The People, Piety, Pollution and Politics of Ganga

Happenings surrounding our ‘National’ River

One of the most striking descriptions of this remarkable phenomenon called the Ganga comes from Jawaharlal Nehru: “The Ganga, especially, is the river of India beloved of her people, round which are intertwined her memories, her hopes and her fears, her songs of triumph, her victories and her defeats. She has been a symbol of India’s age long culture and civilization, ever-changing, ever flowing and yet ever the same Ganga”.

The dimensions are huge: 2526 km long river is India’s longest one. The river basin is among the world’s top twenty big rivers with an area of over a million sq km. In terms of number of people staying in the basin, it is the world’s biggest with 448.3 million people (2001 census), likely to be over 529 million (in 2011, assuming Ganga basin population growth rate same as national rate, which will give only a conservative estimate) staying in the Indian part of the basin (79.3% of total basin area in India). The basin area includes parts of four countries, and within India 11 states (Haryana, Himachal Pradesh, Delhi, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand, Uttar Pradesh, Uttarakhand, Bihar, W Bengal).

In the Hindu religion, Ganga is an incarnation of the Goddess herself. It figures in the Vedas, the Puranas, the Ramayan and also Mahabharat. Throughout the basin the river is considered holy, as also by millions of Indians staying beyond the basin. Almost every festival and ceremonies of the people and religions in the basin and beyond centre around the river. Culturally too, the river has great significance if we look at the popular literature, films, songs, poetry or the stories.

The website of the National Ganga River Basin Authority (NGRBA) says, “Ganga drains a basin of extraordinary variation in altitude, climate, land use, flora & fauna, social and cultural life. Ganga has been a cradle of human civilization since time immemorial. Millions depend on this great river for physical and spiritual sustenance. People have immense faith in the powers of healing and regeneration of the Ganga. It is arguably the most sacred river in the world and is deeply revered by the people of this country. The River plays a vital role in religious ceremonies and rituals. To bathe in Ganga is a lifelong ambition of many who congregate in large numbers for several river centered festivals such as Kumbh Mela and numerous Snan (bath) festivals.”

Besides the main stem of the river, most of its tributaries, including Yamuna, Chambal, Damodar, Gomti, Kali, Khan, Kshipra, Hindon, Sone, Kosi, Betwa, Ramganga to name a few, are all described as grossly polluted by the various agencies like the Central Pollution Control Board, the Union Ministry of Environment and Forests and its National River Conservation Directorate and NGRBA.

Dams and Barrages on Ganga If one were to travel down the river from Gangotri (the birth place of Bhagirathi), considered the source stream of the Ganga River. The River that was brought to the earth through the cross hairs of Kailash, the Shiva, as per Bhagirathi), Yamunotri (the birth place of Yamuna, a river that is bigger than Ganga at their confluence in Allahabad), Kedarnath (the source of Mandakini River) or Badrinath (the source of Alaknanda River) one should be ready to face some rather nasty surprises down the stream.

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These would include complete disappearance of the river for several kilometers for most of the time during the year or the river getting submerged behind a dam. And this disappearance of the river and also submergence of the river would happen again and again for each project. These stretches had perennial rivers before the dams and hydropower projects were built on them. Further down, there are barrages on the river at Haridwar (water diverted to Upper Ganga Canal), Bijnor (Madhya Ganga Canal) and Narora (Lower Ganga Canal), at Kanpur and also the dam at Farakka. In addition, every one of the 17 major tributaries has been dammed several times.

However, in NGRBA’s description of the problem, there is no mention of these projects: “In the Ganga basin approximately 12,000 million litres per day (mld) sewage is generated, for which presently there is a treatment capacity of only around 4,000 MLD. Approximately 3000 MLD of sewage is discharged into the main stem of the river Ganga from the Class I & II towns located along the banks, against which treatment capacity of about 1000 MLD has been created till date. The contribution of industrial pollution, volume-wise, is about 20 per cent but due to its toxic and non-biodegradable nature, this has much greater significance.”

The River Action Plans This polluted state of the river is not an overnight or recent development. The poor state of the river is common knowledge for pretty long now. And the river is not in this state for lack of attempts (at least on paper) and lack of financial or technical or infrastructure resources or lack of understanding as to what are the responsible reasons for the river to be this state for so long and what needs to be done.

The 1st phase of tackling the pollution started with the enactment of the Water pollution act 1974, through which elaborate institutional arrangement from Central to State Pollution Boards were set up with an army of bureaucrats, buildings and laboratories, armed with significant legal powers. However, till date we do not have a single case of a river or tributary or stream that has been claimed to be cleaned up due to the effort of any of the pollution control boards. The Pollution Control Boards are known to have become dens of corruption.

Having seen this failure, the then Prime Minister Rajiv Gandhi launched the now celebrated Ganga Action Plan in 1985. Rajiv Gandhi, in his speech announcing Ganga Action Plan on June 14, 1986 at Dahsamedha ghat in Varanasi was quite optimistic: “Today we are beginning the program of cleaning the Ganga here – and it is our hope that through this there will be a sewage plant built and where all the sewage will be diverted – and won’t come into the Ganga – we will get power from that also – and we will get fertilizer from it and the power that will be required will make it itself.” Rajiv Gandhi was also hopeful that the Environment Protection Act, enacted the same year of 1986, will be useful in this endeavor. The EP Act is good, but the agency implementing it, the Union Environment Ministry did not show the independence, the will, willingness or the intention of taking on this problem with any sense of seriousness.

Moreover, the GAP scheme did not attempt to learn any lessons from the failure of the earlier Pollution Control apparatus then in existence for over a decade when the GAP was launched. The GAP continued on the business as usual emphasis on more sewage treatment plants, pumps, pipes and such infrastructure.

The official consultants to the scheme - the Thames Valley Water Authority of England had never tackled any river that was comparable in size or complexity to any one of the seventeen tributaries of the Ganga, leave aside the whole basin. The World Bank also funded the scheme, but it too had no credible track record of cleaning up any polluted river stretch through any of its projects in India. The Dutch government funded a ten year project to implement parts of the GAP in Kanpur without adequately understanding the nature of the pollutants Kanpur Rivers had and it failed in its design itself. Decades later, the then Union Minister of state of Environment and Forests Jairam Ramesh declared on the floor of the Parliament in 2009 that the GAP and the Yamuna Action Plan had failed to achieve its basic objectives.

In 1993 the GAP Phase II was launched, including tributaries of Ganga like the Damodar, Yamuna, Mahananda and Gomati. In Dec 1996 it was merged with the National River Action Plan. The importance of this scheme to government is clear from the fact that the National River Conservation Authority is chaired by the Prime Minister and includes, besides several Union Ministers, Chief Ministers of all the basin states.
Dams, Rivers & People

There are Standing monitoring and steering committees including the highest bureaucrats from the centre and the states. While it was apparent over the years that the GAP and the RAPs (River Action Plans) are failures, no credible attempt has at any stage been done to understand the reasons for failure when monitoring and supervision was supposed to be from the highest quarters.

The CAG has shown through several reports how the scheme has been a failure, the latest report coming in 2011. In the report, echoing what SANDRP had said several years ago, the CAG said that ever since the UPA alliance came to power in 2004, there have been no meetings of either the authority headed by the PM or the Steering committee headed by secretary of Union Environment Ministry. This is just an indication of how low priority the government has for the Rivers in general and Ganga in particular.

Evolution of NGRBA In February 2009, incidentally just months before the Parliamentary elections, sensing that issue of dams on and pollution of Ganga is becoming a hot issue, the UPA government came out with a notification on National Ganga River Basin Authority, again headed by the Prime Minister and included some non government members. It was clear at the outset that these were symbolic gestures and within government there was absolutely no serious intent at tackling these issues. Most importantly, like in case of earlier attempts at river pollution control, the key decision makers and managers have been the Union and the state governments, through their constituents like the Ministries of Environment and Forests, Water Resources, Urban Development, the Pollution Control Boards, the Water Quality Assessment Authority, Urban Municipalities, etc.

But none of these agencies have shown any culture of democratic, transparent, accountable, participatory functioning. Their salaries, livelihoods or life sustaining elements are not dependent whether the rivers are clean, whether they have any freshwater flow or not.

Throughout almost four decades of attempts at river pollution control, the key decision makers and managers have been the Union and the state governments, through their constituents like the Ministries of Environment and Forests, Water Resources, Urban Development, the Pollution Control Boards, the Water Quality Assessment Authority, Urban Municipalities, etc.

It is assumed that more machinery and finances will take care of the problem and there is no need to address the governance related to any of the component of the river management regime.

Frustrated by this and supporting the fresh fast from Prof G D Agarwal (his earlier series of fasts led to ultimately declaring 135 km stretch of the Bhagirathi as eco sensitive zone, though a bit ominously, the notification for this is yet to be published in the gazette, without which it cannot become a law. On the contrary, some elements within the government took the decision to abandon hydro-projects in this stretch to mean that they can take up even more projects on other tributaries of Ganga), three of the non government members declared their resignation from the authority, but they attended the April 17, 2012 meeting of the authority. This meeting of the NGBRA was the concession given by the government when Prof Agarwal’s fast ended in March 2012.

So where is the problem? Most importantly, throughout these almost four decades of attempts at river pollution control, the key decision makers and managers have been the Union and the state governments, through their constituents like the Ministries of Environment and Forests, Water Resources, Urban Development, the Pollution Control Boards, the Water Quality Assessment Authority, Urban Municipalities, etc. But none of these agencies have shown any culture of democratic, transparent, accountable, participatory functioning.

Their salaries, livelihoods or life sustaining elements are not dependent whether the rivers are clean, whether they have any freshwater flow or not. And the people whose livelihoods, life sustaining elements are dependent on these rivers have no, absolutely no role at any level in ensuring that these rivers are clean, flowing all round the year with clear water, the basic slogan of Nirmal, aviral Ganga that the Ganga campaign have been raising.

In other words, the emphasis has been solely on infrastructure (new plants, pumps, pipes) and (pocketable) finances, but none at all in addressing the governance related to any of the component of the river management regime.

It is established that more machinery and finances will take care of the problem and there is no need to address the governance to ensure that the infrastructure actually works as intended and decisions are appropriate, the finances are used optimally and for the right options. A simple indicator of the failure of the governance is that most of the existing Sewage Treatment Plants do not function anywhere close to designed or promised levels with respect of quality or quantity of output and yet, no one knows who is responsible for this, no one has ever been punished.
So the Ganga Campaign advocates say the river should not be connected to the sewer, but reality today is that the river is the sewer. There has been no credible assessment of the amount of freshwater the river should have all round the year downstream from a dam, hydropoject or a barrage, and none is getting released at diversion points, even for perennial rivers. The rivers are allowed to be killed multiple times and it is actually being passed off as an environmentally benign treatment by no less than the Union Environment Minister Ms Jayanti Natrajan on the floor of the Parliament while answering the debate on Dec 19, 2011 & again in April ‘12.

Environmental Flows or Minimum Flows? Even where the ad hoc-ly decided minimum flows are stipulated, the MEF has no credible compliance mechanism in place and they have refused to involve the local people in ensuring compliance. Leave aside the question of stopping work on ongoing projects on Alaknanda and Mandakini as the Ganga Campaign has demanded, Ms Jayanti Natrajan went out of her way to clear the 300 MW Alaknanda Hydro project of GMR group even after the statutory Forest Advisory Committee twice rejected clearance to the project and the Ministry appointed consultant, the Wildlife Institute of India recommended that the project should not be allowed. This project is close to the Badrinath and Kedarnath sites and also important protected areas like the Nandadevi Biosphere and the Valley of Flowers. It will dry up the river en-route to the shrines, pleading that there are no pilgrims in six months! In fact the Alaknanda basin plans will destroy all the five holy prayags, if the planned schemes go ahead, one of them, the Vishnu prayag already stands destroyed due the 400 MW Vishnuprayag hydropower project of JP associates.

The gap between the state of the river now and what the people of India dream of (Nirmal, avirat) is only increasing. More troubling is the fact that there is no road map in sight to bridge this distance. One has to remember that in the context of climate change, with glaciers melting, sea levels rising and monsoon patterns becoming unpredictable, the state of the river will only get worse.

One of India’s most erudite politicians, Jairam Ramesh, once attempted to strike my name off a list of possible people who can participate in an attempt to solve this riddle. Ramesh said I think Ganga is only a river. Indeed, Ganga is more than a river. But first and foremost it is a river. With due apologies, sir, but does the government that you represent consider it a river at all? There are no signs of it in anything that this government does concerning the Ganga.

What incidentally is a river? Here is a definition we attempted: River is a hydrological, geomorphic, ecological, biodiversity rich, landscape level system that serves as key part of freshwater cycle, balancing dynamic, though not always continuum (e.g. discontinuity when tributaries meet a river) equilibrium between soil moisture, snowfall, rainfall, surface water and groundwater and providing large number of social, environmental, economic, cultural, aesthetic, religious services to the people and ecosystems all along its watershed.

It is not that the citizens and society are beyond blame. In a sense, the religious, cultural connection of the Ganga River has been a bane since it has lead to increase in the pollution load of the river rather than reducing it. Why did they allow the river they revere, to come to this pass? What have they done to reverse it?

Can we even hope the river will have better fate or state without making the citizens part of the process? Ultimately, the river is a mirror, or better still, a report card of what you do it its catchment.

17th April 2012: The Third NGBRA Meeting The Prime Minister gave the most disappointing speech (http://pib.nic.in/newsite/erelease.aspx?relid=82308) at the 3rd National Ganga River Basin Authority meeting on April 17, 2012. The speech promises nothing, says the most discredited IIT Roorkee report that even the Ministry of Environment and Forests’ Expert Appraisal Committee on River Valley Projects criticized and which the EAC does not follow and the report of the Wildlife Institute of India that his environment minister Jayanti Natrajan refuses to follow, will be their guiding lights and a multi disciplinary group will now study them! In early June 2012, the PM decided that this group will be headed by the Planning Commission member B K Chaturvedi will head it. Mr Chaturvedi has been a sort of trouble shooter for the government whenever it hits any environmental hurdle. Such panel will have no credibility.

PM also has hopes from IIT consortium to provide guidance for future. The Consortium that has no track record on either understanding the complex social, cultural, environmental, economic and governance problems that plague the issues related to the state of the river, not does it have track record of taking independent positions on these politically tough issues.
On the deficit of 18000 MLD treatment capacity of Urban sewage (it is a gross underestimate) the only thing the PM has to offer is MONEY: "There is adequate funding available to create additional treatment facilities under the National Mission Clean Ganga."

On under utilization of existing sewage treatment plants, he suggests that it is basically because lack of connection with the sewage and O&M expenses, so he offers relaxation of norms! Neither of these are really the key problems affecting existing STPs.

On persistently polluting industries, he only has a sermon to state government to strengthen enforcement mechanisms... such sermons have come and gone hundreds of times without any impact...

"...to attend to some of the institutional, administrative and financial problems that may be coming in the way of more effective implementation of pollution control and abatement measures", he asks the states to submit reports on urban and industrial pollution and than NGBRA can consider actions! The PM hints that it is well known what needs to be done, but clearly does not want to do anything...

And of course not a word on the issue of Dams, the biggest threat to the river and all the related problems, not a word on addressing the governance issues. PM acknowledges, "We should remember that our efforts in the past have not been very successful" but the only thing on offer is "a renewed and sincere commitment in both thought and action to make a definite change in the situation". Unfortunately, in the entire speech there is nothing at all to suggest that he means what he says.

In the same meeting, Uttarakhand Chief Minister Vijay Bahuguna lobbied hard for hydro projects, even those which were already cancelled by the MoEF saying that projects cannot be cancelled for 'perceived feelings of some people'.

In a statement issued after the meeting, Bahuguna disclosed that the State Cabinet had passed a proposal in support of hydropower projects. He also opposed declaration of 135-km-long area between Gomukh and Uttarkashi as an eco-sensitive zone, exhorting that current regulations were sufficient to regulate development in the area.  

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22 May 2012: More than 30 MPs all parties urge the PM to allocate 50% water from existing Ganga Dams and scrap on-going and planned projects on Alaknanda & Bhagirathi

On the 22nd May 2012, more than 30 Members of Parliament representing various political parties met the Prime Minister and gave him an appeal on behalf of India Parliamentarian Forum for Saving Ganga and Himalayas. This also included MPs from Uttarakhand, a state government that is seemingly hell bent on building more than 500 dams on the Ganga and its tributaries.

The submission and the subsequent meeting is important in many ways, it highlights the fact that Aviral Dhara in Ganga is a demand that is not restricted to one particular religion, or political party, but is echoed by a wide population.

The submission states that the existing projects on Ganga: Maneri Bhali I, Maneri Bhali II, Tehri and Koteswar have shown massive negative impacts. Due to these projects, 115 kilometers of the river from Maneri Bhali to Koteswar has been reduced to a series of tunnels and reservoirs and original Ganga has disappeared. The projects under construction and under consideration are planned "bumper to bumper all along the path of the river".

Interestingly, it says: “Not a single village in the vicinity of the already existing projects can be termed as developed. Indeed, the villages that were once enriched with perennial water supplies and vast grazing lands are now deprived of both, water and land. Deep cracks in houses and unexplained land sinking has happened at several sites even distant from dams. Information gathered from RTIs reveals that existing hydropower projects are functioning below 40% efficiency and yet new projects are built.”

Let us hope that the government takes these demands seriously. The local population suffers the impacts and loses livelihoods to the hydroelectric projects. All the limited profits are made by the contractors, politicians and bureaucrats involved. Hence, the Uttarakhand Government’s role, heavily pushing hydropower needs to be looked at as a limited, motivated perspective.
### Demands of all party MPs

- **Immediate scrapping of all under construction projects on Mandakini (Rambada, Phata Byung, Singoli-Bhatwari on Mandakini) that have already been noticed as detrimental and have been proposed for cancellation but not executed.**
- **All proposed HEPs should be cancelled with immediate effect**
- **150 kms of valleys from glacier lines must be declared as Cultural Eco sensitive zone.**
- **50% water must be released from Maneri Bhali 1 and 2, Koteshwar and Tehri for maintaining e-flows.**

All hydro projects that were scrapped in Gangotri valley last year must be brought to an appropriate closure, sealed and ecology be restored.

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**On June 22, 2012, some anti social elements attacked the person and residence of Dr Bharat Jhunjhunwala at Devprayag. We condemn this most shocking incident. We understand from reports that the attackers were backed by the company building the 330 Srinagar hydropower project on Alaknanda River. We also gather from reports that the police knew about the possibility of such an attack and in fact disappeared from the scene to make such an attack possible. This is most shocking.**

In a letter to the Uttarakhand Chief Minister Shri Vijay Bahuguna on June 23, 2012, we wrote, “We immediately demand strictest action against those responsible for this act, including those from the company and their contractors. PI also set up a credible enquiry to ascertain the role of the police. We also would like you to ensure that such incidents are not repeated as they are against the basic democratic and constitutional norms.” Earlier on June 22, Dr GD Agarwal, Rajendra Singh and others were arrested by the Police when they were on a visit to the under construction Srinagar hydropower project and taken out of Uttarakhand. This too is condemned.

All in all the past and current situation raises doubts about Ministry’s seriousness about making the Ganga either Aviral or Nirmal.

Himanshu Thakkar (An edited version of this appeared in Civil Society issue of June 2012)
Bundelkhand region has emerged as one of the flashpoints of the deepening water-crisis in the country. Following the national-level focus on Bundelkhand's recent prolonged drought and water-shorages, however, considerable funds have been poured into Bundelkhand particularly for improving the water situation. Unfortunately, however, the ground-reality doesn't appear to be improving. Questions are therefore being raised about pushing of some dubious big-budget projects with many adverse side-effects while ignoring the potential of small-scale works which are ecologically sound and can give short-term as well as long-term relief to people at a low cost.

The Institute of Social Sciences (ISS), N. Delhi in collaboration with the Association of Local Governance (ALGI) N. Delhi took the initiative to study these aspects of Bundelkhand in the specific context of Lalitpur district (Uttar Pradesh). Bharat Dogra, Fellow ISS, who has written several reports on Bundelkhand for reputed newspapers and journals, took the lead in contacting some leading social activists of Bundelkhand region in U.P.

A four-member team was constituted including Raja Bhaiya, Director of Vidya Dham Samiti; Vasudev, Director of Bundelkhand Sewa Sansthaan and Rajabua Upadhyaya, senior activist of ABSSS. This team prepared a report after visiting four project sites, speaking to affected villagers and visiting some areas where good traditional practices of water conservation had been practiced in the past. The preliminary findings of this team were presented at a well-attended press conference held at Lalitpur on May 17, 2012. The final report based on these findings has been written by Bharat Dogra. Briefly, this report hopes to show how billions of Rupees can be saved and even bigger environmental damage can be averted by a proper prioritisation and planning of water related projects and programmes. This report is divided into three parts:

I. Avoid this Massive Wastage of Resources and Huge Social and Environmental Costs - The Case of Kachnauda Dam and Canal Project.
II. Utilise the Massive Potential of Saving Crores of Rupees every Year and Protecting Environment By Encouraging Mangal Turbine.
III. Give New Life To Traditional Water Conservation Practices.

Kachnauda dam is being built on Sajnam River in Lalitpur district. An earlier version of this project presented in year 2007 cost Rs. 89 crore. Later in 2009 a revised version appeared which raised the cost between 4 to 5 times to Rs. 425 crore. What is most shocking about this massive escalation is that the later-day version also has massive additional social and environmental costs. One has heard of economic costs being raised to reduce social and environmental damage. But here is a case where economic costs go up and in addition extremely high new social and environmental costs also appear.

The earlier version of the project aimed at taking the canal water to a dry existing canal of an earlier project at a proper site with minimal adverse effects. However the changed version unnecessarily constructs an elevated canal over a long distance parallel to the existing canal of a previous project. There is no need for this extra elevated construction as the dry canal of a previous project already exists in the area. What is more, the new alignment of canal takes the canal to a height of about 25 feet and even higher. The nearby villagers complain with one voice that this can potentially destroy their villages.

As the people of Bamhori Sehna village, (panchayat Bhailoni Lodh, Block Bar) including elected panchayat representatives told us, they were never informed earlier that the canal will be taken from such a height, higher than their kutchha homes. They say that the seepage from this will destroy their houses as well as their fields. The wall will create a barrier dividing fields and temples on one side and houses on the other side. Thus normal drainage will be badly affected leading to much greater threat of water-logging and floods and eventual destruction of agriculture in the village. Even a very partial construction had led to the water-logging of the dalit basti. The soil taken for very high construction will also ruin fertile fields. The farmland here is less but it is very fertile. If this fertile land is lost the farmers here will be ruined, villagers told us. In addition a very important hundred year old tank will be lost due to huge trenches which are being dug to obtain soil using heavy machines.

People of about six villages with a total population of about ten thousand will be very adversely affected. These villages in Bar block include
Bamhori Sehna, Bhaloni Lodh, Bar, Motikhera, Dasrara, Bachravni and parts of Turka village.

Villagers including elected panchayat representatives told us that they had not been informed about the changed plan for elevating the canal to a huge height at all and therefore they were completely taken aback where work suddenly started with heavy machines. Once the tragic implications of this for their village started becoming clear to them, villagers particularly women marched together to the construction site and protested peacefully against the continuation of this work. This work was stopped at some places but continued elsewhere.

Before more damage can be done, this study team requests higher authorities to immediately order a completely impartial review of the entire project and immediately stop further work on it. Our recommendation is that the project should go back to the original 2007 version which costs much less and also avoids this onslaught on the life and livelihoods of these villagers. Why make such costly changes in the original project which bring avoidable destruction to many villages? It is widely suspected that some powerful construction lobbies are behind this who want to earn crores of Rs. while inflicting heavy losses on public funds as well as villagers. This should not be allowed to happen.

The study team also came across other examples of very wasteful use of irrigation and water funds. A check dam on Farari nullah was constructed at the cost of about Rs 13 lakh with very little water conservation benefits, whereas same or better results could have been obtained by giving finishing touches in the form of two gates to a previous project at the same site at a cost of just about Rs 5000 or so. Such wasteful use of money should be avoided, and it should be investigated why such wasteful use of funds has been made to ensure that such plunder of public funds does not occur in future.

II. Lalitpur district happens to be the home district of the famous rural innovator Mangal Singh1 whose innovation popularly called the Mangal Turbine has been widely praised in India and abroad. If properly harnessed and supported by the government and voluntary organisations, the Mangal turbine can save farmers billions of Rs. every year by avoiding the use of diesel or electricity while lifting water from rivulets and streams. All this will translate into saving foreign exchange as well. In these times of climate change it is equally important that there will be a huge reduction in greenhouse gas emissions.

The importance of Mangal Turbine has been highlighted by several senior persons and research documents.

B.K. Saha, former Chief Secretary, Govt. of Madhya Pradesh, said, “The system is extremely cost effective even after taking into consideration the cost of the Stop Dam. Where the Stop Dam is already available the system is even more cost effective. Installation of this device is strongly recommended wherever there is flowing water in small streams by constructing a stop dam and installing one or two water wheels as designed and developed by Mangal Singh. It saves on energy like electricity or diesel and is ecologically completely benign.”

Dr. T.P. Ojha former Deputy Director General (Engineering) of the Indian Council of Agricultural Research has written, "Mangal Singh's device offers great promise and possibility of lifting river water for irrigation, fisheries, forestry and drinking purposes. The water head created by putting a check dam across the river or perennial water course generates enough force to rotate the water wheels to operate one or two centrifugal pumps in series..."

According to a comprehensive study of Bundelkhand's water problems made by IIT Delhi and Vigyan Shiksha Kendra, "Several years back, Mangal Singh, a farmer from Lalitpur district, devised a highly efficient, yet inexpensive turbine which can be used for pumping water as well as for electricity generation. Its specialty is that it does not require a large water head: a water head of even one metre or even less is sufficient for its operation. It can easily be fabricated by the villagers themselves, using locally available material.

This model of water wheel is a source of rotational energy which can be used for any purpose. Its performance as a pumping system for irrigation has been found excellent. It is also being used for sugarcane crushing, grain threshing, grinding - and

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1 As Mangal Singh explains, this innovation called ‘Water Wheel Turbine cum PTO’ machine or simply Mangal Turbine functions on the basis of (i) a specially designed water wheel which can rotate even on a low water head of 1 metre, (ii) stepping up the rotation through a suitable gearbox in the range of 1500-1800 RPM and (iii) using the available mechanical power by connecting one end of output shaft with centrifugal irrigation pump and other with a suitable pulley to operate other machineries and also an alternator to generate electricity.
for operating machine tools.

On the basis of some locational studies within Bundelkhand, some 500 hydro-sites have already been found suitable for its installation. On an average, two turbines per site will have the potential to irrigate 200 hectares of land.

In comparison with the uncontrolled flush irrigation through big-dam-connected trunk canals the irrigation by Mangal turbine can be controlled by local people as per their crops' requirements.

This turbine as a fine example of common people's inventiveness should be encouraged by all means for people's benefit."

This system is thus particularly suitable for decentralised energy systems created and maintained by panchayat raj institutions and voluntary organisations working in cooperation with them.

As the main area of our visit (Bar block) also happens to be the area where the ancestral village of Mangal Singh is located, the study team was particularly keen to see how this important innovation has been used in this area. We were deeply distressed to see that although Mangal Singh had himself worked very hard and with great capability and dedication to install Mangal Turbines at as many as six places, various vested interests and adverse factors worked against this great effort of a rural innovator so that at present none of these turbines is in use. We'll like to emphasise that for several years these turbines had actually worked very well bringing great benefits and even greater hope to many nearby farmers.

This success of Mangal Turbine has been seen and documented by distinguished visitors and experts, including highly placed officials. The entire tragic story of how many of these pioneering efforts of great hope for the country and its farmers were harmed has been brought out very well in the officially conducted investigation report of Dr. B.P. Maithani, former Director of National Institute of Rural Development (NIRD) who was assigned by the Ministry of Rural Development, Govt. of India, to conduct this investigation. All that has been said in that report need not be repeated here. Suffice it to say that the study team strongly endorses the recommendations of Sh. B.P. Maithani.

The study team appeals to the authorities to take adequate steps to ensure that all the Mangal Turbine projects at six sites can be properly restored. Also other sites in the area particularly where some work had been started but could not be completed should also be tapped so that farmers here can get the most benefits from such an effective low-cost and ecologically friendly technology which actually originated in this area. The government should also take steps to compensate Mangal Singh for all the injustice he has suffered so far along the lines suggested in the report by Sh. B.P. Maithani.

III. We also visited some rural areas which were known for their well-built and well-maintained bunding systems. It is a great learning experience to see how previous generations working on their own without any outside support had been able to create and maintain an elaborate system of series of bundings which could conserve rainwater in a very big and effective way. Such a system could not be possible without a remarkable cooperation within the rural communities. There were gates for the releasing of water at the proper time. This can also be seen in the creation and maintenance of very good tanks.

Unfortunately, however the highly useful bundings could not be maintained in recent times. Is growing disintegration of rural communities responsible for this? Perhaps yes, but we should not also ignore wrong and distorted decisions which harmed traditional cropping system and the water system linked to it. For example the bureaucracy supported drive to spread soyabean cultivation in a big way upset the traditional cropping system to which the system of bunding was linked. This harmed paddy cultivation in particular but also many lesser crops which could be grown in integration with each other in a well thought out farming and water/moisture conservation system which gave good yields at low costs and also scored very high marks in terms of sustainability and environmental protection.

Our study team would like to emphasize the need for understanding and protecting and restoring such systems. Once the importance and basics of these systems are well understood, relatively low-cost interventions using existing govt schemes can be made to restore the invaluable traditional systems.

Acknowledgments The study team would like to record its thanks to the affected villagers, other citizens of Lalitpur and rural innovator Mangal Singh who found the time to speak to the team and extended their help and cooperation.

Bharat Dogra, Raja Bhaiya, Vasudev, and Rajabua Upadhaya

\footnote{The local administration as well as CAPART and other concerned organisations can cooperate in such an effort.}
In April of this year, a group of Buddhist monks from Arunachal Pradesh came to Delhi. It takes them almost five days to reach Delhi from their remote Tawang district location. They were angry and were also looking for agencies that were the cause of their misery. What drove this troupe of robed monks to travel 2,000 km to Delhi, in this fiesty state?

Organized underneath the banner, Save Mon Region Federation (SMRF), based in the Tawang District of modern Arunachal Pradesh, the monks had been engaged in a fierce educational campaign for the past year. They had now come to the nation’s capital to address what Secretary General, Lobson Gyatsu, called, “the juggernaut of 15 large hydropower projects in the ecologically and geologically fragile, seismically active, and culturally sensitive Tawang region”.

Tawang, an internationally recognized holy place for the Buddhists, has been a contested region for many decades. At one point Tawang was actually a part of Tibet (with locals identifying themselves as Tibetan), both China and India were vying for control over the region. The locals were so suspicious of Chinese and also Indians, that the local administration then had their own way of dealing with spies and invaders, says British officer Capt Bally in his account of his travel to the area in 1913. Since they couldn’t behead the offender (it would be against the Buddhist value of non-violence), they would simply tie him in a sack, and dispose of him in the river, “claiming “the river has done it”.

Today, a different kind of attack has been mounted on Tawang, and this time the river cannot save the monks, for the river itself is in danger. The culprit isn’t so straight forward anymore either—Locals have largely accepted their region as part of Indian territory, and call themselves Indians; yet the government of India, multinational energy corporations, and potentially even the UNFCCC are financing a major assault on the resources of the area.

The 780 MW Nyamjang Chhu Hydro Electric Power Project (NCHEPP), being pursued by the multinational energy giant, Bhilwara Energy Ltd, is the latest of the 15 HEPs to have gained clearance. The company has floated “NJC Hydro Power Limited” for the operation the NCHEPP, is now in the process of applying for Clean Development Mechanism (CDM) status under the United Nations Framework Convention on Climate Change (UNFCCC). Under UNFCCC, projects in developing countries that are CDM-certified can earn certified emission reduction credits (CERs), which are saleable and can be used by industrialized countries to meet part of their emission reduction target under the Kyoto Protocol.

But a quick examination of the facts shows that there is nothing clean about the mechanism Bhilwara Energy is employing in the NCHEPP. The project proposes to divert the flow of 35 km of the 40 km stretch of Nyamjang Chhu River (that flows through India) into a 23.5 km long head race tunnel. The project has a design discharge of 87 cumecs, which means that (in a 90% dependable year) during 60 of 120 monsoon days there will be no downstream water release. And effectively, for the rest of the year, the Nyamjang Chhu would remain dry, even if the company were to release some water under the garb of environmental flows. Incidentally, the Nyamjang Chhu river enters India at the elevation of 2220 m and the project FRL is 2114.9 m, just within about 100 m elevation difference from the border. The project is likely to affect area between Line of Actual Control and Mcmohan line and lead to some disputes.

There is also the possibility of downstream dispute as the river Tawang enters Bhutan a couple of kilometers downstream from where the tail race channel of the project meets the river. Bhutan will face the downstream impacts, and there has been no assessment of the downstream impacts singly or collectively, either for Bhutan or for further downstream Assam.

Not to mention, the project would engulf 89 hectares of community-owned forest land and lead to felling of 9,127 trees. Since the project is located in a "seismically active" area prone to landslides, the blasting involved in tunnel construction and the widening of over 60 km of roads, could lead to devastating geological impacts. The Save Mon Region Federation and the WWF-India have also raised critical issues related to a range of negative effects that the dam may inflict upon Tawang’s unique wildlife and biodiversity.

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1 “Among the total 148 MoUs/MoAs on Hydro Electric Projects signed by the state Govt. (till July 2011) in a short period, 15 of such projects with more than 3500 MW are in Tawang District, the Federation laments.

2 On May 9, 2012 Tarun Vijay, Member of Parliament, raised this issue in the Rajya Sabha. He said, “Isn’t it the duty of the government to listen to this big movement which has been led by these monks, and attend to their issues?...The government ministers tells me not to bother about this—they say ‘Maybe China is instigating this movement’. Is this responsible talk? Even if China is instigating them, isn’t it the responsibility of the central government to address their needs? But these people are surely Hindustani, they are swearing by the colors of our national flag, and are using our slogan ‘Jai Hind!’ They speak in Hind.” He prodded, “Do you want to create a background in Tawang for an anti-India movement?" See: http://164.100.47.5/newdebate/225/09052012/12.00NoonTo13.00pm.pdf

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Other HEPs in Arunachal Pradesh that have recently (in Apr-May 2012) applied for CDM:

- Tsachu-II (Tawang dist): 90 MW
- Pachuk-II (Kameng): 60 MW
- Marjingla-II (East Kameng): 39 MW
- Marjingla Lower: 48 MW
- Tsachu-I Lower (Tawang): 18 MW
- Tsachu-I: 48 MW
- Tsachu-II lower: 45 MW
- Nefra, (West Kameng): 120 MW
- Pakke Bung I (East Kameng): 48 MW
- Pakke Bung II (East Kameng): 15 MW
- Pakke Bung III (East Kameng): 36 MW
- Pakke Bung IV (East Kameng): 12 MW

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In 2011 a team from WWF-India confirmed what locals had suspected for a long time: the Black-necked crane, *Grus nigricolis*, an endangered and ecologically threatened species, has a winter dwelling in the Zemithang Valley of Tawang. Google images of the area have subsequently confirmed that its wintering spot is in direct overlap with the proposed site of the NCHEPP barrage! Amazingly, the Expert Appraisal Committee of the Union Environment Ministry for River Valley Projects, while recommending approval for the project, managed not to notice any of these aspects! But this is not the first time that they have shown their capacity to ignore such vital aspects.

What will this mean for the fate of the local people and the eloquent, red-crowned, Black-necked crane? Seeing how the Zemithang Valley dwelling is one of two Indian winter locations for the crane (the other being in Sangti, also in Arunachal Pradesh), the picture cannot be good. For the locals who have formed small livelihood initiatives centered on the Black-neck Crane like ecotourism and bird watching, and the monks who believe that the Crane is an incarnation of the sixth Dalai Lama, the social cost would be tremendous.

The Black-necked Crane is the last known crane to have been discovered by the scientific community. © Pankaj Chandan/WWF India

In the letter the monks handed SANDRP during their trip to Delhi in April 2012, the Federation has pointed out that it’s not only the rare crane that needs to be looked after when considering the coming dams—“Tawang is also home to rare Himalayan Wild Plant species like Rhododendron.” And, “Tawang is the only place in the world where all different varieties of Rhododendron are grown.”

They also mention that the Mago Chu, site of Tsachu-II (which has also applied for CDM status), “is the only known region of the world to have all three Goral species”. Rare primate species like Tawang Macaque, Rhesus Macaque, snow leopards, & the Himalayan Marmot, to name a few, also make their habitat in Tawang. All of this crucial information has been conveniently omitted from the project EIA & the company’s bid for CDM. The PDD goes as far to claim that the “Nyamjang Chuu river acts as a barrier to wildlife movement” so therefore the dam “will not create any new barriers”! The EAC seems to have a good competition with the project developer.

The facts that the monks, international agencies like the WWF, & the International Snow Leopard Trust (Seattle, USA) have unburied could be of particular use to the movement. The project has failed to obtain wildlife clearance from the Arunachal Pradesh Wildlife Board (as required under the Wildlife Protection Act of 1972). Nearby projects like NHPC’s 600 MW Tawang-I and 800 MW Tawang-II HEPs, have come to a virtual halt in the Forest Advisory Committee, due to the adverse impact they would have on wildlife. If someone had brought the issue of the Black-necked Crane to the attention of the FAC when it was considering NCHEPP, would it have faced same fate?

With respect to the 15 dams, we are now demanding nothing short of an independent, cumulative impact assessment (CIA). The MoEF must fulfill the promises it made in the 2010 Public Consultation on Northeast dams held in Guwahati, where the then Environment Minister Jairam Ramesh said, “Individual environmental clearances regarding HEPs in the North East region would only be considered after having prior river basin studies which will also examine cumulative downstream impacts of the project.” Akhil Gogoi, Secretary General of Krishak Mukti Sangram Samiti wrote to Jairam Ramesh in Feb 2011, reminding him of his promise to the people of the North East but still no action has been taken towards realizing a CIA.

It’s clear why groups like KMSS from Assam have become increasingly involved in the agitation against projects like the 780 MW NCHEPP. Without a thorough impact assessment on NCHEPP and the other proposed dams, how can we know what dam-induced fluctuations in flow will have in store for downstream Manas (which flows via Bhutan, to the Assam)? The Manas is “not only one of the important tributaries of the Brahmaputra, but flows through the Manas Tiger Reserve, which is also a World Heritage Site and an Important Bird Area as per the [Birdlife] International criteria” says Gogoi.

From here on, the movement against NCHEPP is likely to grow, both locally and internationally (as stated before, Tawang is the global revered place for the Buddhist faith). On April 4, 2012 there was a public protest and rally in Tawang invoking mass turnout from the ranks of both students and locals. Five groups have signed onto SANDRP’s objection to NCHEPP application for CDM (including KMSS & Save Mon Federation). The UNFCCC has a dicey past in India, granting CDM to projects that are not additional, not sustainable and have faced mass opposition including Bhilwara’s Alain Duhangan, Jaiprakash Associate’s Kacham Wangtoo & SJVN’s Rampur HEPS. Maybe this time the rising tides will be impossible to ignore.

Samantha Agarwal (sa.sandrp@gmail.com)

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5 Jairam Ramesh, then Minister of Environment and Forests, was present at the WWF-India tri-country workshop on the Black-necked Crane (he even conducted the inauguration ceremony)! RameshJi made high promises to protect and conserve the Indian habitat of the ecologically threatened species. See the full report here: [http://assetswwfindia.org/downloads/regional_cooperation_for_conserv ation_of_the_black_necked_cran.pdf](http://assetswwfindia.org/downloads/regional_cooperation_for_conserv ation_of_the_black_necked_cran.pdf)
WII’s Cumulative Impact Assessment of Ganga hydel projects on biodiversity:  
A small step in the right direction, a long way to go

If you want to visit Valley of Flowers National Park or the Nandadevi Biosphere reserve in Uttarakhand, plan it this August. If you want to see the Alaknanda and Mandakini Rivers en-route to Kedarnath and Badrinath, do it soon, the rivers may disappear. If you enjoy or worship the sight of the confluence of rivers (called holy praysag, one of which, the Vishnu praysag already stands destroyed), you should rush your plans as they all are slated for extinction. When dams and big hydro projects planned in this region, which are being sanctioned by Ministry of Environment and Forests (MoEF) (and some are already under construction) come up there will be little reason to visit these places, unless you like looking at dry rivers & muck disposal sites.

Wildlife Institute of India’s (WII) Report on Cumulative Impact Assessment of Hydropower project on terrestrial and aquatic ecology of the Alaknanda-Bhagirathi basins was finally up on the MoEF website on 16th April 2012, more than three months after it was submitted, but just a day before the NGRBA (National Ganga River Basin Authority) meeting. The timing is very significant. While the MoEF can claim the credit for putting this study up before the meeting, none of the members, and very few external experts & media could read the report, support it, or raise & record their concerns before the NGBRA.

More than 70 hydel projects are in various stages (17 commissioned projects, 14 projects under-construction & 39 proposed projects) of completion and planning in Alaknanda Bhagirathi basins, though there are accounts which say the list could have 300 or 600 projects. If all these projects with a combined installed capacity of at least 9563 MW are constructed, they will lead to deforestation of at least 9494.68 ha of forest land and adversely affect 655 km of river length. Many of these projects are entirely or partially inside Gangotri National Park, Kedarnath Wildlife Sanctuary, Nandadevi wildlife Sanctuary, Valley of Flowers, National Park (both UNESCO World Heritage sites of Outstanding Universal Values). They will threaten 16 globally threatened fish species, 5 rare and endangered mammals (including Snow Leopard, Brown Bear, Mouse Deer), 5 rare and endangered bird species, and 55 rare and endangered plant species, over 300 medicinal plants and hundreds of plants which are used by locals in varied ways. These are among the known damages, there are likely to be other unknown collateral damages.

Though remarkably high number of projects were under consideration in Alaknanda and Bhagirathi river basins, which would affect culturally and ecologically important rivers, the Panch Prayags, and outstanding universal biodiversity, MoEF did not suo motto order for cumulative impact assessment studies. This was done only because CEC and Supreme Court gave explicit directions to the Forest Advisory Committee in Feb 2009 to conduct cumulative impact assessment studies for these projects.

In June 2010, the Forest Conservation Division of the MoEF assigned this study to WII. The NRCD (National River Conservation Directorate) assigned study of “Cumulative impacts on the environmental side of the projects in Bhagirathi and Alaknanda river basins in Uttarakhand” to AHEC IITR (Alternate Hydro Energy Centre, Indian Institute of Technology, Roorkee). AHEC submitted its report in March2011, WII submitted its interim report about 5 projects (195 MW Koltibhel I A, 320 MW Koltibhel I B, 530 MW Koltibhel II all by NHPC, 444 MW Vishnugad Pipalkoti by THDC and 300 MW Alaknanda Hydro of GMR) which had at that time applied for Forest Clearance from MoEF. In May 2011, Forest Advisory Committee rejected Forest Clearances to 3 of these projects in the light of WII interim report.

Evidently, these are important reports, which, in the recent words of the PM at the third NGRBA meeting, would, “guide what actions we need to take pending formulation of a long term policy” for River Ganga.  
(http://pib.nic.in/newsfilev1/62308)

Unfortunately IIT Roorkee report on Cumulative Impacts of these projects was of such a poor quality that the EAC (Expert Appraisal Committee) for River Valley Projects of MoEF criticised the report and is refusing to follow the report. Civil society had rejected the report, which read like a mouthpiece of hydropower developers, without taking any considered, independent and unbiased stand.

SANDRP had also prepared detailed critique (http://www.sandrp.in/hydropower/Pathtic_Cumulative_Impact_Assessment_of_Ganga_Hydro_projects.pdf) of the report. A critique of the river-ecology aspects of the report was prepared by Emmanuel Theophilus, Himal Prakriti, Uttarakhand was also published by SANDRP (http://www.sandrp.in/rivers/Ganga_Basin_Report_by_AHEC-IIT_Roorkee_Review_of_River_Ecology_Apects.pdf). Most importantly, the report failed in doing ‘Cumulative Assessment’ of the impacts of the onslaught of dams.

In this context, the WII report is critical. While providing slick lip-service to terms like ‘Cumulative Impact Assessment’ and Sustainable Development, the MoEF is blatantly giving individual clearances to
projects. In a remarkably shocking incident, the MoEF actually sanctioned a project in this region which has been rejected by the Forest Advisory Committee TWICE for the extensive and irreversible ecological damage it will cause and which had also been rejected by the interim report of the WII. This was done based on a representation from the project developers to the minister Ms Jayanti Natrajan! The minister is ready to listen to the vested interest party, rather than the expert environment body commissioned by the ministry!

By its mandate, the WII report can help assess the cumulative basin wide impacts of the massive projects being planned in the Bhagirathi-Alaknanda basins. It can also help initiate a discussion about the value we ascribe to outstanding, protected biodiversity, rivers and related natural resources and livelihoods of people that depend on them and the services that they provide, vis a vis our current development paradigm and planning and decision making processes.

Table 1: List of proposed hydro projects to be excluded for safeguarding terrestrial and aquatic ecology

<table>
<thead>
<tr>
<th>Sub Basin</th>
<th>Excluded Projects</th>
<th>River</th>
<th>Capacity (MW)</th>
<th>Aquatic/ Terrestrial</th>
</tr>
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<tr>
<td>Balganga</td>
<td>Bal ganga II</td>
<td>Bal ganga</td>
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<td>A</td>
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<td></td>
<td>Jhala koli</td>
<td>Bal ganga</td>
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<td>Bharon ghati</td>
<td>Bhagirathi</td>
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<td>Jalandhari</td>
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<td></td>
<td>Siyangad</td>
<td>Siyangad</td>
<td>11.50</td>
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<td>Kakoragad</td>
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Source: WII Report 2012

What does the report say? The WII report, while suffering some serious flaws, has done a much better job of the task given to them than the AHEC report. The report has evolved thinking about some of the cumulative impacts, linked it with hydropower development and has devised a methodology for addressing these impacts, integrating biodiversity and impact values. The methodology comes up with multiple scenarios of cumulative impacts on sub basins with or without projects. Importantly, WII has moved away from project-centric impacts and has assessed cumulative impacts on terrestrial and aquatic ecology on sub basin level, dividing the two basins into 18 sub basins. Cumulative impacts can be seen better at a landscape scale, than a project scale. After a baseline study of the aquatic and terrestrial ecology of the region, the report has assigned biodiversity values to individual basins. Based on projects planned and their nature (Run of River/Storage), a scorecard for impacts has been made. In the final matrix, biodiversity scores and impact scores are superimposed to give an idea of the overall impact on the sub basin. These impacts range from low, moderate, high and very high.

Based on these cumulative impacts, “a list of proposed projects that may be reviewed for combined benefits of reducing impacts on both, aquatic and terrestrial biodiversity and for acceptable outcomes from hydropower development for biodiversity conservation and societal well-being” has been put forth. The list of projects to be reviewed (recommended for exclusion/ scrapping) includes 24 projects. According to the report “Ecological prudence requires that securing long term biodiversity conservation should get precedence over economic considerations visualized in commissioning these 24 projects.”

Conservation Reserves The report recommends that rivers Nayar & Balganga, which are of critical importance for aquatic biodiversity, especially fish populations should be declared as fish conservation reserves & should be protected from further degradation & hydel projects. These two stretches are comparatively less disturbed & have critically important habitats for long term survival of Himalayan fish.

Operating Projects For projects that are already operating, the study recommends that for regulating impacts, “Monitoring for compliance of clearance conditions and conducting environmental audits to identify areas of negligence in environmental management so that regulatory frameworks can be better tailored for ensuring the reduction in the combined footprint of all projects operating in the sub-basins.” However, it is an open secret that MoEF does not have the will, capacity or inclination to actually do this. Instead of having monitoring committees full of uninterested bureaucrats, it will be more effective if the committee has 50% local participation and the committees are empowered to make corrective recommendations when required.

While accepting dropping these 24 projects would mean reducing power generation capacity by 27%, the report significantly states that India has one of the world’s highest power transmission losses of about 30-40% against global average of 15%. Better and effective power transmission & management system can to a large extent offset this loss.

Major Limitations While the WII study has some strengths, it also has some major lacunae which need to be addressed urgently:

- **Number of projects underestimated** Though this study mentions that only 70 projects are
commissioned, under construction and in planning stage, the number is much more than 70. As an example, the study has not included commissioned projects like 144 MW Chilla, 0.4 MW Tharali, 0.8 MW Tapovan or planned projects like 745 MW Utyasu (I-IV), 745 MW on Birahi Ganga, 72 MW Bagoli or 44 MW Bangri. This is a very serious limitation. The AHEC study lists 244 projects in various stages in Uttarakhand, of which majority are in Alaknanda Bhagirathi basins. This number needs an urgent check and additional projects should be included in the list which will add to the cumulative impacts.

- **No mention of impacts of Peaking Power** All of the hydro power projects are supposed to generate maximum Peaking power, as it is supposed to be the USP (Unique Selling Proposition) of hydro projects. Peaking power, even if regulated with strict e-flows norms can lead to huge downstream fluctuations in water levels, affecting ecosystems and communities. However, the issue of Peaking does not find a single mention in the WII report.

- **Livelihood Issues** The study does not give any consideration to livelihoods that depend on the ecological goods and services of the river systems in the region. It simply states “in addition to the expansion of urban areas, road building activities and in recent times the Hydro Electric Projects have further marginalized the individual landholding in Uttarakhand. These projects are certainly going to engulf the already marginalized productive agricultural fields, thus implying more hardship to the local population in times to come”. It further states that degrading ecosystem goods & services from a flowing river impair social & economic development and can also lead to adverse influence on livelihoods, income & local migration, which in turn may sometimes lead to unrest and political conflicts.

   There was a huge scope for studying these impacts and putting them in front of the decision makers so that the so called economic benefit could be compared with livelihood and ecological losses and seen in the right perspective. But the report has not done this. The impact scorecard devised by WII should have included impacts of the projects on settlements and villages, drinking water sources and streams, fisheries, riparian farming, groundwater recharge, fodder for animals, medicinal plant use, etc.

- **Aesthetic, Cultural, spiritual and religious values** do not find a mention in the report. Considering the cultural importance of Ganga and Panch Prayags (five confluences namely Dev Prayag, Kama Prayag, Rudra Prayag, Nanda Prayag and Vishnu Prayag, the last of this stands destroyed by the Vishnuprayag HEP and the rest would be destroyed by the planned projects) in the hearts of millions of India, this omission is serious.

- **No mention of protected status of 135 kms of Bhagirathi River.**

- **No mention of cumulative impacts of allied activities** like road construction, muck disposal, quarrying, extracting material from riverbed, blasting, tunneling, settlements, etc.

- **Climate Change concerns** and its impacts on glaciers, biodiversity, methane emissions from storage reservoirs & their cumulative impacts, neither does it mention unique biodiversity value of the cryosphere areas.

- **No consideration of free flowing distance between two dams.**

- **Cumulative impacts of changed silt flows** on biodiversity and geomorphology in the downstream not even mentioned, leave aside assessed. The changed silt pattern will have far reaching impacts on the aquatic and terrestrial biodiversity.

The **environmental flows** section is a major limitation. The report has used methodologies based on the Ecological Management Class (EMC) and ecological needs of fish. The EMC methodology was put forth by Vladimir Smakhтин et al in 2007 and the authors say in the paper: “The set of indicators used here is very preliminary and the selection of indicators needs to be revisited. Apart from the rather general nature of some indicators, no indicators relating to the social importance of rivers have been considered in the approach, at present. This is acknowledged as a serious limitation and one that needs to be addressed in future work.”

The social aspects of eflows cannot be simply brushed away, like the WII Report does. The report claims to have used the Building Block Methodology for calculating eflows, but there is no evidence given about it. Thus, the eflows recommendations need to be reworked with a much more holistic perspective and till that time, the releases mentioned in the report should be considered as the minimum threshold values. These issues will need to be addressed in order to understand the whole range of cumulative impacts of the projects. WII should be asked to work on these aspects and come out with a report that includes all the possible impacts and their mitigation measures.

In the meantime, recommendations made in the WII study should be urgently adopted by the MoEF, without any closed doors negotiations with project proponents. It is learnt that GMR Energy rejected WII impacts scores, and the MoEF even accepted their arguments before giving the forest clearance to the project. None of these discussions have been put in the public domain. Accepting private project proponent’s word against biodiversity scores developed by WII is clearly unacceptable. If there has to be any discussion, it has to be held in the open domain.

The decision about the Forest and Environment clearances to all the projects that WII report has asked to be excluded, including the 300 MW Alaknanda Hydro of GMR group needs to be reviewed urgently. While WII needs to redo the study keeping above flaws in mind, the AHEC report should be rejected. An independent, credible agency be given this responsibility. In the meantime, MoEF should suspend process of giving clearances to any new hydro project in the Uttarakhand. We need energy, but it need not always be at the cost of our life support systems, future generations and climate change concerns.

Parineeta Dandekar (an edited version appeared on infochange India)
Can we simply wish away the ecological crisis of our rivers?

India Water Week, organized in April 2012 by our premier water management organisations does not even attempt to address environment security.

Consider some facts: most of the peninsular rivers do not reach the sea any longer, Salinity ingress in Krishna delta and coastal erosion in Godavari due to over abstraction of water is affecting livelihood of thousands of farmers and the ecology of the region. Sand deposition at the river mouth in Cauvery delta due to reduced flushing flows is causing flooding in monsoons.

Increased salinity in Sunderbans due to increased abstraction of water from the Ganges and reducing freshwater flows from the upstream dams is affecting local communities, making them more vulnerable to climate change. This is changing the mangrove and fish distribution of the region and while also affecting the health of Tigers inhabiting Sunderbans.

More than 168 large dams are being planned in the North East, against which India’s biggest anti movement is going on in Assam today. One of the main bone of contention and reason for discontent is the huge, unstudied downstream impacts of these structures on rivers, communities and ecosystems.

In the upper Ganga, more than 135 dams (some accounts say there are 300 to 600 of them) planned on Alaknanda and Bhagirathi are all set to change the hydrology of the region. A number of local protests, including Prof. GD Agarwal’s recent fasts highlighted the importance of flows in rivers for Indians.

In Himachal Pradesh and Uttarakhand, communities and organisations are demanding Cumulative Impact Assessment and Basin studies to understand and challenge the huge environment impact of cascade of dams planned on all rivers in the region.

India has a large vulnerable population that depends directly on the goods and services provided by rivers, including fishermen, riparian farmers, boatmen, villages depending on rivers and streams for water supply and irrigation. This is an indisputable fact. Unfortunately, the way these issues are being handled by our government, it seems there is a strong will to brush these issues under the carpet and keep them buried there.

The India Water Week organised in April 2012 by Union Ministry of Water Resources, Central Water Commission and National Water Development Agency, highlights this disturbing fact. The conference entirely misses addressing the issue of environment and ecology and its centrality in the water-food-energy nexus. This is a serious, conscious omission and cannot be considered as a random oversight.

One of the main arguments against the Interlinking of rivers proposal is its huge, unstudied and underestimated ecological impact. In ecological terms, the definitions of ‘surplus river basin’ and ‘deficit river basin’ on which the entire proposal is based are entirely incorrect. A river basin is reflection of a particular regions climate, geography and ecology and each river has an important ecological function to perform. Surplus basins have rich estuaries which support thousands of fisherfolk and riparian farmers. With every ecological service provided by the river, a strong social service is linked on which communities depend.

Especially against the backdrop on ILR proposal and NWDA’s express involvement as an organiser, India Water Week could have been an opportunity to address the ecological challenges being faced by our rivers, which will increase as it is, and multiply if Interlinking goes through, the acute data gaps that we face while addressing these issues, the nonexistent environment compliance which is aggravating environmental and social problems. It could have provided a platform for further work and cooperation in this direction. But this will happen only if we are ready to acknowledge the extent of the ecological crisis we face.

The Prime Minister’s Inaugural speech on April 10, 2012 has created a landmark through the way in which he addressed centrality of groundwater and severity of climate change in water discourse. These issues have seldom received the importance they deserve in the past. However, it was dismaying to see that in face of the current ecological crisis that our rivers are facing, the PM did not even mention the issue of environmental security.

The first ever assertion in PM's speech that groundwater is our mainstay in water sector and that at least 60% of our irrigation, domestic and industrial water needs are coming from that source would have some obvious implications. We need to reorient our water policy, plans and programs to achieve sustainability of this resource use, but we are doing nothing in that direction. Sustainable existence of our rivers will be key factor in our endeavor for sustainable groundwater use.

However, for the now ongoing 12th Five Year plan, the working group report has recommended investment of Rs 331 000 crores on Major & Medium irrigation projects. This when these projects have not added any additional net irrigated area for the last two decades. These projects will not help sustain groundwater lifeline. On the contrary, they will destroy more of the rivers. It seems we are not learning any lessons from the past.

We cannot simply wish away our ecological crisis. We need to show our seriousness and intent in addressing and ameliorating this. Without addressing challenges facing the environment, the fourth leg of the security nexus, the three-legged, dodgy table of water-food-energy nexus is likely to fall on its face.
CC led to collapse of Harrapan civilization A new study combining archaeological evidence with Geoscience technologies provides evidence that climate change was a key ingredient in the collapse of the great Indus or Harappan Civilization 4000 years ago. Once extending more than 1 million sq km across the plains of the Indus River from the Arabian Sea to the Ganges, over what is now Pakistan, northwest India and eastern Afghanistan, the Indus civilization was the largest of the first great urban cultures. Like their contemporaries, the Harappans, lived next to rivers owing their livelihoods to the fertility of annually watered lands.

The research was conducted between 2003 and 2008 in Pakistan, from the coast of the Arabian Sea into the fertile irrigated valleys of Punjab and the northern Thar Desert. The international team included Woodshole Ocean Research Institute and scientists from the U.S., U.K., Pakistan, India, and Romania working in geology, geomorphology, archaeology, and mathematics. By combining satellite photos and topographic data, the researchers prepared and analyzed digital maps of landforms constructed by the Indus and neighboring rivers, which were then probed in the field.

The study suggests that the decline in monsoon rains led to weakened river dynamics, and played a critical role both in the development and the collapse of the Harappan culture, which relied on river floods to fuel their agricultural surpluses. By 3900 years ago, their rivers drying, the Harappans had an escape route to the east toward the Ganges basin, where monsoon rains remained reliable.

This eastern shift involved a change to more localized forms of economy: smaller communities supported by local rain-fed farming & dwindling streams. This may have produced smaller surpluses, & would not have supported large cities, but would have been reliable. Such a system was not favorable for the Indus civilization, which had been built on bumper crop surpluses along the Indus & the Ghaggar-Hakra rivers in the earlier wetter era. This dispersal of population meant that there was no longer a concentration of workforce to support urbanism. Thus cities collapsed, but smaller agricultural communities were sustainable & flourished. Many of the urban arts, such as writing, faded away, but agriculture continued & diversified.

The study leader Liviu Giosan has words of caution against the frantic dam building in the region, “We now see landscape dynamics as the crucial link between climate change and people. Today the Indus system feeds the largest irrigation scheme in the world, immobilizing the river in channels & behind dams. If the monsoon were to increase in a warming world, catastrophic floods such as the disaster of 2010, would turn the current irrigation system, designed for a tamer river, obsolete.” (phys.org 280512)

Climate change & Rivers According to National Geophysical Research Institute (CSIR-NGRI) the Godavari, Krishna and Cauvery Rivers have experienced dramatic changes in flow due to the construction of dams, anthropogenic contamination and other activities. Specifically, the Godavari would require significant intervention to protect its ecosystems and the people, who are mainly dependent on its river basins. About 135 million people inhabit the Godavari-Krishna (KG) basins.

According to Dr S. Masood Ahmad, CSIR plans to use sedimentary archives to trace the evolutionary history of Asian big river systems and understand the impact of climate change. Recent studies have proved that some rivers will experience significant increases in flood flows, while some others are likely to experience a drastic reduction in flow. To understand the effects of this change there was an urgent need for the generation of new data and aquifer modeling of river basins. In the KG & Kaveri basins the process of precipitation, recharge and storage remains ambiguous and requires detailed investigations. (Deccan Chronicle 280512)

Streams going dry in Kullu, Himachal Pradesh Dozens of streams and brooks of Kullu district in Himachal Pradesh have dried up completely, while many others are about to disappear, causing immense hardships on local population. Water mills or Gharats are being rendered useless due to remarkably low flows, attributed to Climate Change.

According to several community groups, water levels in all tributaries of Parbati and Beas rivers have been decreasing steeply along with decline in water levels of streams used for drinking water purposes. Jwani, Rampur, Bari, Kharu, Bainala, Ladinala, Bagarnala, Nagabai, Saininala and dozens of other water streams in Manikaran, Kharahal, Banjar, Aani, Manali and Lag valleys of Kullu have gone extinct in the last three decades. Residents said that insufficient, erratic and declining level of snowfall is the main reason behind drying up of water sources.

Over 25 gharats on Bran nullah, Rampur nullah, Kais streams and Balsari nullah have gone non-operational as water levels were not sufficient enough to rotate the mechanical grinders. According to a water mill owner, “Our village used to get buried under 5 feet of snow 25 years ago, but now we are longing for only one foot. Temperature is increasing each year”.

Scientist from Kullu-based Govind Ballabh Pant institute of Himalayan Environment and Development, Dr J C Kuniyal says that climate change is the reason behind depleting water sources and irregularity in snowfall. “Some parts are witnessing heavy snowfall while others are recording sharp fall. The overall temperature has recorded a rise and the peaks, which used to remain covered with snow all through the year, have no snow owing to human interference. (The Economic Times 290512)
India to discuss Dhaka equity in Tipaimukh project?
India’s Prime Minister’s Office, backed by the Ministry of External Affairs, seems to accept giving Bangladesh a stake in the controversial mega Tipaimukh multipurpose hydro project in Manipur. It is reported that India may discuss the possibility of Dhaka acquiring equity in the project. Central Ministries have been raising objections to this, fearing delay and veto power to Bangladesh.

Tipaimukh, along with numerous other dams has given rise to misgivings in Bangladesh about India’s tight lipped behaviour and brushing away the lower riparian’s concerns about water releases, environmental impact and data sharing. In 2009, a team of Bangladeshi Parliamentarians was airlifted to the site to convince them that the project was for hydropower and flood control, and not irrigation.

Talks on Tipaimukh may lead to discussions on joint partnership in hydel projects in Sikkim on the Teesta. Bangladesh has been indicating its interest in nine hydel projects under construction or being planned in the north-east. Besides Tipaimukh and Teesta III and IV, these include another mega project, Subansiri, and a host of under-100-mw projects.

Bangladesh expects collaboration in hydel projects on common rivers flowing from the Himalayas to subsequently lead to tri-nation initiatives (India-Bangladesh-Bhutan) on common basin management.

After various Indian Ministries claiming that involving Bangladesh will be problematic, PMO is said to have invoked the Prime Minister’s name to rule out opposition. “The Prime Minister has approved that as a first step, a Bangladeshi delegation could be invited to India to discuss the possibility of Bangladesh taking a stake in Tipaimukh project. This would be the preferred course at present rather than getting into formal or semi-formal mechanisms that may give Bangladesh a veto on this and a number of similar projects.” (The Hindu 020612) If this actually materialises, it will mark a big break from the past the way India deals with the projects on shared rivers. It is doubtful, though if this will happen.

SARDAR SAROVAR PROJECT

NGT says no to filling Maheshwar dam reservoir A bench headed by Green Tribunal’s acting chairperson Justice A S Naidu, through restraining orders, has asked the Maheshwar Dam authorities to maintain status quo on the proposal for partially filling up the reservoir up to 154 meters above the sea level.

The tribunal passed the interim order on a plea by two project-affected villagers against the Centre’s approval for closing the gates of Maheshwar dam on river Narmada for filling up the reservoir. The Ministry of Environment and Forests and the project proponent, Shree Maheshwar Hydel Power Corp Ltd opposed villagers’ plea. But the court said, “It (the dam) is not going to run away. You are not producing electricity. You only want to experiment”.

Two project-hit villagers Antarsingh Patel and Sanjay Nigam had challenged the MoEF’s May 1 order, allowing partial filling of the reservoir, contending that the submersion caused by filling it would cause irreparable damage to the life and livelihood of the people living there. The MoEF’s May 1, 2012 order had modified the ministry’s earlier orders of April 2010, which had allowed construction on five gates of the dam but had forbidden their closure or submersion till completion of the rehabilitation. The villager’s plea stated that there will be submersion of agricultural land, houses and several villages will become islands “causing irreparable damage to the life and livelihood of the people”.

The order to allow closure of gates was passed on the basis of false information ignoring the revenue records of the state itself which showed that there was submersion of lands and houses at the water level of 154 meters on August 27 2011 the petition said.

Shockingly in a ‘complete contradiction’, Khargone district collector had falsely certified that there will not be any submersion of houses and lands at 154 m water level. NBA has demanded action against this Collector.

When the resettlement of the proposed oustees had to be completed six months prior to submersion of their villages, in reality, the rehabilitation of the oustees of the Maheshwar dam is far from complete. According to the NBA, less than 15% of the project-affected people (from 61 villages) have been rehabilitated till date. (The Hindu 020412, Times of India 310512, NBA Releases)

People of the valley have been protesting against this decision for a long time and in May, 15000 people marched to Mandardeshwar against the MOEF Order and had warned of undertaking a Jalsatyagraha rather than give up their homesteads and farms.

April May June 2012
FOREST CLEARANCE FOR KALU DAM REJECTED In a significant decision, on April 2, 2012, the Forest Advisory Committee of the Ministry of Environment & Forests rejected Forest Clearance (& recommended closure of file) to Kalu Dam, coming up in the Western Ghats of Murbad Taluka in Thane District. Kalu is just one of the 10+ large dams coming up around Mumbai, which are all showing blatant disregard for any environmental, social or procedural laws.

Kalu Dam would have submerged nearly 1000 ha of forest in the global biodiversity hotspot of Western Ghats, just 7 km from the Kalsubai Sanctuary. Apart from forest land submergence, the dam was set to submerge 18 villages and affect 18000 inhabitants, mostly Tribals who have been entirely dependent on their forests and river for survival.

The Konkan Irrigation Development Corp (KIDC), who was building this dam, being financed by the Mumbai Metropolitan Region Development Authority (MMRDA) has shown utter ‘lack of respect to the laws of the land’, as per the report from the Regional Chief Conservator of Forests. The work started on the dam site more than a year back and hundreds of trees were cut, without a Forest Clearance, blatantly violating the Forest Conservation Act (1980) and the Forest Rights Act (2006). When Shramik Mukti Sangathana and SANDRP approached the officials about this, they were told by KIDC engineers that ‘in order to reach a destination fast, we have to jump some signals!’ These broken signals include No Forest Clearance, No Environmental Impact Assessment or the Environment Management Plan for the project, No Social Impact Assessment, No Rehabilitation and Resettlement plan in Place, No Wildlife Management plan, No options assessment, No Public consultations amongst many more.

The dam construction had already started in full swing in the last year itself, breaking multiple laws like PESA (Panchayat Extension to Scheduled Areas) Act, Forest Rights Act and Forest Conservation Act. Shramik Mukti Sangathana had filed a PIL in the Bombay High Court against the dam in June 2011. When the Regional Chief Conservator of Forests, Central zone made a visit to the dam site in Oct 2011, he was taken aback at the extent of destruction taking place in the absence of any clearances and in his strong-worded report submitted to the MoEF, pointed out the proponent had no respect for the laws of the land and took permission from MoEF for granted. Significantly, KIDC gave work order to contractor in May 2011, but submitted the proposal to MoEF only in August 2011. KIDC also grossly underestimated the number of trees to be felled and villages which will be affected. It did not even consider those villages which were to be cut off by the dam.

According to MMRDA, of the approximately Rs 850 crore budget of Kalu, more than Rs 112 crores have been already given to KIDC. It is shocking that MMRDA and Irrigation Department allocated, released and spent such a huge amount of public money on a dam illegally, destroyed land, forests, river and the villages without taking any requisite permission or without any respect to multiple gramsabha resolutions against the project, violating the PESA.

MMRDA funded Kalu Dam despite strict orders from Chief Secretary Around 1000 villagers who would be displaced by dam projects protested outside the MMRDA building demanding cancellation of the four dam projects namely the Kalu, Shai in Thane, Sasuri in Vasai-Virar and Bal Ganga in Pen, Raigad. (Free Press Journal 280312)

MMRDA would like to paint a picture that it is just a funding agency and has no role to play in the irregularities plaguing the Kalu Dam. However, MMRDA went ahead funding Kalu Dam even when it did not have Forest Clearance. MMRDA’s letter in July 2011 to KIDC clearly stated that no fund transfer would be done from MMRDA to Kalu Dam unless KIDC gets the requisite Forest and Environmental clearances. (Copies of these Letters are available with SANDRP). In Oct 2011, the Chief Secretary held a meeting in which the KIDC and Commissioner MMRDA, Rahul Asthana were present and categorically stated that “No work should start on Kalu and Shai Projects without complete land acquisition and Forest Clearance. The Chief Secretary also directed that if WRD has started work without these permissions, MMRDA should NOT release funds. Despite these very clear and unambiguous instructions, the MMRDA did actually release funds amounting to Rs 112 Crores to the Kalu Dam. (DNA 160512)

The situation only demonstrates the huge power of the dam lobby in Maharashtra which dares to go on unperturbed even in the face of strict orders. The question which remains is what exactly compelled the MMRDA to issue funding to Kalu Dam, wasting Rs 112 Crores of public money, as Kalu Dam has been rejected Forest Clearance!

CRPF Forces deployed at Shai Dam, protestors arrested At least 21 persons, agitating against the proposed Shai dam were arrested as the contractor brought in machinery without permission from the revenue department to the proposed Shai Dam site on March 17, 2012. Villagers allege that the government has still not resolved the issue of rehabilitation of the project-affected people from more than 52 villages of Sahapur and Murbad talukas, Forest Rights of the communities are yet to be documented or settled. (IBN)
It is very shocking to see that rather than address the serious matters about violations of legal rights, resultant consistent local opposition, gram sabha resolutions against the project, irregularities in the tendering, rehabilitation and resettlement plans, etc. the Shai Dam site now gets protection from CRPF and resembles an army camp. This protection is against marginal tribal farmers who have been fighting non-violently, saving their livelihoods and farms from submergence.

**Maharashtra cancels the Kondhane dam**

The state government has terminated the contract for the Kondhane dam in Karjat awarded to F A Enterprises and proposed action against officers of Konkan Irrigation Development Corp (KIDC) which approved the project. KIDC awarded the work to F A Enterprises for Rs 56.17 crore, but within a month increased the price to Rs 328 crore, an astounding 500% jump.

Now, a confidential letter written by state water resources department secretary E B Patil to the governor said, "Instructions are issued to executive director, KIDC, to terminate the contract for the original work of the dam as it was taken up without fulfilling the conditions mentioned in the administrative approval. It is proposed to take action against concerned officers after inquiry in the matter." The Kondhane dam is planned on the river Ulhas and is situated below Khandala. When built, it will submerge around 1,000 acres, more than half of which is forest land. But no forest clearance has been taken.

Documents showed that the Kondhane dam's height, restricted to 39 metres when bids were invited, was almost doubled to 71 metre soon after F A Enterprises won the contract. KIDC justified the increase, saying that an elected representative wanted more water to be stored in the dam. The minor irrigation project was suddenly converted into a medium irrigation project, escalating its cost six times between July and August 2011. "Work on the dam is stopped since April 11, 2012. Currently, the expenditure on the project is nil," said secretary, state water resources department, E E Patil's letter to Raj Bhavan.

"Work order for the additional work portion considering additional storage was given to the same agency by field officers under KIDC. As reported by KIDC, work order for additional work is cancelled. Revised administrative approval is not yet given by the government," it added. In April, four activists of India Against Corruption moved the HC and urged it to halt work on the project. The petition said that F A Enterprise and F A Construction from Khar, although purported to be different entities, were one, and have been awarded "a disproportionately large number of irrigation projects in Thane and Raigad districts". Soon on May 2, 2012, governor K Sankaranarayanan wrote to CM Prithviraj Chavan: "I request you to direct the chief secretary to personally conduct an inquiry and submit an action taken report within 15 days." The governor further said, "It appears work started without obtaining clearances. The Maharashtra Water Resources Regulatory Authority has communicated that the Kondhane project was not referred to it for clearance by KIDC." On May 25, 2012, Governor sent a reminder to the Chief Minister.

Patil's letter to the governor dated May 31, 2012 said the project cost would have risen to Rs 435 crore due to the proposed increase in storage capacity and other costs. "Out of this, cost of work portion related to the dam is about Rs 328 crore," it said. The state is expected to review the construction of the dam itself.

In response to a PIL by activists, pointing out irregularities in the awarding of contract and construction of the Kondhane dam, the Bombay High Court has said that "Any project that affects forests and the environment and is in violation of rules or lacks required permissions cannot be permitted to continue". Work on Kondhane Dam has been going on in spite of a stop work notice from the Archeological Survey of India due to the presence of historic caves in the project area. The Dam is set to submerge more than 400 ha, including about 200 ha Forest land. (The Times of India 290612, The Hindustan Times 130512, 290612)

Kondhane also gets the dubious distinction of being the dam whose price was pegged at Rs 56 crores before tendering and was hiked to a staggering Rs 328 crores within a month after tender was sanctioned. Its height was raised from 39 m to 71 m post tendering without any apparent justification! Kondhane received technical sanction in just one day and the entire tender sanctioning process which entailed liasoning with more than 4 offices in different districts in Maharashtra was completed in half a day, with the contractor submitting his demand draft for earnest money on the same day! The contractor for most of the projects coming up around Mumbai is the same, FA constructions & FA Enterprises.

**GROUNDWATER**

**Centrality of groundwater finally acknowledged**

While addressing the audience at the inaugural ceremony of India Water Week, Prime Minister noted “Conserving our groundwater is now an urgent priority because we depend on it for more than two thirds of our water needs. The decline in the water table across the country is a matter of serious concern. The present legal situation gives every land holder the right to pump
unlimited quantities of water from a bore well on his own ground. There is no regulation of ground water extraction and no coordination among competing uses. Inadequate and sub-optimal pricing of both power and water is promoting the misuse of groundwater. We need to move to a situation where ground-water can be treated as a common property resource."

“As a first step towards effective management of water resources we need to map the aquifers of India to obtain basic information on ground water availability. This will be initiated in the 12th Plan. We also need to promote participatory management of aquifers to ensure sustainable and equitable use and promoting cropping patterns which are aligned with the groundwater actually available. We should also examine seriously the proposal to have a clear legal framework to govern the use of scarce groundwater resources. Groundwater sources of drinking water often fail due to competition over the same aquifer between public drinking water systems and private irrigation.”


However, the 2012 Draft National Water Policy or the working group reports for the 12th Plan do not mirror the implications of these statements of the Prime Minister. Groundwater, which sustains 90% rural drinking water supply, over 60% Irrigation and over 60% urban & industrial water supply does not find a mention in the preamble of the draft NWP. Let us hope that PM’s message will initiate a more serious consideration of groundwater and evolve a perspective about attention given to the huge, underperforming surface irrigation infrastructure.

**RIVERS**

**River basins critical for emerging markets-report**

Poor management of water resources could stifle economic growth in some of the world’s most rapidly developing economies, according to research commissioned by HSBC. The study, by consultancy Frontier Economics, estimates that by 2050 the world’s ten most populous river basins will be producing a quarter of the globe’s gross domestic product, compared with 10 percent now. But seven of them will be facing water scarcity without significant investment in better water management. This includes the Ganges Basin. According to the report, this could mean the GDP growth expected in the river basins would not materialise - and would therefore mean wider forecasts for emerging markets will not be achieved. The key river systems identified by the study are mostly in China, India and North Africa. They are the Ganges, the Yangtze, the Indus, the Nile, the Huang He (Yellow River), the Huai He, the Niger, the Hai, the Krishna and the Danube.

The report estimates that every dollar spent on improving access to safe water and sanitation gives an average return of $5 in terms of economic activity. On a global basis, providing universal access to safe water and sanitation could boost the world’s GDP by $220 billion a year. The gain in Brazil, India, and China alone would be more than $113 billion. (Reuters 110612)

The links between investment and actual increase in access of safe water and sanitation are not at all straight in India or anywhere else. We have invested thousands of crores through National and international funding on water supply and sanitation schemes, but there is no correlation between amount spent and outcomes achieved. On the other hand, it is seen that smaller, decentralised and less infrastructure and costs intensive measures are more effective in facing these challenges. It is clear that HSBC is not really interested in access to water for those who do not have, but to only push the case for more cash spending to increase investments, business and growth. A month later, HSBC came out another report, pushing the case of large hydro for energy security, not understanding the link between such projects and destruction of water sources and livelihoods for the poorest dependent on these sources.

**IITs to map Indian River basins**

In an attempt to assess the impact of climatic changes on river basins across the country, the Indian Institutes of Technology (IITs), along with other institutes, are supposed to conduct comprehensive basin-wise studies. The project has been initiated by the Ministry of Water Resources.

IIT Bombay is looking at Godavari, Krishna & Sabarmati basins, west-flowing rivers; Tapti to Tadri and Tadri to Kanyakumari. Institutes involved in the project include IIT Delhi, IIT Madras, IIT Kharagpur, IIT Guwahati, IIT Rajasthan, Indian Institute of Science (IISc)-Bangalore and National Institutes of Technology (NITs) Jaipur and Surat. The other areas of the study are river basins of Narmada, Krishna, Indus, Cauvery, Brahmaputra, Brahmani, Tapti, Mahanadi & east-flowing rivers between Mahanadi & Penner. (Indian Express 280412) In view of the reluctance of the water resources establishment to make available water flow data in Indian rivers, it is doubtful how far this study will go.

**HYDRO PROJECTS**

**Karnataka High Court: Government number one enemy of forests**

While ordering a stay on two mini hydel projects in dense forest regions of Karnataka Western Ghats, the High Court of Karnataka on April 18, 2012 took the State government to task on its apathy in protecting the forest area. During the hearing of a petition filed by Western Ghats Environment Forum, challenging the permission accorded to set up mini hydel projects in the Western Ghats, the Division Bench headed by Justice D. Venkatesh Shylendra Kumar observed that the government was the number one enemy when it came to protection of forests.
The two mini hydel projects of 18.9 & 19 MW capacity are located in Kaganara and Yedakumeri reserve forests respectively. The government has allotted 4.18 ha and 4.20 ha respectively for the two projects, and handed over to Maruthi Power (Gen) India Private Limited, a private power generating company. (Deccan Herald 190412)

However, in bizarre circumstance, it came to light that Maruthi Gen had actually built a single mega hydro project in the eco sensitive area, causing huge deforestation and disturbance to wildlife, while escaping EIA, Forest Clearance or Public Hearing Processes.

**HYDRO PROJECTS IN NORTH EAST INDIA**

**Sikkim can experience a mega earthquake** Since September 2011, when an earthquake of magnitude 6.9 rocked Sikkim, scientists have recorded nearly 300 aftershocks in the region and predicted the possibility of a quake up to magnitude 9. They have recommended that parts of Sikkim be upgraded to Zone 5, the classification that carries the highest risk. The seven Northeast states are in Zone 5 — Assam and Meghalaya had a magnitude 5.4 earthquake recently. Sikkim is now in Zone 4. The prediction by researchers of the department of geology and geophysics of IIT Kharagpur is for a north-eastern region that includes the Sikkim-Darjeeling region in particular.

Scientists studying aftershocks recorded 292 tremors since the Sikkim earthquake, all in the range 1.5 to 5 and including 63 in the range 3.5-5, with 17 of these of magnitude 4.5 or higher. (Indian Express 140512)

There are two opinions among geo-scientists regarding the link between the seismic activity and large number of hydro projects. There is also the issue of threat of these projects to downstream lives and livelihoods. Sikkim alone has more than 29 hydel projects in various stages, while Arunachal has more than 200. What will happen to downstream areas if an earthquake of magnitude 9 happens here? What disaster management mechanisms will save the people from such a huge cumulative impact of projects? The geo scientists should not limit their discussion only to reservoir induced seismicity and should also attempt to answer these bigger questions.

**HYDRO PROJECTS IN HIMACHAL PRADESH**

**A DISASTROUS DECISION: Indian Council of Forestry Research and Education to do Sutlej basin cumulative impact assessment** The Indian Council of Forestry Research and Education has been appointed by the SJVNL to conduct a study to assess the cumulative impact of hydropower projects on environment in the Sutlej basin and also quantify the minimum discharge that must be maintained in the river during the lean period.

Sutlej has 135 projects planned, under construction and operating on it, including the country’s largest public sector Nathpa Jhakri HEP and the largest private sector Karcham Wangtu HEP.

With so many projects planned, most of the river will vanish under a cascade of projects, virtually coming one over the other, leading to an ecological disaster. The study is supposed to prepare an inventory of the flora and fauna, endangered species found in the area, breeding grounds of fish, human settlements and carry out characterisation of forests. It is claimed that such information will enable the authorities to take an 'objective view' while granting forest and environment clearances and plan mitigation measures. The study is also supposed to work out the length of the river stretch with normal flow after commissioning of the projects and also the impact on the livelihood of people, due to loss of forest, agriculture land and water sources.

However, just for a reality check, nearly all the cumulative impact assessment studies done till date have not been objective, but have only worked to further the project proponents’ claims. These include the AHEC Roorkee Report on Cumulative Impact Assessment of Alakananda Bhagirathi, WAPCOS’s Lohit Basin Study and Bichome Basin Study. Such studies cannot be done by a single agency. Ironically, the agency appointed to Sutlej study is none other than ICFRE, an agency with poor track record. The EIA of Renuka dam done by this agency was of such a poor quality, so full of contradictions that it led to NGT suspending the Environmental Clearance of the project. (The Tribune 180412)

The MoEF has been giving consultancies to EIA consultants who have been repeatedly submitting shoddy EIAs. A number of organisations wrote about this serious issue to the MoEF. Following are the excerpts of the letter. Organisations which have specific examples of shoddy EIAs and bad consultants may write to the MoEF (Shri Rajiv Gauba, Joint Secretary, MoEF) on similar lines.

“This is with reference to the Judgement dated 23 May 2012 of the National Green Tribunal in Appeal No. 23 of 2011, T Mohana Rao vs Ministry of Environment and Forest & Ors. The Judgement in paragraph 28 inter alia states: “MoEF may ensure that the quality of the EIA report remains fool proof and any consultants whose EIA reports are not found satisfactory, should be blacklisted”.

Civil society has been raising this point with the Ministry for a number of years now and has not yet received a satisfactory response, nor seen any action from the Ministry on this front. Attached is a submission made by a number of civil society groups about severe limitations and inherent problems with the QCI accreditation process for EIA consultants. The submission was sent to the Ministry in April 2010 and we have not received any response from the Ministry about the pertinent issues raised in the submission.
In the meanwhile, consultants with bad track record & ‘unsatisfactory performance’ are routinely being commissioned for important assignments like Cumulative Impact Assessment & Basin studies. Some instances are:
1. The Ministry itself has not accepted the Cumulative Impact Assessment Report of hydropower projects on Alaknanda Bhagirathi done by IIT Roorkee. The EAC has raised doubts about the study and has considered it to be data deficient (54th EAC Meeting, Agenda 2.11) and civil society has exposed serious problems with the same. Despite these facts, the same agency has been recommended by the Ministry itself for working on cumulative impact study of Lower Demwe Project (Wildlife Clearance to Demwe Lower Project, Office Memorandum from MoEF, dated 11.02.12). Incidentally, IIT Roorkee has no qualifications for addressing ecological impacts.

2. WAPCOS: The agency has done various shoddy EIAs and Basin studies (Bichome Basin Study: See attached, Lohit Basin Study critique).

The NBWL has raised doubts about the expertise of WAPCOS in dealing with wildlife issues and has said that “the level of expertise of WAPCOS in studying wildlife related issues is a matter of concern based on earlier experience of the NBWL Standing Committee (e.g. EIA report for the 2000 MW Lower Subansiri)” (Report of Dr A Rahmani, member of the team for site inspection of the proposed DEMWE Lower Hydroelectric project in Arunachal Pradesh). Despite these facts, the agency is working on number of studies commissioned by the MoEF.

These are only indicative examples, and there are a number of other such evidences clearly demonstrating a systemic problem with the QCI system. The QCI system needs to be done away with as it has not achieved what it was set up for. In the meantime, the Ministry is accepting shoddy EIAs, Cumulative Impact Assessment Reports and Basin Studies by these consultants even when civil society and local communities are highlighting the problems about the same. Neither the EAC nor the Ministry is trying to cross check the information stated in such reports. As an immediate action in response to the NGT judgement about blacklisting consultants with bad track record and unsatisfactory past work, the Ministry immediately needs to bring out such a list and put it in public domain.

- The Ministry should set up a credible independent process of ensuring that the consultants who have done shoddy, dishonest, cut and paste or inadequate work are identified and corrective steps taken, including rejection of shoddy EIA/CIA/basin study and black listing them, among other options.
- This process should invite submissions from individuals and organisations all over India showing evidence of such shoddy work.

- To ensure that the persons responsible for such shoddy work do not open a new shop in a new name with the same old people, specific persons should be identified and also black listed.
- The EACs and FAC should be asked to apply their mind and recommend agencies for such corrective measures that they have found to have been involved in such bad quality work.
- The Ministry also needs to apply its mind about the issue of conflict of interest and identify norms and criteria to decide the agencies that need to be debarred from doing EIA and CIA work. WAPCOS is a prime candidate in this respect.

As a first step the Ministry should suspend all studies awarded to IIT-Roorkee and WAPCOS pending a decision by the Ministry on blacklisting of consultants.”


Lahaul Valley villagers protest against HEPs
Fearing drying up of traditional water sources and destructive impacts, due to construction of massive hydropower projects, people of over two dozen villages of the remote Lahaul Valley in the Chenab basin staged a massive protests in Keylong, District head quarters.

According to Ravi Thakur, president of Jispa Bandh Jan Sangharsh Samiti, the government has allocated more than two dozen mega and mini projects in the past four-five years in the Chenab valley. Mega projects being constructed by private firm Moser Baer Projects Private Limited and state-run Himachal Pradesh Power Corporation Limited (HPPCL) are posing grave threats to the ecosystem and dependant livelihoods. “These would severely hit the local flora and fauna and would dry up the traditional water resources. It will also hit the livelihood, directly or indirectly, of more than 6,000 people settled in 26 villages in the Lahaul Valley”. The reservoir of the 300 MW Jispa project of the HPPCL on the Chenab would displace more than 200 families of seven villages. The mega projects, two by Moser Baer and one by the HPPCL, coming up in Lahaul are in Miyar, Seli and Udaipur areas.

The Chenab basin falls largely in the high-altitude region (above 2,500 metres) in Lahaul and Spiti district. The
area is characterised by difficult terrain, fragile and loose mountains, prone to avalanches and landslides and falls in seismic zone-IV. Locals say that they have not been taken into confidence before planning, sanctioning and allocating the projects. According to forest department estimates, over 9,000 hectares of forest land have so far been diverted to non-forest use. Of this, 7,000 hectares were used for hydel projects. (CanIndia 050612)

GOVERNANCE

Book Review: Remunicipalisation - Putting water back into public hands Cities worldwide are experiencing the failures of water privatisation. Unequal access, broken promises, environmental hazards and scandalous profit margins are prompting municipalities to take back control of this essential service. The new book from Corporate Europe Observatory, Transnational Institute and the Municipal Services Project examines the new trend for water ‘remunicipalisation’. Case studies analyse the transition from private to public water provision in Paris, Dar es Salaam, Buenos Aires and Hamilton, and look at a national-level experiment in Malaysia. It shows the benefits and challenges of municipal ownership, while underlining the stranglehold of international financial institutions and the legacies of corporate control.

The journey toward better public water illustrates the benefits and challenges of municipal ownership, but the book also highlights the stranglehold of international financial institutions and the legacies of corporate control, putting water in the context of the larger debate about ‘alternatives to privatisation’ and drawing lessons from these experiences for future action in favour of public services. It is a must-read for policy makers and activists looking for concrete ways to democratise water services. The book offers rich evidence of how public service providers outperform private water companies while at the same time pointing to the challenges that managers, policy makers and activists face in making water public again. (http://www.corporateeurope.org/publications/remunicipalisation-putting-water-back-public-hands)

Ministry told to give complete data on rivers Highly critical of being furnished a “half-baked” reply on diversion of waters of the Brahmaputra and its tributaries by China, the Parliamentary standing committee on water resources has once again asked the Water Resources Ministry to compile complete data of major river systems in the country at the earliest. This was also the direction from the 2011 CAG Report.

In its report submitted to Parliament, the committee headed by Dip Gogoi reiterated that the government should compile the entire data of India’s major river systems, indicating the volume at the point where a river enters the country and the volume at the point where it either falls into the sea or into the territory of adjoining nation. According to the committee, while data on all major river systems is just not available, even the data pertaining to Brahmaputra’s tributaries was incomplete as it did not specify the exact period it pertained to. The standing committee wants the govt to compile data indicating the volume of water in every major river at the point where it enters the country and the volume at the point where it either falls into the sea or flows into the territory of any adjoining nation. (The Tribune 020412)

WATER SUPPLY & SANITATION

Pune Thirsty while wastages continue While the Pune Municipal Corporation (PMC) has been struggling to get additional water supply of one TMC (thousand million cubic feet), it is estimated that as much as four TMC is wasted in the city annually by way of leakages due to old and faulty distribution system. The loss takes place by way of leakages through the old and rusted pipelines both above and below the ground, loose valves and unauthorised water connections. This loss is 40% of supplied water.

According to officials, though the department repairs surface pipelines, it is difficult to for them to detect underground leakage. The PMC, like most Indian cities, has no maps of the old pipeline network which makes it difficult to carry out repair works. According to superintending engineer, water works, PMC, while the repair work is being undertaken at several places, unavailability of sufficient staff often is a problem. Pune will soon embark on water audit. While primary and secondary water audit will be over by Dec 2012, for tertiary audit (from tanks to homes), water meters must be installed at every household. (Indian Express 100412)

LIVING RIVERS with freshwater flows

Excess salinity in Sunderbans affects Bengal Tiger Recent observations by W Bengal wildlife experts have revealed serious physiological changes in the Bengal Tiger. These include weight loss, shrinking size and fading lustre. Experts believe this is because of climatic change and increased salinity in the water. While the average weight of an adult Royal Bengal tiger in other parts of India is over 180 kg, in the Sunderban region it has fallen to around 110 kg. The length of a Sunderban tiger has come down from over 9 feet to about 8 feet.

The tiger's weight loss is being attributed to its consumption of saline water as the number of fresh water ponds inside the core area of Sunderbans has gone down drastically because of rising salinity. Currently, the average salinity in Sunderbans is more than 21 parts per thousand (ppt), which touches 25 ppt during winter. Experts claim that the salinity level in the mangrove forest has increased 15 per cent in the last two decades.

Located in Kolkata’s neighbouring South 24 Parganas district, the Sunderbans is part of the world's largest...
delta formed at the confluence of the rivers Ganges, Brahmaputra and Meghna. It is spread over an area of 4,262 sq km with a major portion lying in Bangladesh. The deltaic belt, which houses a vast tract of forest and saltwater swamp, is located in the lower part of the Ganges. It extends 260 km along the Bay of Bengal from the Hooghly river estuary in India to the Meghna River in Bangladesh. (India Today 010412)

The main reasons for rising salinity in Sunderbans is the over abstraction from the Ganges basin and no consideration of downstream ecosystems. Farakka Barrage has severely affected the salinity profile of the region. This has affected the mangroves, fish, the Tiger and people of W Bengal and Bangladesh.

**FISH AND FISHERIES**

Parl Com invites suggestions on fisheries The Parliamentary Standing Committee on Agriculture has decided to review the fisheries Development in India and has invited suggestions from all concerned. The aspects the Committee will study include inland fisheries, freshwater fisheries, brackish water fisheries, aquaculture, estuarine fisheries and marine fisheries. Sustainable livelihood is among the thrust areas. The suggestions are invited in three weeks, that is by July 18, 2012 and are to be sent to: The Committee Officer, Committee on Agriculture Branch, Lok Sabha secretariat, Room no 616, Parliament House Annex, New Delhi 1, Email: agricom@sansad.nic.in (The Hindustan Times 270612)

Fisheries support over 4 lakh along Wainaganga River Inland fisheries as they are called in India is one of the most neglected sectors. Despite supporting millions people, riverine fisheries do not find a mention in any development scheme. All the schemes by Irrigation and Fishing Departments are geared towards reservoirs fisheries, hatcheries and breeding. The naturally occurring fish diversity in a river, which supports millions of livelihoods finds no mention. Neither are conservation plans for riverine fisheries, which would include river protection, ever discussed. Despite this fact, there is still a large dependence of communities on riverine fisheries. Wainaganga River in a stretch of 330.32 km. Out of these 50 villages, data of 16 villages has been collected and analysed. According to this study, 4,70,604 persons are involved in fishery in river. Additionally 84,522 persons fish in tanks, pond and few reservoirs in the Wainaganga basin. So around 555126 people depend on the river, traditional tanks and natural lakes for their livelihoods.

(Data collected and analysed by Manish Rajankar, Manohar Bhrushundi, Dr. Prakash Malgave, Dr. Ulhas Phadke, Wainaganga Khore Abhyas Gut)

This is a staggering number for a tributary of river Godavari. All across the country, communities depend on the river for various goods and service. Fishermen are particularly vulnerable because even though they face the most direct problems of degrading rivers like dams and pollution, they are never compensated for any of their losses.

**Golden Mahseer Hatcheries in Assam Rivers** The Uttarakhand-based Directorate of Coldwater Fisheries Research (DCFR) is planning to start hatcheries and brood banks (pregnant fish) for repopulating the golden mahseer in Manas, Pohumara and Braohelli rivers where lack of conservation has led to fall in Golden Mahseer figures. The DCFR, in association with Assam Bhorelli Angling Conservation Association (ABACA), has already been running such a hatchery at Nameri for the Braohelli River which flows down to Assam from Arunachal Pradesh where it is known as Kameng.

The DCFR organised a two-day workshop on sustainable utilization of mountain fishery resources in the northeast. The workshop will take inputs on developing high-altitude fisheries in NE for inclusion in the 12th Five Year Plan. Every year, more than 500 anglers from different parts of the world gather at Nameri for golden Mahseer, which contributes to the development of eco-tourism in that area. ABACA executive member Atul Borgohain said in 2009-10, angling tourism at Nameri generated about Rs 34 lakh. He said ecotourism at Nameri has emerged as a major employment generation avenue in the area. “Golden Mahseer are the most sought after by anglers. There is a tremendous potential for angling tourism in the northeast. In 2009-10, about 12,080 locals were engaged in various ecotourism works, including angling, at Nameri alone”, (The Times of India 250312)

The Golden Mahseer and Mahseer fisheries in North East stand to be destroyed due to the host of dams planned on all tributaries of the Brahmaputra, including the Kameng. Mahseer are anadromous fish, i.e., they need to travel to the upstream in order to spawn. This migration route is about to be blocked by the mega dams coming up on Subansiri, Lohit, Dibang, Siang and its tributaries. It is sad to see that DCFR has not even mentioned this very contentious point in its discussions about cold water fisheries, especially when millions of people from Assam depend on Fisheries in Brahmaputra.

**Fish species in Assam migrating upstream indicating warming rivers** A study, conducted by Guwahati University and Haflong Government College has found that cold-water fish species in the hill rivers are decreasing while the number of plain-water species are increasing owing to rapid changes in physicochemical properties of rivers induced by rise in temperatures. A total of 75 fish species were recorded in two sample rivers, of which 27 species belonged to the cold-water variety.

Goswami, one of the researchers in the study, said the findings were a clear indication of environmental impact
on the upland river system and its fish diversity. He added that cold-water species are showing a declining trend as fallout of destruction of river ecosystem and climate change. “The manifestation of climate change is becoming apparent in the hill or upland river systems.

The rivers are becoming braided as dry spells are getting longer and more frequent. It is high time that a comprehensive programme on studying the impact of environmental changes on fish diversity in upland rivers is taken up”. (The Times of India 280312)

### AGRICULTURE

**Protecting food diversity through Organic Farming** India is a centre of mega biodiversity, not only geographically but also in food. There used to be more than 3 lakh varieties of rice and there are more than 50 traditional varieties of Brinjal grown in the country. More than 20,000 varieties of rice have been documented by Central Rice Research Institute. This diversity can still be seen in Odisha and Chhattisgarh while in Sunderbans of W Bengal, people defy agriculture scientists who claim that rice can't be grown in salt water. This special salt-resistant variety of rice has been passed on to the people by their ancestors. Similarly, a deep water variety of rice is harvested using a small boat in areas around Kolkata and Visakhapatnam.

On the banks of Varda, a tributary of Tungabhadra River in Karnataka, people grow flood-tolerant rice which remains submerged in water for 20-25 days & gives 10-12 quintal of paddy yield per acre. The need for chemicals is eliminated due to the nutrition rich silt brought by the flood. The fact that these practices are now limited to specific areas underscore the hegemony of modern agriculture practices. Whether it's the use of fertilisers and pesticides, mono cropping or excessive exploitation of groundwater, the false alarm of food security is not only increasing input costs for farmers but also turning food unhealthy. The procurement policies negate any benefits by mixing naturally-grown grain with that produced using heavy dose of chemicals. With this background, community initiative involving small farmers' groups and more than 2,000 seed conservers in Karnataka is a welcome change.

Starting with nine women farmers in 2000, the movement called Sahaja Samrudha (bountiful nature) has grown into a network of small farmers. Around 300 seeds of ragi, paddy, minor millets, vegetables, pulses and soon are being conserved all over Karnataka. Besides farmers, weekend doctors, software engineers and media friends are making it a community effort in its true spirit. The network is spread all over Karnataka. Bore Gowda, a farmer from Shivahalli in Mandya district near Mysore has preserved 70 rice varieties. He says “Paddy is a grass family. Does anybody apply chemicals to grasses? Pests and diseases do come but they don't drastically affect the yield.” Bore Gowda has inspired 60 more farmers to save seeds in the region each one conserving around 20-30 varieties.

The movement is not restricted to individual farmers. Banavasi panchayats consisting of 3-4 villages in Sirsi taluk started the first community seed bank and has conserved more than 30 varieties of rice each with a specific purpose. One of the farmers in the group has conserved 11 medicinal varieties of rice which have been found to provide relief in various conditions including herpes, diarrhoea, piles, during pregnancy and also to increase breast milk for lactating mothers. Lab analysis done on the variety said to be good for pregnant women found that it was rich in iron.

Various ethnic communities are also getting involved in this conservation movement. For instance, Tibetan settlements are growing various varieties of tomatoes. To link organic farmers directly to the consumers, Sahaja Samrudha Organic Producers Company Ltd was formed in 2010 with initial investment of Rs 2 lakh. It involved 250 individual farmers and 10 farmer groups. The annual turnover of the company was Rs 70 lakh last year which is expected to touch Rs 1 crore this year. Several outlets have been established including in offices of IT companies like Wipro. Farmers have actively participated in anti-GM food movement. Before the advent of green revolution, which propagated the concept of monoculture, Indian farmers had been cultivating two or three crops together. When Karnataka’s department of agriculture pushed for Bt Cotton, Sahaja Samrudha joined hands with other groups to lobby hard for the traditional multi cropping systems like Akkadi, which is millet - based pattern.

When former Union Environment Minister Jairam Ramesh came to hold public discussion on Bt Brinjal, farmers dumped more than 50 traditional varieties of Brinjal and asked him: “**What’s the need for a genetically-modified (GM) Brinjal when we have such a vast heritage?**” In fact, the high yield argument of GM promoters has been rightly thwarted by the community through more logical definition of a good variety. As many as 14 parameters including amount of fodder, cooking quality, pest and disease resistance, drought resistance and shelf life, are considered much more important than yield. (G Krishna Prasad, Founder Director of Sahaja Samrudha in The Weekend Leader)

**SRI gaining momentum in Asia** The system of rice intensification (SRI) is gaining momentum across Asia, with more governments’ relying on it as a solution to achieve food security in their country. Rice is a staple food of more than half the world’s population, including 640 million undernourished people in Asia.

April May June 2012
Less seed, less water, less pesticides, and chemical fertilizers can bring significantly higher yields through SRI. SRI methods are being successfully applied to other staple commodities like wheat and sugarcane. SRI started with involvement by just farmers and NGOs, but now governments are promoting it in China, India, Indonesia, Cambodia and Vietnam, and the spread is accelerating.

In China, SRI will exceed 900,000 ha in 2012, from 700,000 in 2011 and 200,000 in 2007. SRI is becoming the main rice cultivation system in most of southern China. According to the UN Food and Agriculture Organisation, China, India and Indonesia were the world’s leading producers of rice in 2010, and Asia produced and consumed around 90% of the world’s rice.

The Indonesian Ministry of Agriculture announced in 2011 that it would rely more on SRI to increase food security, with a target of 1.5 m ha in 2015, from 100,000 ha in 2011. In Jan 2012, the Indian Ministry of Rural Development increased support to SRI by targeting 10 m ha of rice area for SRI management over the next five years, twice the area under SRI cultivation today. With the ongoing acceleration, the system has gained momentum in Asia, and could even represent 10% of world rice production by 2015. ([One world South Asia](270412))

Govt to reduce chemical fertilizer subsidy
Supposedly concerned over the adverse impact of chemical fertilisers on soil and crops, the government plans to reduce subsidy on it and divert funds to organic manures, bio-fertilisers, green manures and promotion of organic farming.

Agriculture Minister sought Parliament’s support to divert the subsidy for fertilisers to organic and balanced manure. He said in Punjab, Haryana & W Uttar Pradesh, paddy cannot be grown and government is now encouraging farmers of this region to sow pulses, oilseeds and wheat.

He added that Government is encouraging use of soil amendments, micro-nutrients, bio-fertilisers, organic fertilisers, green manure and organic farming approaches to boost overall productivity. Financial assistance was being provided for setting up of compost plants from vegetable and fruit waste and bio-fertiliser production units to ensure increased availability of compost and bio-fertilisers. ([Business Line](150512))

Looking at the disastrous impacts of chemical fertilizers and pesticides on a number of issues including health, biodiversity, productivity, farmers’ independence and increased water consumption, this is a welcome statement. How this translates into reality & the political & governance will to sustain this will be important to see.

**NEPAL**

**Nepal clears China plan for $1.6 B HEP**
A parliamentary panel cleared the way for a Chinese company to build a $1.6 billion hydroelectric plant in Nepal, the country’s biggest foreign investment program. Nepal signed an agreement with China’s Three Gorges International Corp in February allowing the firm to construct the 750 MW West Seti dam in the northwest. The Chinese firm, which was to own a 75% stake in it while the state-owned Nepal Electricity Authority would take the rest, threatened to pull out after the parliamentary panel ordered an inquiry about awarding the contract to the Chinese company without any international bidding. According to the committee appointed by the Government of Nepal to look into the irregularities, the Chinese firm should be given 51 percent stakes instead of 75 percent and the remaining distributed among the public in the remote villages where the project is to be located. ([Reuters](020412))

**Hydro dams pose threat to tourism in Nepal**
Regarded as one of the best waterways in the world for whitewater rafting, the Bhote Koshi River attracts tourists from all countries for thrilling rafting. Since the end of Nepal’s 10-year civil war in 2006, a surge in popularity has made rafting a multi-million dollar industry and a vital contributor to tourism. However, many sections of Nepal’s famed river network could soon be tamed as it plans a huge expansion in hydropower projects.

According to Nepal River Conservation Trust president Megh Ale, “Bhote Koshi river is world’s heritage — not only Nepal’s. It is like mount Everest in rafting. We are not against development in itself, but the government should clearly state which river is for what.” One plant under construction on the Bhote Koshi will include a gated weir near the Tibetan border, choking the fast flow of water for rafters. Five major resorts and 21 rafting companies operate along its banks, bringing in more than 100,000 tourists a year and providing hundreds of jobs. Campaigners have called on the govt to take rafting into account when planning locations for HEPs.

The energy industry insists power generation is the only need of the hour. The Chilime Hydropower Co, behind the Bhote Koshi project, says it would lose half of its capacity and all its profits if it were to build further away from rafting hotspots. Indian developer GMR is building a 900 MW hydro plant on river Karnali which flows through spectacular protected forests, destroying the rafting potential of the river. Tourism contributes more than US$1 billion to the economy and rafting contributes to 20 percent of foreign holidaymakers, which were at a record 719,547 visitors last year. In the words of a rafting trainer, “We have nearly 6,000 streams and rivers. Why can’t we spare some for rafting? Countries that don’t have any natural beauty erect buildings to attract tourism. Despite being bestowed with immense natural beauty, we are destroying it.” ([Taipei times](010412))
Fisherfolk protest against decreasing water levels and dams

On the International Day of Action for Rivers, fisherfolk gathered at Kotri barrage and demanded to get rid of unnatural control and storage projects from rivers, especially from the River Indus. They burst out in rage as they referred to the dunes of sand which filled the riverbed, where water had once flowed.

The fishermen held protests, walks against the construction of Bhasha Dam, and to demand the decommissioning of all the dams built on the Indus River. According to PFF spokesperson, there is a nexus between construction companies, international financial institutions, environmental consultants and the corrupt bureaucrats and politicians which push dams as the only solution to water problem, neglecting its impacts on communities. According to PFF, over 3 m acres of land was lost because of sea intrusion in Badin and Thatta, the Indus delta has been destroyed and mangroves depleted.

The activists who have been protesting against the construction of Kalabagh Dam, Greater Thul Canal and other projects on the Indus River, demanded that at least 35 million acre feet of water be discharged downstream from Kotri. They argued, with evidence, that the decrease in water discharge had taken away livelihoods of thousands of fishermen, agriculturists and other associated professions in Jamshoro, Thatta and Badin districts. A researcher, Jami Chandio, said that in the next 2-3 decades, the two tail-end districts – Thatta & Badin – may not exist if the sea continued to intrude inland at the current rate. He claimed that the sea had already entered the underground water in Tando Muhammad Khan district. Sindh Democratic Forum criticised the ruling Pakistan Peoples Party for breaking its promise, made during the Anti-Greater Thul Canal Movement to oppose any new dams built on the Indus River. (The Express Tribune 160312)

Contamination of Keenjhar lake supplying water to Karachi

Hundreds of fish of different sizes, tortoises, turtles and several other animals have died in the Keenjhar lake in Pakistan in what the environmentalists term as the biggest environmental disaster in near past. Keenjhar Lake is the only source of drinking water for Karachi, Pakistan’s biggest metropolitan besides being Pakistan’s second largest natural freshwater lake, a Ramsar site and a protected game sanctuary under the Sindh wildlife laws. It also provides huge revenue to Sindh Culture & Tourism Department. In many parts of the lake, the colour has changed to blue or green with a strange odour, with dead fish and other animal carcasses floating. Though many departments claim ownership of the lake including the Sindh Irrigation Department, Sindh Wildlife Department (SWD), the district government as well as Karachi Water Supply Board, which supplies water to 1.8 million people of Karachi, none of these departments is coming forward to protect the lake.

Besides being the main water supply source, the lake is also considered to be an important site for breeding and a passage for water birds that migrate to Pakistan in winter from Siberia and other cold countries. The official record of the SWD reveals that almost 300,000 migratory birds of about 200 species were spotted here but with the rise in pollution, this has dwindled.

The Pakistan Fisherfolk Forum (PFF) has slammed the irresponsible approach of the govt institutions, which could not check the streaming of poisonous water into the Keenjhar Lake which has been going on for many years. According to PFF, Karachi is the largest beneficiary of the Keenjhar Lake, receiving around 500 million gallons daily but, the city does not spend a single penny on the lake, despite the fact that the Karachi Water & Sewerage Board earns a substantial amount on account of water charges. (Pakistan Today 210412)

WORLD WATER

US Intelligence Report Warns of Global Water Tensions

A Report of the American intelligence community has warned that problems with water could destabilize countries in North Africa, the Middle East and South Asia over the next decade. It says that increasing demand and competition caused by the world’s rising population and scarcities created by climate change and poor management threaten to disrupt economies and increase regional tensions.

The report is based on a classified National Intelligence Estimate that reflected an increasing focus on environmental and other factors that threaten security. The report concluded that countries could use water for political and economic leverage over neighbours and that major facilities like dams and desalination plants could become targets of terrorist attacks. Coupled with poverty and other social factors, problems with water could even contribute to the political failure of weaker nations. Brahmaputra Basin is marked as one of the regions with high potential conflicts.

The report warned that water shortages would become acute in some regions within the next decade, as demand continued to rise. While disputes over water have historically led to negotiated settlements over access, upstream countries will increasingly use dams and other projects “to obtain regional influence or preserve their water interests” over weaker countries downstream. This is already happening on the Tigris and Euphrates, where Turkey, Syria and Iran have harnessed the headwaters of the two rivers that flow through Iraq. The report said that improvements in management — like the use of drip irrigation systems — could ease the potential for shortages, especially in agriculture, which accounts for 70 % of the world’s water use. (The New York Times 220312)
NEW PUBLICATION: Water Options for India in a Changing Climate

The report tries to capture the relevant issues for Indian Water Sector in the context of changing climate and highlights the options for coping and mitigating climate change challenges in water sector in India.

“The opportunities provided by climate change are still within reach. India, with the world’s largest water infrastructure also has the biggest performance deficit in terms of what that infrastructure can deliver and what it is delivering now. Groundwater is India’s water lifeline and opportunity beckons to make it sustainable. Our foodgrains requirements and demand for water for the same would go up, but there are huge opportunities like increasing soil moisture holding capacity, taking up chauka systems in grazing lands, organic farming, System of Rice Intensification, System of Crop Intensification, rethinking cropping pattern, protecting local water systems, etc. Glaciers are melting, but we have the options of creating large number of local storages and also using underground aquifer storage space. Urban water demands are going up but we also have the slew of hardly explored options including local water harvesting, protection of local water systems, demand side management, achieving proper sewage treatment and recycling, participatory governance, among others.”

(From the SANDRP Press Release, March 21, 2012)

The 93+ix page report is divided in 12 chapters, including on Rainfall, Himalayan Glaciers, Groundwater, Rivers, Floodplains, Wetlands and water bodies, Big Water Infrastructure, Agriculture, Urban water options and Positive local water adaptation and a case study each on Organic Farming (by Shripad Dharmadhikary) and Forest-Agriculture settings in Western Ghats (by Dr Latha Anantha and S Unnikrishnan).

The soft copy of the report: http://sandrp.in/wtrsect/Water_Sector_Options_India_in_Changing_Climate_0312.pdf
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