These institutions can be part of the process of formulating the Missions' detailed plan of activities as they are in touch with the grassroots and therefore ensure community participation, and have an understanding of the larger issues of climate change.

The government can also hold regional consultations, divided because of river basins rather than states, to include the public, local bodies, NGOs, research institutions and the water supply and irrigation departments. These will be aimed at developing detailed action plans under the Mission.

Sounding a note of caution, members said NAPCC should conduct studies to assess the real impact of climate change on India's water availability before launching any programmes under the missions. There are many aspects of this phenomenon that scientists and policy makers have not understood and many gaps in the information available in India.

Each mission of the action plan can take an integrated approach in its activities. For example, NWM has to work in tandem with the Missions on Agriculture, Himalayan Ecosystems and others. NAPCC is an opportunity for an integrated approach to the several environmental challenges facing India cutting across departments and ministries. It is also an opportunity for NGOs and civil society to be involved in a meaningful way in the development process. For this to happen, the planning, decision making and implementation process has to be consultative and open.

September 2008: Civil Society response to the government: At a consultation in Delhi on Sept 25-26, 2008 organised by the Climate Action Network South Asia, Greenpeace, Christian Aid and the WWF, it was interesting to see participation from some of the government officials, including a joint secretary of the GOI's Ministry of Environment and Forests. The meeting after two days of deliberations sent a detailed set of recommendations to the government, some of the important ones are listed below.

- Shift in emphasis from a centralized production model to a decentralized & democratic model.
- Notwithstanding the obligation of developed countries, to the maximum extent possible and on urgent basis, India must deploy its own resources for both mitigation and adaptation, and both need to go hand in hand.
- Recognise that economic growth will not automatically result in sustainable development and therefore strong regulatory measures are essential to protect lives and livelihood

and also ensure development targeted at prioritized needs based planning and decision making process in India.

- Recognise that market led investments alone will not be sufficient to combat climate change and hence public resources must be used to deal with climate change.
- Recognise that historical obligations for addressing climate change also exist within national boundaries. It is imperative that the rich within India make their contribution towards mitigation of and adapting to climate change and pay costs towards their higher contribution to green house gas emissions.
- Apply the "Precautionary Principle" especially in situations where there are high risks of ecological/social costs, such as use of GMO technology in agriculture or big dams and big hydropower projects or Carbon Capture and Storage for power plants, or large scale deployment of bio-fuels.
- Recognise and respect the traditional knowledge systems and practices that may have relevance for dealing with climate change alongside modern scientific methods and technologies.

November 2008: INECC-FCFC Declaration: The Consultation on "Peoples' Voices in the Domestic and International Climate Change Agenda" was jointly organized by Indian Network on Ethics and Climate Change (INECC) and Forum for Collective Form of Cooperation (FCFC) during early November 2008. Some of the important points from this declaration, in the context of NAPCC are listed below.

- NAPCC states unequivocally that climate action plan should not be in conflict with the objective of fast economic growth. The participants found this stand contradictory. While power and transport sectors account for around 40% of GHG emissions, these are the sectors to which the government is giving priority in the name of economic growth. The concept of economic growth, development and prosperity needs to be reviewed with a rationale long-term perspective.
- Climate Change is not yet one of the components of the environmental impact assessment (EIA). 687 mining projects and 316 Special Economic Zones (SEZs) and other projects like Coastal Corridors have been sanctioned without taking the impacts of Climate Change into account.
- The NAPCC mentions biodiversity as a national priority but the government is planning to build at least 168 major dams in Northeast India, for example, which is one of the 25 mega biodiversity zones of the world. More than 80 major thermal power plants are being planned in the coastal areas which too are rich in biodiversity. These projects will cause massive destruction of bio-diversity: forests, rivers, ecosystems of tribal and other societies.
- The traditionally-rooted communities, usually the marginalised rural communities, have preserved the environment for centuries and they continue to do so.
- The poor hardly contribute to climate change, due to their low consumption lifestyles. The country needs to find ways of responding to the issues of the ecosystem communities because they are the first to suffer the ill-effects of climate change.

Some Useful Sources

Anon 2000, Climate and climate change in India, http://www.brron.edu/Research/EnvStudies_Theses/full9900/crcid/climate_and_climate_change_in_in.htm

Singh HS, 2002, Impact of climate change on mangroves, Paper presented at the South Asia Expert Workshop on Adaptation to Climate Change for Agricultural Productivity, Ministry of Agriculture, Government of India, United Nations Environment Programme and Consultative Group on International Agricultural Research, New Delhi, May 1-3.

M Lal *et al* 2001, Future climate change: Implications for Indian summer monsoon and its variability, in *Current Science*, Vol 81, No 9, November 10, p 1205.

Tata Energy Research Institute 2002, India specific impacts of climate change; <http://www.teriin.org/climate/impacts.htm>

Y S Ramakrishna *et al*, Impacts of climate change scenarios on Indian agriculture: Evidences, Central Research Institute for Dryland Agriculture, Hyderabad

Water Resources and Climate Change: An Indian Perspective Review Article; by R.K. Mall *et al*; *Current Science*, Vol. 90 No. 12; 25 June 2006 Available at <http://www.ias.ac.in/curresci/jun252006/1610.pdf>

Climate Change Impact Assessment on Hydrology of Indian River Basins Article; by A.K. Gosain *et al*; *Current Science*, Vol. 90, No. 3; 10 February 2006 Available at <http://www.iisc.ernet.in/curresci/feb102006/346.pdf>

Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries

Book; United Nations Framework Convention on Climate Change (UNFCCC); http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/text/pub_07_impacts.pdf

Global Monitoring of Lakes and Reservoirs to Assess Climate Change Paper; by Richard Roberts; UNEP GEMS/ Water Programme Available at http://www.idswater.com/Common/Paper/Paper_147/Global%20Monitoring%20of%20Lakes.htm

Global Climate Change and Agricultural Production. Direct and Indirect Effects of Changing Hydrological, Pedological and Plant Physiological Processes Book; FAO; Rome; Italy; 1996 Available at <http://www.fao.org/docrep/W5183E/w5183e00.htm>

SPOTLIGHT on India & Climate Change, SciDev.Net, London, UK <http://www.scidev.net/dossiers/index.cfm?fuseaction=specifictopics&dossier=4&topic=180&CFID=4346692&CFTOKEN=52741341>

Change and Food Security, from Arun Balamatti, Agriculture, Man and Ecology (AME), Bangalore (Experiences). Food and Nutrition Security Community, Solution Exchange India: <http://www.solutionexchange-un.net.in/food/cr-public/cr-se-food-15060701-public.pdf>

End Notes

- ¹ PNC's speech at the release of NAPCC on June 30, 2008, see: <http://pvcindia.nic.in/speeches.asp?id=690>, accessed on February 9, 2009
- ² *Preliminary Consolidated Report on Effect of Climate Change on Water Resource*, Ministry of Water Resources, Govt of India, June 2008 page 1
- ³ <http://news.bbc.co.uk/2/hi/science/nature/7690988.stm>, *Global warming 'underestimated'*, accessed on February 15, 2009
- ⁴ <http://planetark.org/web/51636>, *CO2 Hits New Peaks, No Sign Global Crisis Causing Dip*, accessed on February 16, 2009
- ⁵ The Times of India, December 16, 2008, *Rich countries won't share carbon profits with others*
- ⁶ Mint, November 26, 2008 *Rich nations must make first cut in emissions: Harvard*
- ⁷ The Hindu, December 9, 2008, *Has the Kyoto protocol worked?*
- ⁸ The Tribune, December 16, 2008, *Kyoto pact is worthless*
- ⁹ The Times of India, November 26, 2008, *Emissions by rich nations up by 16% in 10 years*
- ¹⁰ The Financial Express, December 31, 2008 *Carbon Finance Fund: Potential and benefits*
- ¹¹ The World Bank, January 2009, *South Asia Region: Towards a Climate Change Strategy* page (xix)
- ¹² MWR, Govt of India, June 2008 p 37
- ¹³ Eco-ethic, the INECC New letter, November 2007
- ¹⁴ Indian Express, November 25, 2008 *Change we must act on*
- ¹⁵ The Tribune, December 16, 2008 *Kyoto pact is worthless*
- ¹⁶ The Times of India November 12, 2008, *Sibal wants local solution for climate change*
- ¹⁷ Indian Express November 16, 2008
- ¹⁸ Editorial in Mint, September 27, 2008
- ¹⁹ For Details, see: <http://southasia.oneworld.net/todaydeadlines/india-unveils-action-plan-on-climate-change> dated July 1, 2008 accessed on February 7, 2009
- ²⁰ *Mawsam*, July-Sept 2008 page 8-10, *India's Climate Action Plan: where is the plan?*
- ²¹ The Hindustan Times and Financial Express, November 11, 2008 *Climate Change meeting generated heat as ministers spar*
- ²² See: http://himachal.nic.in/enviro/ncmt/notifications/Climate_Change.pdf accessed on December 29, '08
- ²³ http://himachal.nic.in/enviro/ncmt/notifications/Nodal_Agency.pdf accessed on December 29, 2008
- ²⁴ http://himachal.nic.in/enviro/ncmt/new_events.htm
- ²⁵ Indian Express, January 9, 2009, *For carbon neutral Himalail, Dhemal's team draws road map*
- ²⁶ Himachal This Week, December 27, 2008 *Himachal Climate Change Policy: Help or Hindrance?*
- ²⁷ <http://www.businessinindia.co.in/feeds/thinkindia/PressRelease.asp?b2mid=181472&India=Y> accessed on February 9, 2009

- ²⁸ The *Himalayan Times*, November 15, 2006
- ²⁹ The *Tribune*, December 27, 2006, *Climate: The missing links*
- ³⁰ From the *Economic Times*, November 4, 2006
- ³¹ *Mint*, February 11, 2009, *India should take the lead in imposing a cap on emissions*
- ³² The *Times of India*, November 15, 2006, *Haze behind melting glaciers in Himayas*
- ³³ *MWR*, June 2006, p 40
- ³⁴ *MWR*, June 2006, p 44
- ³⁵ *MWR*, June 2006, p 32-33
- ³⁶ The *Hindu*, January 21, 2009, *Warming overn alters monsoon*
- ³⁷ See for details: <http://www.satcomindia.org/satcomreport.htm>, accessed on February 10, 2009
- ³⁸ *MWR*, June 2006, page 22
- ³⁹ *MWR*, June 2006, p 46
- ⁴⁰ *MWR*, June 2006, page 32
- ⁴¹ National Water Mission (Draft), Ministry of Water Resources, GOI, Dec 2006, Vol. 1, p 1
- ⁴² The *Times of India*, November 25, 2006, *In parched Rajasthan, water not a poll issue*
- ⁴³ The *Economic Times*, November 16, 2006
- ⁴⁴ http://planetark.org/web/51435/Rising_Sea_Salinity_India's_Ganges_Expert, accessed on February 3, 2009
- ⁴⁵ The *Times of India*, Nov 19, 2006
- ⁴⁶ PM's opening remarks at the First meeting of the PM's Council on Climate Change on July 13, 2007, see: <http://pmindia.nic.in/speech/content.asp?id=561>, accessed on February 9, 2009
- ⁴⁷ *MWR*, June 2006, page 3
- ⁴⁸ The *Times of India*, November 24, 2006, *Brown clouds will go if we eliminate pollutants*
- ⁴⁹ *Mint*, January 23, 2009, *Burning biomass contributes 70% of brown cloud soot says research*
- ⁵⁰ *Mint*, November 24, 2006, *Experts differ on environmental effect of 'brown clouds'*
- ⁵¹ Note that the IPCC figure is for the whole of the Himalayan region, whereas the figure given earlier is for the glaciers in Indian Himalayan region.
- ⁵² *MW*, June 2006, p 19
- ⁵³ This is likely to be a typo. The more likely scenario is reduction in Sept-July flow rather than July-Sept flow.
- ⁵⁴ *MWR*, June 2006, page 99
- ⁵⁵ Dharamdhari Shripad, *Mountains of Concrete*, *International Rivers* 2006, page 32
- ⁵⁶ For details see www.sandp.in and a recent report "Mountains of Concrete" at http://www.internationalrivers.org/files/IR_Himalayas_rev.pdf
- ⁵⁷ See http://sandp.nic.in/sandp/draft_on_regulatory_framework.pdf for the draft guidelines for the regulation of wetlands, accessed on February 10, 2009
- ⁵⁸ *MWR*, Dec 2006, Vol 2, page 1/94
- ⁵⁹ *MWR*, Dec 2006, page 5
- ⁶⁰ *Indian Express*, September 19, 2006, *Brace for Kosi all over: Pune study*
- ⁶¹ See for example: Kosi's tragedy: Bhander after bhander, <http://www.rediff.com/news/2006/sep/01quest.htm>, Sept 1, 2006, accessed on February 7, 2009
- ⁶² *MWR*, June 2006, page 26-27

²⁰ MWR, June 2006, page 22

²¹ MWR, June 2006, page 33

²² See http://www.mandp.in/irrigation/100000_crores_spent_no_irrigation_benefits_SANDRP_PR_Oct2007.pdf for more detailed analysis.

²³ See the chapter on Indian experience in "Before the Deluge: coping with floods in the changing climate" at: <http://internationalrivers.org/en/deluge-full-report>

²⁴ For details see: http://www.mandp.in/floods/Hinakud_Dam_bring_a_floods_in_Orissa_Sept08.pdf

²⁵ For details see: http://www.mandp.in/dams/India_Dams_Methane_Emissions_PR160907.pdf

²⁶ For details see: http://www.mandp.in/dams/reservoir_situation_in_india0906.PDF

²⁷ FAO, New Delhi, December 2006, "National Medium Term Policy Framework: Sector Paper on Natural Resources Management", page 5

²⁸ Nikhil Anand, July 2007, in Seeds of Hope (a collection of case studies of successful local efforts), published by Lokayan, see: http://www.indiawaterportal.org/tt/wb/case/seed_watr.pdf, accessed on February 11, 2009

²⁹ Down To Earth, June 30, 2002, <http://www.minwaterharvesting.org/rural/Raj-Saundhyala.htm>, accessed on February 11, 2009

³⁰ FAO, New Delhi, December 2006, "National Medium Term Policy Framework: Sector Paper on Water Management for Agriculture", page 9

³¹ The Mint, January 9, 2009, *Global warming could hurt crop yields: study*

³² The Hindustan Times, February 5, 2009, *Eco warriors 10 youngsters go on 3500 km journey to spread the climate change message*

³³ Subodh Shukla, Suman Bhattacharya and Amit Garg, *Greenhouse gas emissions from India: A perspective*, Current Science, February 10, 2008

³⁴ See the order of the Central Information Commission, following an appeal by SANDRP, http://www.mandp.in/other/moves/CIC_TO_JMD-REVIEW_INFO_POLICY%20January_09.pdf, accessed on February 11, 2009

³⁵ Quoted in the Financial Express, January 9, 2009 *Climate change to spur global food crisis*

³⁶ The Times of India, December 17, 2008, *A Hungry Tale*

³⁷ See *How Distant a Square Meal: The Persistence of Hunger in India* by Rahul Goswami, January 23, 2009 <http://info.changeindia.org/2009/01/23/Agriculture/Analysis/The-hunger-index.html>

³⁸ FAO, Rome, August 2007, "ENERGY USE IN ORGANIC FOOD SYSTEMS", see: <http://www.fao.org/docs/eims/upload/233069/energy-use-0a.pdf>, accessed on February 7, 2009

³⁹ The Financial Express, February 9, 2009, *Low efficiency of reservoirs raises concerns*

⁴⁰ For details see: <http://www.mandp.in/sri/>

⁴¹ The Hindustan Times, November 19, 2006

⁴² <http://www.farmerguardian.com/story.asp?sectioncode=1&storycode=22663>, Nov 17, 2006

⁴³ http://www.swisinfo.ch/en/swiss_news/Land_wasted_for_fuel_as_millions_go_hungry.html?siteSect=201&sid=10314695&ckKey=1234344121000&cty=st, Land "wasted" for fuel as millions go hungry, accessed on February 11, 2009

⁴⁴ http://www.thehindian.com/newsportal/newscategorized/100-million-jatropha-saplings-planted-in-chhattisgarh_100154010.html, 100 million jatropha saplings planted in Chhattisgarh, accessed on February 16, 2009

⁴⁵ The Hindu, November 17 2006, *Strategies for green growth*

⁴⁶ http://planningcommission.nic.in/reports/genrep/rep_integy.pdf accessed on February 3, 2009

¹²⁸ The Financial Express, January 9, 2009, *High on new deals, govt sets eyes on 60000 MW N-energy by 2030*

¹²⁹ See http://www.sandp.in/otherissues/Nuclear_Power_GenAug2007.pdf for details. Accessed on February 11, 2009

¹³⁰ The World Bank, January 2009, page ix

¹³¹ The Bank Information Centre Press Release, February 10, 2009, *World Bank Loans Exacerbate Climate Change: Study highlights World Bank's financing of fossil fuels*

¹³² See http://cea.nic.in/god/open/Monthly_Generation_Report/18col_A_08_12/open_01.pdf, accessed on February 11, 2009

¹³³ MWR June 2008, page 22

¹³⁴ The Financial Express, February 4, 2009, *India and Denmark join forces on global warming* by Ole Lousmann Poulsen, Danish Ambassador in Delhi

¹³⁵ The Financial Express, November 20, 2008, *Taxing Carbon*

¹³⁶ The Financial Express, November 24, 2008

¹³⁷ The Financial Express, February 12, 2009, *New mechanism to improve viability of renewable energy*

¹³⁸ Press Release on February 3, 2009, *CFL is a leapfrog option for India as it increases efficiency, but the lack of regulations is jeopardizing the programme*

¹³⁹ <http://www.guardian.co.uk/environment/2009/jan/08/windpower-energy>

¹⁴⁰ For a detailed critique of the EIA notification 2006, see: *Green Topism: A Review of the EIA Notification 2006*, by Leo Sakdanna et al, 2007, www.eajoinia.org

¹⁴¹ The Guardian (Manchester, U.K.), Jan 18, 2009, 'OMG! FOUR YEARS LEFT TO ACT ON CLIMATE CHANGE,' JIM HANSEN

¹⁴² New Scientist (pg. 30), Jan. 24, 2009, *One Last Chance to Save the world*

¹⁴³ During a US Senate Foreign Relations Committee hearing on climate on Jan 28, 2009, from Patrick McCully, personal communication, January 30, 2009

¹⁴⁴ The Mint, January 6, 2009, *India's CDM sector is booming*

¹⁴⁵ For details see: <http://www.sandp.in/hydro-power/>

¹⁴⁶ For details see: http://www.sandp.in/hydro-power/Alhina_Duhangan.pdf

¹⁴⁷ See <http://www.adb.org/Documents/Environment/IND/42933/42933-IND-SEIA.pdf> for the detailed EIA of the project, accessed on February 9, 2009

¹⁴⁸ *Massam: talking climate in public space*, July-Sept 2008 issue, page 4, the magazine is brought out by NELSON, Siliguri (W Bengal), *Massam* is the Hindi word for climate.

¹⁴⁹ The Financial Express, January 22, 2009, *Rural job scheme can get poor an's share in carbon trading*

¹⁵⁰ The Hindu, December 12, 2008 *A new climate deal based on human progress and justice*

¹⁵¹ South Asia Climate Change Strategy, January 2009, page xxi

¹⁵² From the Jaany Memorial lecture, "Climate Change- Towards Climate Resilient Development" in 2008-09

¹⁵³ MWR, June 2008, page 79

¹⁵⁴ The World Bank, January 2009, page 107

¹⁵⁵ <http://www.solutionsexchange-va.net/infopack/cd/cd-ar-w-09-120801.pdf>

¹⁵⁶ <http://www.solutionsexchange-va.net/infopack/cd/cd-ar-w-09-1208-27-110801.pdf>

¹⁵⁷ The Times of India, February 5, 2009, *Take the lead: India has vital role of play in climate deal*

¹⁵⁸ For consolidated copy, see <http://www.solutionsexchange-va.net/infopack/cd/cd-ar-w-09-120801.pdf>

About this publication

Climate Change is perhaps the biggest challenge facing the world today. There is little doubt that the responsibility of having created this specter that threatens our very survival, lies with the policies and practices of the countries of the Global North. It is also true that the western world, the UN and all the various multilateral agencies, including the UNFCCC have not managed to come up with anything more than feeble, cosmetic efforts in this direction. Given these circumstances, the western world has forfeited the right to lecture on this issue.

At the same time, for a variety of reasons, India is more vulnerable to climate change impacts than the US, the Europe or even China. Within India it is the rural and urban poor, Dalits and Adivasis, those who depend on access to natural resources for their fragile livelihoods that are the most vulnerable. This is the cruel irony of Climate Change: Those who have contributed least towards causing it, will suffer the most because of it. More crucial still, they are the ones who have been entirely left out of the process of finding a solution.

The National Action Plan of Climate Change (NAPCC) is being offered as THE policy document on how the Indian Government plans to tackle the problem. Those who are directly affected have been completely left out of the process, planning and indeed the vision of the NAPCC and the missions like the National Water Mission. Rather than challenge or even critique the destructive model of development that has already jeopardized the livelihood of millions of people and continues to do so, the NAPCC endorses it and makes it clear that sustaining the GDP growth ought to remain top priority.

These are some of the key issues this report examines. There is a lot of work that remains to be done. This critique of the NAPCC is only a small step in that direction.

About South Asia Network on Dams, Rivers & People

SANDRP (www.sandrp.in) is an informal network of organizations and individuals working on issues related to the water sector. SANDRP's areas of interest include all the issues related with water sector, with special focus on issues associated with large dams, mostly in India, but including south Asia regional issues. SANDRP's broad objective is to work on these issues so that democracy, people and environment get due place. Started in 1998, SANDRP activities include monitoring, research, documentation, policy analysis, publication, dissemination, advocacy, networking and awareness building among organizations and people related to these issues. SANDRP publishes a journal "Dams, Rivers & People".