

FOOD FUTURES

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“If enough diversity is lost, the ability of crops to adapt and evolve will have been destroyed. We will not have to wait for the last wheat plant to shrivel up and die before wheat can be considered extinct. It will become extinct when it loses the ability to evolve and when neither its genetic defenses nor our chemicals are able to protect it. And that day might come quietly even as millions of acres of wheat blanket the earth.”

Cary Fowler and Pat Mooney, winners of the
Right Livelihood Award [1]

In 2008 agricultural scientists from across the world released a landmark report which indicated that this nightmare scenario is not so far fetched. The International Assessment of Agricultural Science and Technology for Development (IAASTD) concluded that the business-as-usual model of prevailing industrial agriculture cannot meet the food needs of the 9 billion who are expected to inhabit planet earth within the next few decades. Implementing the findings of the IAASTD would mean a significant break from the trend towards farm consolidation and chemical-intensive agriculture. In a nutshell the report said that we cannot go on depleting natural capital, with its dwindling of genetic variety, and still hope to ensure that everyone on earth has sufficient food.

While this 2,500 page report did not quite grab headlines in the way that news about climate change does, its findings and implications are no less startling. The IAASTD, which involved about 400 scientific and social science experts from 60 countries

around the world, was modeled on the Inter-governmental Panel on Climate Change (IPCC). Like the IPCC, the IAASTD process has been lauded for being a collaborative multi-disciplinary initiative evaluating solutions for agriculture, poverty and development in an inclusive manner – involving a wide range of countries, institutions while also being gender sensitive.

Academics and activists alike have called the IAASTD report, commonly known as ‘the Assessment’, a uniquely representative and holistic document which captures the best of current thinking in agriculture and development. It is seen as a significant departure from earlier international reports on agriculture which tended to be dominated by either a particular perspective or set of governments or private interest groups. [2]

In particular the IAASTD report has been appreciated for its insistence that food security requires a multi-functional approach to agriculture. This means acknowledging that agriculture does much more than just provide us food and fodder. It also enables, or endangers, social security and sustainable ecosystem services. The Bioscience Resource Project, a non-profit initiative, has lauded the IAASTD for going beyond the usual emphasis on low productivity and lack of productivity to focus on food *quality*, sustainability, water use, land tenure, energy use etc., as vital facets of any sustained solutions to the problems of hunger. Furthermore, said the Bioscience Resource group, this report:

“...attempts to recognize the rights and needs of small farmers, women farmers and the hungry while also giving appropriate emphasis to the significance of power and its unequal distribution in the creation and maintenance of poverty. In line with this analysis the draft promotes special policy emphasis on small/poor farmers, the involvement of women in farming and non-chemical farming in order to promote food security.” [3]

However, a few months before its release, the IAASTD report ran into controversy. Two of the major private sector stake holders in the IAASTD process, Monsanto and Syngenta, withdrew and refused to sign on the final report. Later, the governments of USA, Canada and Australia refused to fully approve the final report and

expressed reservations about it. Fifty eight countries approved the report.

What in this context is the full significance of the International Assessment of Agricultural Science and Technology for Development (IAASTD)? What are the various realities, and dimensions of conflict, that this report captures? More importantly, what are the emerging solutions? Can “local food, global solutions” be more than an inspirational slogan? Before delving into these questions in detail let us review the dire circumstances which have caused sharp anxiety among people across the world. However dire the situation may be, our fate is not sealed. There are several possible scenarios, different food futures which can be crafted. Pathways that lead to a positive future will necessarily depend upon people across nations acting as a citizens of a global community. Answers may well depend on *vasudhaiva kutumbakam*, “Earth is a Family”, being a basis for action – not just a philosophical ideal.

Multi-dimensional Food Anxiety

The fact that the IAASTD was convened is itself a signal of a dire crisis in global food security. In 1996 the FAO convened a World Food Summit at which 180 countries pledged to halve the number of malnourished people by the year 2015. A mid-term review by the FAO showed that this goal is unlikely to be met. But that is not the worst of the news. The future food security of those who eat well at present might soon be in peril. We will see how.

In 2007 officials of the Food and Agriculture Organization recorded an “unforeseen and unprecedented” shift of rapidly dwindling food supply which sent food prices soaring. In that year the FAO’s food price index rose by more than 40 percent, compared with 9 percent the previous year - a rate which has already been cause for alarm. The total cost of foodstuffs imported by the neediest countries rose by a sharp 25 percent. At the same time, global stocks of wheat declined by 11 percent, the lowest level since 1980.

Multiple causes have been identified. Early effects of global warming are cited as one reason for drop in crop yields. The

diversion of food crops to feeding cattle and manufacturing bio-fuels is another major reason. For instance, in the United States, it has been estimated that by 2010 about 30 percent of the corn crop will be used to produce ethanol. According to some reports this has led to decrease in production of staples like soybeans because farmers get generous subsidies for growing corn for fuel.[4]

Increasing meat consumption by newly affluent populations is also listed as a cause. Consequently, an official of the World Food Program noted that the poor are being “priced out of the food market”. The World Food Program’s procurement costs increased by 50 percent between 2002 and 2007.[5] Francesco Tubiello, of the Earth Institute at Columbia University, has pointed out that these trends overturn a long held assumption that there would never be a crisis of food production on a global scale. We now need to be prepared for some strong negative surprises, said Tubiello. [6]

One major reason for this is that poor agricultural practices, both industrial and traditional agriculture practices, have depleted one-quarter of the world’s soil and the damage continues. While there is growing clamor to overturn industrial agriculture and the large corporations which control it, a serious quest for answers will have to grapple with some fundamental dilemmas at the interface of technology, public policy and money-profit driven agriculture.

For instance, David Dickson, Director of SciDev.Net, a web-based science journal, has identified the decline of public investment in agricultural research as one of the factors that has led to this crisis point. International donors, wrote Dickson:

“... have tended to reduce emphasis on this area in recent years, often arguing that the task of meeting demand for food can be safely left to the private sector. The price of this policy is now being felt in rapidly rising food prices. Furthermore, agribusiness has focused its efforts on the main food crops, where the largest profits are to be made. Relatively little research... has been carried out in less profitable areas, such as so-called “orphan crops”, or those suitable for desert or saline conditions.” [7]

The irony is that agribusiness, with its large consolidated farms, has been seen as the way to ensure efficiency and thus food security by both policy makers and businesses in North America and Europe – a trend which then spread across the world. For instance, in the last four decades of the 20th century the number of farms in the USA went from 3.1 million to about 1.9 million. Similarly, the six founding member countries of the European Economic Community had 22 million farmers in 1957 and just 7 million were left by 2000. [8]

Policy makers and private businesses alike have tended to equate this reduction of small farms and people working on the land as a sign of progress. Till about ten years ago it was mostly social activists who challenged this view. But a series of farm based epidemics, from mad-cow disease to the foot-and-mouth disease have created public pressure for shifting away from the intensive industrial agriculture of either corporations or smaller farms. Both in the USA and in UK there are now popular movements working for a more holistic system of food production that also rebuilds the lower levels of the market economy in rural areas. [9]

Yields and Gains through Organic farming

Here are some examples of the remarkable gains in productivity that have been achieved:

- * Some 45,000 farmers in Guatemala and Honduras used regenerative technologies to triple maize yields to some 2-2.5 tons/ha and diversify their upland farms. This has led to local economic growth that has in turn encouraged re-migration back from the cities;
- * More than 300,000 farmers in southern and western India farming in dryland conditions, and now using a range of water and soil management technologies, tripled sorghum and millet yields to some 2-2.5 tons/hectare;
- * Some 200,000 farmers across Kenya, participating in government and non-government soil and water conservation and sustainable agriculture programmes, more than doubled their maize yields to about 2.5 to 3.3 t/ha and substantially

improved vegetable production through the dry seasons;
* 100,000 small coffee farmers in Mexico adopted fully organic production methods, and yet increased yields by half;
A million wetland rice farmers in Bangladesh, China, India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand and Vietnam shifted to sustainable agriculture, where group-based farmer-field schools have enabled farmers to learn alternatives to pesticides, and increased their yields by about 10%.

Source: <http://www.combat-monsanto.co.uk/spip.php?article345>

Even before the IAASTD report the FAO had been stressing the role of local food in improving food quality as well as empowering both producers and consumers. While the potential of organic agriculture in providing complete food security is still under study, the lessons it offers for sustainable food systems have been acknowledged. Even more significantly, the FAO has called for policy initiatives that would help farmers to access technology that complements local knowledge.

The FAO's research has shown that organic agriculture has developed a pattern of reconciling economic objectives with environmental and social goals. The challenge now is to foster policies which provide such agriculture a more level field. In May 2007 the FAO convened an international conference to discuss the how-to aspects of this challenge. This conference, for instance, concluded that there is need to foster participatory networks in international markets which help develop value chains based on fair trade and informed choices. The conference also noted that:

“Urban food supplies are enhanced by organic urban gardens and short supply chains between growers and consumers. At household and community level, organic rural and urban markets and networks contribute to improving food quantity, quality and diversified food availability. In Argentina, the ProHuerta programme which covers 3.5 million people, reports 70 percent self-sufficiency in vegetables for poor

people, especially in urban areas, as well as social security nets through organic gardens.” [10]

From UN bodies to research organizations and activist groups, there is an emerging consensus about the need for a global shift in agricultural methods and their environmental impacts. But, as the FAO’s Assistant Director-General Alexander Muller has untiringly repeated, this is a challenge of political will more than technology or business models. We can’t secure our food future without public policies and institutions that empower farmers to revive ecosystems. The good news is that a wide range of initiatives across the world are doing just that. So before returning to the details of IAASTD process let us briefly review some of these trends and their history. [11]

Organic agriculture

“Organic agriculture can contribute to food security but its potential to do so depend greatly on political will. New challenges such as climate change can be mitigated by organic agriculture through such measures as enhanced soil carbon sequestration. Organic agriculture also offers practical climate adaptation options.

Water security is enhanced by organic agriculture, in terms of drinking water quality, decreased irrigation needs in organic soils and better yields in water-stressed climate variability.

Agrobiodiversity is protected and sustainably used by organic agriculture.

Nutritional adequacy is enhanced by the more diverse and micronutrient rich organic foods. Rural development is achieved by organic agriculture through generating income and employment in areas where people have no alternative other than using their labour, local resources and indigenous knowledge.

... An international network for organic research and proper extension is crucial for the further development of organic agriculture and more public resources should be devoted to agro-ecological science.

Food security is tightly linked to agricultural policies that determine export and import choice. Organic agriculture reconciles economic objectives with environmental and social objectives but its further development requires securing a level playing field through appropriate policy interventions.

Food security is not only a concern of developing countries as fossil fuel crisis, climate change and other vulnerabilities in the food chain may threaten also food secure areas.

[Report on International Conference on Organic Agriculture and Food Security, Rome, 3–5 May 2007]

A Wide Range of Responses

“In two talukas of Nandurbar district of Maharashtra which is on the border of Narmada, every farmer grows two minor millets, in addition to their normal rain crop.. The crop grows wild on barren land and production is low. But the farmers never miss raising these two crops. Nor is this crop traded. It is just harvested and stored. Since these crops can be store for more than 50 years, it is their security against famine.”

— Girish Sohani of BAIF

The preference for local, and/or organic food has found expression in a variety of ways through out the period that industrial agriculture was becoming dominant.

Millions of people, in *cities* across the world, are engaged in urban agriculture for either their own or their local neighbors' consumption. A report by UNDP gives the following staggering figures:

- Almost half the vegetables consumed by the residents of Hong Kong are grown within the city limits on just about 5 to 6 % of the city's land.
- During the 1980s the 18 largest cities in China met over 90% of their vegetable needs and half of their meat needs, through urban farming.
- In Lusaka, Zambia urban 'squatters' grow one-third of their food within the city.

- In Kampala, Uganda about 70% of poultry and eggs are supplied by local urban producers.
- Singapore raises 80% of its poultry and quarter of its vegetables within city limits.
- In the closing decades of the 20th century New York city opened a thousand community gardens on public land and dozens of public markets to sell produce grown in them.[12]

Wander about Britain and you are bound to run into similar people playing a key role in getting together a farmers market be it in London or a small town. What these farmer markets offer is a wide range of high quality, locally reared or produced foods. The same markets are also a hub for political action and lobbying to take WTO agreements away from the agenda set by agribusiness. Colin Hines, a British food and agriculture activist, has called this a mobilization for local food and global solutions! [13]

Community Supported Agriculture

In the USA the trend of Community Supported Agriculture (CSA) has been going steadily for the last few decades. The first two CSA schemes were set up in 1986. Today there are estimated to be anywhere between 1200 to 1700 such schemes spread across the USA. Since the mid-1990s the number of farmers markets there has doubled and now stands at about 3,706. [14]

Given the scale of the American economy this may still seem negligible. Even Café 150 on Google's campus at Mountain View, California, can seem like a niche phenomenon. This café serves only that food which its chef can source within a 150-mile radius. After all, half the food sold in the US is now produced on just about 2 percent of its farms which are mostly owned by corporations and operated more by machines than human workers. By contrast three-quarters of the farms account for only 9% of the produce. There are now approximately just 3 million people working on American farms, while there are 2.2 million in its prisons. [15]

There is also an increasing public unrest about how a long food chain has created structures which put much less of every dollar spent on food in the pocket of the family farmer. In 1910,

before the current system came into place, a farmer got about 41 cents of every dollar spent on food. Now most farmers earn an average of 9 cents out of every dollar spent on food in the USA. Meanwhile 67 cents of every food dollar goes to marketers and the extensive chain of storing, packaging, branding and hard-selling farm produce.

Now a wide range of people, not just activists, are asking how and why industrial agriculture reduces the quality of the food they get at the super market. They are also asking if large feedlot based cattle farms, with their large volumes of pollution, are indeed efficient? For example, what forms of agriculture will ensure that the richly multi-purpose cow dung is fully utilized rather than being rendered a form of waste and pollution?

CSA answers some of these questions by fostering modes of food production which respect the land as a living, breathing entity whose cooperation the farmer elicits. Then all operations — pest control, tillage, fertilization — are undertaken with close concern for how it will affect the health of the soil, rather than focusing purely on immediate monetary returns. But this requires a radical leap in consciousness. It means accepting that food is not a mere commodity but a result of multi-layered relations between the soil-animals-humans and within society.

The philosophical roots of CSA have been traced to Rudolf Steiner's concept of a world economy based on more equitable forms of ownership. While many CSAs are on family farms some are on land held by a community through a legal trust. The trust then leases its property long-term to farmers who use the land to grow food for the community. This inherently replaces the employer-employee relationship with a equation of co-ownership. Those influenced by Steiner call this an associative economy in which the guiding principle is not increase of profits per se but rather identifying and meeting the actual needs – not just of the people involved but also the land. [16]

History of CSA

The earliest CSAs were formed in Germany, Switzerland and Japan in the early 1960s with groups of consumers and farmers coming together in cooperative partnerships to pay the full costs of ecologically sound and socially equitable agriculture. In Japan similar schemes, known as *teikei*, supply food to about 11 million people and have done so far almost fifty years. Various forms of community linked agriculture are thriving across Europe. The *teikei* system, which also began in the early 1960s, is often cited as the inspiration for community-supported agriculture around the world. Many of these initiatives have been driven by people who got into it primarily to build and nurture communities.

The Japan Organic Agriculture Association runs a producer-consumer co-partnership known as the *Teikei* system. The JOAA was created as a response to the environmental destruction unleashed by the post-war spurt of industrialization in Japan when the GNP was growing at the rate of 10% annually. As heavily chemical based agriculture became the rule, consumers became alarmed about the safety of the food they were eating and thus formed groups for the promotion of organic farming. According to the Association's website, it has about 3,000 members of whom about 20% are growers the rest are consumers.

"Teikei" is an idea to create an alternative, direct, distribution system rather than depending on the conventional market. The JOAA described Teikei as "not only a practical idea but also a dynamic philosophy to make people think of a better way of life either as a producer or as a consumer through their interaction." [Source: website www.joaa.net/english]

By the mid-1970s organically-grown produce began to sold even by some wholesalers and greengrocers. But it was not until 1993 that the Japanese Ministry of Agriculture, Forestry and Fishery enacted "The Special Labeling Guideline on Organically-grown Vegetables and Fruits". The JOAA dismissed these guidelines as inadequate, misleading and aimed at suiting the demands of "profit-seeking traders and corporations".

The edifice of the Teikei rests on the understanding that:

- a) chemical hazards are not just a matter of techniques, but an indication of the total malfunction of distribution systems, consumption structures and agricultural policies;
- b) “the swollen commercialistic market and food industry intercept the communication between producers and consumers, eventually misleading the both of them.”

Thus the need for consumers and producers to work together to overcome these problems by forging direct links. The Teikei system also encourages consumers to physically labour on the farms from which they are getting organic produce. The prices, under the Teikei system, are settled through direct negotiation between producers and consumers. Such prices are in most cases higher than those offered by the conventional market. Yet consumers are delighted because these prices are still lower than those offered by most grocery stores and safer. In some cases the consumer groups offer interest free loans to farmers who are switching from chemical to organic farming — to tide-over the fallow period.

The Teikei system runs on the following ten principles:

1. To build a friendly and creative relationship, not as mere trading partners.
2. To produce according to pre-arranged plans on an agreement between the producer(s) and the consumer(s).
3. To accept all the produce delivered from the producer(s).
4. To set prices in the spirit of mutual benefits.
5. To deepen the mutual communication for the mutual respect and trust.
6. To manage self-distribution, either by the producer(s) or by the consumer(s).
7. To be democratic in the group activities.
8. To take much interest in studying issues related to organic agriculture.
9. To keep the members of each group in an appropriate number.
10. To go on making a steady progress even if slow toward the final goal of the convinced management of organic

agriculture and an ecologically sound life.

The “teikei” movement also aims at local food self-sufficiency through independent units where food is grown, produced and processed within the area.

The Japan Organic Agriculture Association (JOAA), founded in 1971, is a non-profit voluntary organization of producers and their consumers who are committed to the spread of organic agriculture. The JOAA runs entirely on membership fee and takes no subsidies from either government or corporations. The JOAA estimates that there are around 650 food related co-ops with 16 million members in Japan).

And then there is the Seikatsu Club with its network of 600 consumer co-operatives and a combined membership of some 22 million people in Japan. The Seikatsu Club was founded in 1965, by housewives who were disturbed by the emphasis on the outward appearance of food items and a massive infusion of chemical additives, artificial colorings, preservatives etc.

The formation of the Club was driven by the refusal to remain passive consumers and instead get involved in creating food and other essential goods in ways that are safe for both human health and the environment. This included boycott campaigns against detergents which can cause water pollution and Genetically Modified foods.

“Seikatsu” , which means “life”, signifies that people are not mere passive receptacles for goods but rather aggressive and conscious beings engaged in organizing their daily life in ways that promote a more fair world, higher quality of life made possible in ecologically sustainable ways.

Thus a good part of Seikatsu’s mission has been the development of safe food at a fair price. It deals in only about 3,000 general consumer goods items, of which 60% are basic foodstuffs such as rice, milk, eggs, frozen fish and vegetables. This helps the Club to hold down rising costs and the waste of resources while maintaining the quality of merchandise.

The prices of the main consumer items are determined according to the producer cost guarantee system, in which all producer costs from production to distribution are made public.

A pre-order collective purchase system allows both producers and consumers to benefit from reduced costs.

The Seikatsu Club has received the Honorary Right Livelihood Award. The prize evaluated the movement for its continuing interest in human health and the environment when producing essential materials for living. The SC has solidarity links with NGOs and co-operatives in many countries of the world, including the National Credit Union Federation of Korea, Women Link of the Republic of Korea and the Homemakers' Union and Foundation (HUF) of Taiwan.

In 2002 the Club submitted a "Declaration Opposing All Forms of Terror and Demanding an Immediate Cessation of Military Action" to both the Japanese and US governments.

It also carried out a fund-raising campaign called the "Afghan Life Fund," as well as other peace activities. Source: <http://www.seikatsuclub.coop/english/>

For more details on The History of Community Supported Agriculture see article by Steven McFadden >

<http://www.newfarm.org/features/0104/csa-history/part1.shtml>

More information also available on

<http://www.smallisbeautiful.org>

See also *Gaian Democracies: Redefining Globalization and People-Power* by Roy Madron & John Jopling; Schumacher Briefing; Green Books: Dartington; 2003.

Thus activist groups like the UK based International Society for Ecology and Culture (ISEC) are calling for a bottom-up review of the grid-lock between the money-profits, technological innovation and the crisis of farming across the world. From the earliest factory-made farm equipment to the mammoth grain combines and tomato harvesters in evidence today, says an ISEC report, "technologies were invariably designed to reduce investor's and industrialists' expenditure on human labor, rather than to improve the well-being of farm laborers and their communities." [17]

The organic food market in Britain is now estimated to be worth almost £1.6 billion annually. Its growth rate, 30 per cent last

year, is much greater than the growth compared to a 3 per cent growth for all UK food and drink sales. Two out of three British consumers now knowingly buy organic food.

However, can such trends tackle the impending food crisis? For example, in UK the number of farmers' markets selling the produce of small farmers went from zero in 1996 to 270 in 2000. But less than one percent of food sales in that country happen at these markets, while 88% of the food is sold through supermarkets, which still largely stock the produce of industrial agriculture. In the USA farmland continues to decline despite farmers markets and the rise of CSA schemes.

Steven McFadden, a long-time chronicler of these processes offers some reasons why these trends are likely to keep growing. This is will happen not because of government programs or philanthropic efforts but on the basis of sheer merit:

“...from a real assessment of the benefits that can come from creating and supporting community farms ...CSA can play a substantial part in a sustainable future. It has the potential to establish thousands of cells of environmental vitality in cities, suburbs and countryside, and to extend basic, healthy linkages among the people who make up a community.” [18]

The British local food advocate, Colin Hines, takes a tougher view. For all their happy consequences farmers markets and local food networks don't even come close to solving the problems of small and family farmers, says Hines. They are even further from giving us any ready answers for how to solve “...the looming crisis of fostering ecologically sound agriculture that can be sustained for generations and produce enough to feed the 9 billion who might inhabit our planet in a few decades.”[19]

Certainly, the case against the globalized agri-business is far from settled. As John Mackey, CEO of Whole Foods in the USA told John Cloud of Time Magazine, his diet now is much better and diverse than it was in childhood when they didn't get fruits and vegetables from all over the world. [20] Many consumers across the world would agree with Mackey and may not care that much more than food is at stake here.

However, every new regional epidemic and the fear of pandemics like bird flu or swine flu, draws attention to the fact that a long and complicated food chain spreads viruses farther and is trickier to trace and fix. In the USA the implications of an excessively centralized food system have been noted as one a major national security risk. For instance, in 2006 about 80 percent of America's beef was being slaughtered by just four companies, 75 percent of the precut salads were being processed by two companies and 30 percent of milk was being provided by just one company. The US General Accounting Office concluded back in 2003 that this makes the nation's food chain extremely vulnerable to bioterrorism.

Familiar Conflict and Tangential Possibilities

“Going local does not mean walling off the outside world. It means nurturing local businesses which use local resources sustainably, employ local workers at decent wages, and serve primarily local consumers. It means becoming more self-sufficient, and less dependent on imports. Control moves from the boardrooms of distant corporations, and back to the community, where it belongs.”

—Michael H. Shuman [21]

“To the despair of its opponents, organic agriculture has been offering lessons in the application of agro-ecological science, empowerment of rural communities, feasibility of certification and traceability systems, ability to respond to consumers' demands, and functioning of short supply chains. And it happened from the base, out of people's ingenuity and search for sustainability. Now that organic agriculture is a market reality, it is increasingly attracting public sector and business interest – but also attracting more attacks in the struggle for shelf space.”

—Alexander Muller, Assistant Director-General of the Food and Agriculture Organization [22]

Let us now return to the opportunities and conundrums that the

IAASTD highlights. Many civil society organizations expressed joyful surprise when the IAASTD, despite being housed at the World Bank, did not conclude that transgenic crops are the best hope for humanity's food future. Instead the IAASTD report said that genetically modified crops are not a particularly helpful tool to alleviate the agricultural problems of developing countries, and thus most of the world's poor and hungry people.

A report by the Bioscience Resource group argued that there is a connection between the inclusive nature of the IAASTD process and its distancing from GMOs:

“It is probably no coincidence that a document arrived at transparently, using a tolerably democratic process (i.e. it was not written behind closed doors), and using a multidisciplinary approach, should conclude that GM crops have ‘lingering safety concerns’ and may even be unhelpful to rural development.

These conclusions in general, and the lack of support for GMOs in particular, are immensely unwelcome in some quarters. The biotechnology publicity machines of Monsanto, Syngenta and others have not spent twenty years carefully positioning transgenics as the solution to every agricultural problem in order for them to be ignored by the largest and most diverse collection of agriculture and development policy experts ever assembled.”

Here is the crux of conundrum – a multi-stakeholder exercise of this kind cannot be undertaken without including all relevant entities, such as the representatives of agri-business. The underlying assumption of such an endeavor is that all parties come to the table with a firm commitment to open and free scientific enquiry. The experience of the IAASTD does challenge this assumption. Some observers have sarcastically noted that it was predictable that Monsanto and Syngenta would be no more useful to the assessment than Exxon would have been to the IPCC process. Exxon, the world's largest oil company, has consistently maintained the position that fossil fuel use are not a leading cause of climate change. It took 11 years for the IPCC's warnings about the need to control

carbon emissions to move from the scientific community to being an urgent item on the agendas of governments and corporations.

Is the IAASTD going to suffer the same fate of getting delayed attention or will it be even more doomed? Among civil society organizations the withdrawal of Monsanto and Syngenta has been seen as a deliberate strategy to de-legitimize the findings of the IAASTD. This might explain the muted media coverage of the report. *Nature* magazine called the companies' withdrawal a blow to the credibility of the IAASTD. Other journals expressed the doubt that the IAASTD's finding lack balance and maybe biased. Such coverage essentially put the blame for the corporate withdrawal on the manner in which the IAASTD process was conducted. The Bioscience Resource group countered this by criticizing how the science media had failed the poor of the world and pointed out that: "...perhaps it never occurred to any of the journal editors that in so doing they were supporting a tiny handful of corporate biotechnologists against the aggregated views of 400 independent scientists?" [23]

Prospects for Dialog and Action

From the vantage point of agri-business the IAASTD report underplayed the role of technology in improving world agriculture. Representatives of companies argued that the IAASTD paid more attention to the risks of biotechnology than to its benefits.

The points of controversy and disagreement are as follows:

- The IAASTD concluded that there is insufficient evidence that biotech crops produce high yields. Private sector proponents of biotechnology disagree.
- The IAASTD was emphatic that if policy-makers give more prominence to biotechnology, this may consolidate the biotech industry's dominance of agricultural R&D in developing countries. This in turn could affect graduate education and training, and provide fewer opportunities for scientists to train in other agricultural sciences. Proponents of industry found the IAASTD findings on biotechnology over-cautious and unbalanced,

However, as the editorial in *Nature* magazine pointed out, these finding:

“...do not represent the rantings of a fringe minority. The idea that biotechnology cannot by itself reduce hunger and poverty is mainstream opinion among agricultural scientists and policy-makers. For example, biotechnology expansion was not among the seven main recommendations in *Halving Hunger: It Can Be Done*, a report commissioned by former UN secretary-general Kofi Annan. The writing team for this report included Kenya’s Florence Wambugu, perhaps the strongest proponent for biotechnology in Africa.” [24]

The magazine went on to urge Monsanto and Syngenta to reconsider their boycott of the report. Partly, argued *Nature*, this would be a blow to the credibility of an important scientific assessment. And more importantly, it would undermine public confidence in the biotech industry and in its ability to engage with its critics.

David Dickson, Director of SciDev.Net noted that the IAASTD report while well-meaning and full of powerful messages was somehow diffused and lacked a collective punch strong enough to make a significant impact on decision-making in corridors of power across the world. “The IAASTD report itself, for example, points out that current intellectual property legislation may restrict access by poor farmers to technological innovations (for example, by inhibiting the saving, exchange and sale of seeds originating from proprietary crops). But appropriate control of innovation is a political issue, not a scientific one. The dilemma is that there are even fewer simple solutions to this quandary than to the issue of making economic growth compatible with global warming.”[25]

These dilemmas are more painfully alive in India than anywhere else in the world. In the last decade and a half India has become the fourth largest economy in the world. The number of people who are becoming prosperous has increased. But India ranks so low on the global hunger index that only the poorest nations of sub-Saharan Africa feature below it on that index. In this context the IAASTD should be readily embraced by the Indian political

establishment and business, argued Dr. Rajeshwari Sarala Raina, a Senior Fellow at the Centre for Policy Research in New Delhi and one of the co-authors of the IAASTD report. The Government of India has already made a commitment to inclusive growth in the 11th Five Year Plan, Raina points out: "...the IAASTD findings speak directly to this commitment to eradicate poverty and malnutrition, and ensure a sustainable environment. Today, the world looks up to India to emerge as the most dynamic environmental nation state to lead a real green revolution, deploying advanced eco-friendly technologies, its wealth of traditional knowledge, and humane macro policies." [26]

And yet most metro-dwelling Indians, the one's who get to make or influence decisions in the public as well as private sector, have probably not even heard about the IAASTD. It is however very likely that they have seen a new advertisement campaign by Monsanto about how the company is "producing more, conserving more, improving farmers lives". The advertisement informs people that non-irrigated agriculture produces 60% of the world's food and that since "it will need to do more" Monsanto is committed to sustainable agriculture which ensures this. People are directed to a segment of Monsanto's website which has the address – ProduceMoreConserveMore.com.

It is easy, in this context, to condemn Monsanto for fostering an image that claims commitment to sustainability while it attempts to scuttle the findings of IAASTD. Many civil society organizations across the world are in a pitched battle with Monsanto. For instance, a group called 'Combat Monsanto' carries a report on the many examples of innovative agriculture, outside the dominant model, which is producing higher yields.

Such activist mobilization plays a vital whistle-blowing role. It was such initiatives from the late 1960s onwards which had the cumulative effect of putting environmental concerns on the table of governments and corporations alike.

However, the fear now is that time is running out. The combination of depleted soils, climate change and scuttled scientific enquiry could prove lethal. But pressure for a paradigm shift in

agriculture is growing – largely within the scientific community. For instance, in February 2009, a paper by International Food Policy Research Institute (IFPRI) highlighted the importance of shifting agricultural practices in ways that could actually slow down climate change. At present agriculture contributes about 14 per cent of annual greenhouse gas emissions. A variety of changes – from the types of crops grown, switching from annual to perennial crops, changing crop genetics and improving the management of irrigation and fertiliser use — could all contribute to lowering greenhouse gas emissions. [27]

Pressure from civil society organizations continues to mount. In mid-2009 Food First was running a campaign urging Americans to send the US Congress message opposing a bill that would force genetically engineered crops on other countries as a condition of receiving US aid. According to Food First the Global Food Security Act (SB 384) has many positive aspects but its biotech provisions are driven by the interests of agri-business and could further weaken the ability of poor farmers to feed themselves throughout the global south – where at present many countries still do not allow genetically engineered crops (GMOs) to be commercially grown. [28]

From this vantage point it is easy to picture a simple battlefield with the large corporations on one side and the poor and hungry, with their sympathizers, on the other. This image is partially true. But a fuller view of reality is, of course, more complicated.

For example, the Gates Foundation has come in for criticism by Food First because it has funded GMO research by Monsanto. At the same time, the Gates Foundation and the W.K. Kellogg Foundation are collaborating with the Training & Development Corporation (TDC), on a \$400,000 project to showcase locally-owned food enterprises from around the globe. This endeavor to document successful strategies for small- and medium-scale community-based enterprises is headed, among others, by Michael Shuman, author of a book titled *Going Local*, who is well known for his critique of how corporations have undermined local economies. [29]

Such endeavors are significant for various reasons – mostly notably for potentially expanding spaces in which there can be not only open and fair sharing of information but also building of knowledge. These spaces can easily be shrunk, even closed, by those who take a one-dimensional view – be it Monsanto or its opposing activists. But the same spaces can be creatively stretched by those who are willing and able to grab all opportunities for change and transformation.

The key battle ahead is about the politics of knowledge. In a sense processes like the IPCC and IAASTD signal the rise of a global community – the realization that unless we think and act as a global family, protecting global commons, our species is endangered.

Such international panels can be seen as one among many manifestations of knowledge that is emerging through a reaffirmation of ‘*vasudhaiva kutumbakam*’, “Earth is a Family”. True, we still lack the mechanisms for such collectively crafted knowledge to be translated into action on a sufficiently large scale. The hurdles on the path are daunting. And yet, the road ahead is well lit and full of creative possibilities.

This is so not merely due to the richness of ground level resistance, as well as creative problem solving work. It is also because there is growing pressure, within the mainstream of capitalism, not to leave the future of our species in the hands of the money-profit motive. Just as the IPCC’s work finally led to a red-alert, so will that of the IAASTD. What is in doubt is whether the required shift will happen fast enough.

NOTE: The following countries approved the IAASTD Report: Armenia, Azerbaijan, Bahrain, Bangladesh, Belize, Benin, Bhutan, Botswana, Brazil, Cameroon, China (People’s Republic of), Costa Rica, Cuba, Democratic Republic of Congo, Dominican Republic, El Salvador, Ethiopia, Finland, France, Gambia, Ghana, Honduras, India, Iran, Ireland, Kenya, Kyrgyzstan, Lao People’s Democratic Republic, Lebanon, Libyan Arab Jamahiriya, Maldives, Republic of Moldova, Mozambique, Namibia, Nigeria, Pakistan, Panama, Paraguay, Philippines, Poland, Republic of Palau, Romania, Saudi Arabia, Senegal, Solomon Islands, Swaziland,

Sweden, Switzerland, United Republic of Tanzania, Timor-Leste, Togo, Tunisia, Turkey, Uganda, United Kingdom of Great Britain, Uruguay, Viet Nam, Zambia

Footnotes:

- [1] Fowler and Mooney are authors of **Shattering: Food, Politics and the Loss of Genetic Diversity**; University of Arizona Press; Tucson; 1990; Quoted in **Short Circuit**; p.271. In 1985 Fowler and Mooney won the Right Livelihood Award for their work on Sustainable Agriculture.
- [2] The IAASTD (www.agassessment.org<http://www.bioscience resource.org/commentaries/article.php?id=18><http://www.bioscienceresource.org/commentaries/article.php?id=18> The Bioscience Resource Project Commentaries How the Science Media Failed the IAASTD 7th April 2008
- [3] The Bioscience Resource Project is USA based non-profit organization whose mission is 'To provide the highest quality scientific information and analysis to enable a healthy food system and a healthy world.' The Bioscience Resource Project pursues this mission by publishing scientific reviews and reports and also maintaining this website. The website provides independent news, information and analysis of current trends and activities in food and agriculture without depending on commercial advertising.
- [4] <http://www.nytimes.com/2008/03/03/opinion/03mon1.html?th&emc=th>
Published: March 3, 2008
Lynne S., New Haven, Conn.
- [5] The World Food Program feeds millions of children in schools and people with HIV/AIDS. Poor nutrition in these groups increased the risk serious disease and death.
- [6] A report in the New York Times noted that all countries and international agencies would have to "revisit" agricultural and aid policies they had adopted "in a different economic environment." For example, with food and oil prices approaching record, it may not make sense to send food aid to poorer countries, but instead to focus on helping farmers grow food locally.
...FAO plans to start a new initiative that will offer farmers in poor countries vouchers that can be redeemed for seeds and fertilizer, and will try to help them adapt to climate change.

...The recent scientific papers concluded that farmers could adjust to 1 degree Celsius (1.8 degrees Fahrenheit) to 3 degrees Celsius (5.4 degrees) of warming by switching to more resilient species, changing planting times, or storing water for irrigation, for example. World food stocks dwindling rapidly, UN warns By Elisabeth Rosenthal Published: December 17, 2007 <http://www.iht.com/articles/2007/12/17/europe/food.php>

[7] For example the Gene Campaign is calling for “ more public involvement in making decisions about research priorities and the cost and risk –benefit analyses must be held before approving GE crops. In our view research funds must be carefully prioritised so that conventional, systems based agricultural research gets the bulk of the funds since it continues to deliver almost all the new seeds and crop improvement systems. We believe that the way ahead for Indian agriculture is to emphasise organic production rather than GE crops, simply because organic markets are growing and markets for GE produce are diminishing.” <http://www.genecampaign.org/We%20stand%20for/wws.htm>

[8] Source: International Society for Ecology and Culture (ISEC)]

[9] Source: ‘Local Food, Global Solutions’ Colin Hines; Resurgence issue 210; Jan-Feb, 2002

In ‘The Vegetable-Industrial Complex’ by Michael Pollan (New York Times, October 15, 2006) wrote: “The Centers for Disease Control and Prevention estimate that our food supply now sickens 76 million Americans every year, putting more than 300,000 of them in the hospital, and killing 5,000. Industrial animal agriculture produces more than a billion tons of manure every year, manure that, besides being full of nasty microbes like *E. coli* 0157:H7 (not to mention high concentrations of the pharmaceuticals animals must receive so they can tolerate the feedlot lifestyle), often ends up in places it shouldn’t be, rather than in pastures, where it would not only be harmless but also actually do some good. To think of animal manure as pollution rather than fertility is a relatively new (and industrial) idea.

...Wendell Berry once wrote that when we took animals off farms and put them onto feedlots, we had, in effect, taken an old solution, the one where crops feed animals, and animal waste feeds crops, and neatly divided it into two new problems: a fertility problem on the farm, and a pollution problem on the feedlot. Rather than return to that elegant solution, however, industrial agriculture came up with

a technological fix for the first problem, chemical fertilizers on the farm.

Pollan, who is the Knight Professor of Journalism at University of California, Berkeley, is one of the growing tribe of activists and thinkers who intricately demonstrate how and why industrial sense and ecological sense are at variance. Such work is a key element of keeping the bazaar vibrant. But it is not clear if this growing knowledge can rewire the circuits through which the market intersects with technology and state policy. Pollan's assessment is that so far the industrial approach remains unshaken and businesses within that mode stay with ideas "that not only leave our centralized food system undisturbed but also imperil its most promising, and safer, alternatives."

- [10] Report of International Conference on Organic Agriculture and Food Security called by FAO in Rome in May 2007.
- [11] [Source: Agricultural action needed to protect food future, FAO By Jess Halliday <http://www.foodnavigator.com/news/ng.asp?id=76046-fao-agriculture-fodo-security-climate-change>] Footnote: Alexander Muller, Assistant Director-General of the Food and Agriculture Organization speaking at the IFOAM Event on Organic Agriculture and Food Security, Rome, 2 November 2006 International Federation of Organic Agriculture Movements (IFOAM) is the worldwide umbrella organization for the organic movement, uniting more than 750 member organizations in 108 countries. [http://www.ifoam.org/about_ifoam/index.html]
- [12] Source: *Urban Agriculture: Food, Jobs and Sustainable Cities* ; New York: UNDP, 1996. Quoted in *Going Local : Creating Self-Reliant Communities in a Global Age* by Michael H. Shuman; The Free Press, NY, 1998.
- [13] [Source: Local Food, Global Solutions by Colin Hines; Resurgence issue 210; Jan-Feb, 2002. <http://www.resurgence.org/resurgence/issues/hines210.htm>]
- [14] [Source: Organic Inc.: Natural Foods and How They Grew by Samuel Fromartz. Quoted in Eating Better Than Organic by John Cloud, NYT, Friday, Mar. 02, 2007.]
- [15] Footnote: The ideas that informed the first two American CSAs were articulated in the 1920s by Austrian philosopher Rudolf Steiner (1861-1925), and then actively cultivated in post- WW II Europe in the 1950s, 1960s, and 1970s. The ideas crossed the Atlantic and came to life in a new form, CSA, simultaneously but independently

in 1986 at both Indian Line Farm in Massachusetts and Temple-Wilton Community Farm in New Hampshire. The pioneering CSA farms were influenced by Rudolf Steiner's concept of world economy and Schumacher's ideas of local production and consumption.

One reason for this is that millions of rural Americas are both cash and resource poor. In addition they must cope with mounting crime rates. The Pulitzer Prize winning journalist, Timothy Egan, has consistently documented how pockets of hard poverty have taken shape in rural America "amid large agribusinesses supported by taxpayers." [The New York Times, December 1, 2003, "Amid Dying Towns of Rural Plains, One Makes a Stand" By Timothy Egan.] For example, while drugs related homicides fell by 50% in urban areas during the 1990s, they tripled in rural areas. An investigation by Egan in 2002 showed that small rural towns are now the most likely places to experience a bank robbery. [Source: "Symptoms of Economic Despair Cutting A Large Swath Throughout the US" by Timothy Egan, New York Times 8th Dec, 2002.]

- [16] Footnote: While CSAs overall numbers have climbed over the years, there has been a significant attrition rate and many CSAs have failed. Common causes of failure include: The farmers did not ask enough for their effort, they did not have the skill to grow adequately, or they were farming on unsecured land. Some CSAs have also failed because the members of the community could not get along.
- [17] Source: *Bringing the Food Economy Home: The social, ecological and economic benefits of local food* by Helena Norberg-Hodge, Todd Merrifield and Steven Gorelick; ISEC; 2000; p. 7
- [18] [Source: Community Farms in the 21st Century: Poised for Another Wave of Growth? By Steven McFadden; <http://www.newfarm.org/features/0104/csa-history>. Journalist Steven McFadden co-authored *Farms of Tomorrow: Community Supported Farms, Farm Supported Communities* (1990), and *Farms of Tomorrow Revisited* (1998) with Trauger Groh. Steven is the director of Chiron Communications in Santa Fe, NM <http://www.chiron-communications.com>]
- [19] [Source: 'Local Food, Global Solutions' Colin Hines; Resurgence issue 210; Jan-Feb, 2002]
- [20] [Source: Eating Better Than Organic by John Cloud, TIME, Friday, Mar. 02, 2007]
- [21] *Going Local : Creating Self-Reliant Communities in a Global Age* by Michael H. Shuman; The Free Press, NY, 1998; p.6

- [22] Speaking at the meeting on Organic Agriculture and Food Security, Rome, 2 November 2006]
- [23] The IAASTD (www.agassessment.org<http://www.bioscienceresource.org/commentaries/article.php?id=18><http://www.bioscienceresource.org/commentaries/article.php?id=18> The Bioscience Resource Project Commentaries How the Science Media Failed the IAASTD 7th April 2008
- [24] Editorial, *Nature* 451, 223-224 (17 January 2008); Published online 16 January 2008. <http://www.nature.com/nature/journal/v451/n7176/full/451223b.html><http://www.nature.com/nature/journal/v451/n7176/full/451223b.html>
- [25] <http://www.scidev.net/en/editorials/s-t-has-vital-role-in-sustainable-farming.html>
- [26] IAASTD Press Release February 6, 2009
- [27] <http://www.scidev.net/en/news/put-agriculture-at-heart-of-climate-talks-says-rep.html>
- [28] http://www.change.org/foodfirst/actions/view/no_tax_dollars_for_genetic Food First/Institute for Food and Development Policy is based at Oakland in California.
- Policy Brief No 18: Why the Global Food Security Act Will Fail to Curb Hunger by Annie Shattuck and Eric Holt-Giménez; April 15th, 2009; <http://www.foodfirst.org/en/node/2412>
- [29] The project, Community Food Enterprise: Local Success in a Global Marketplace, builds on evidence worldwide that local ownership is a fundamental building block for long-term prosperity—and that market shifts in favor of local food offer small farmers and other entrepreneurs a promising new path to economic security.
- ...A growing body of literature highlights the importance of local ownership for economic development. Compared to non-local businesses, locally-owned enterprises generally produce more community wealth by spending more money at home, build stability by staying put for the long term, contribute to rising labor and environmental standards by adapting to new expectations more readily, and foster greater community resilience by reinforcing political participation and entrepreneurship. Community Food Enterprise will be a key tool in helping practitioners build and strengthen local food enterprises.
- <http://www.wallacecenter.org/our-work/current-initiatives/community-food-enterprise-local-success-in-a-global-marketplace>

ALTERNATE PERSPECTIVE ON CLIMATE CHANGE DEBATES IN SOUTH ASIA

Arun Kumar Panibaba

Our essaying on ‘Global Warming’, climatology of South Asian Monsoon and restoration of planetary ‘cooling in the Himalayas’ is divided in two parts – (i) in the opening gamut we attempt to describe the landscape, climate, ecology civilization and culture of South Asia—the southern watershed of the Himalayas; the destruction of environment in Hindustan as a result of encounter in imperialism. We then suggest a program for resurrection of the ecology and environment in SA though national/patriotic sciences based on non-violence and plurality. We also suggest a list of issues for further empirical investigation and scientific validation to develop a science of climate change from Hindustani perspective but meeting the western sciences, half way through. The second part is an attempt to define and understand the basics of landscaping through vernacular narratives. It should perhaps be read as an independent paper. Our reference frame is essentially drawn from ‘traditional wisdom’ and people’s own knowledge which, generally speaking, is vernacular and belongs strictly to the realms of community-geographies. We are South Asian. Our perspectives are regional but concerns are humanly global.

“Modernity’ and ‘Development’ have never been appreciated even partially. All Modernity, Development continues to flourish and evolve incessantly in utter disregard of the costs involved. Those who pay the price had have remained marginalised, for ever. Only a few, rather rare, sensitive South Asians, American Indians or

Africans, the likes of a Mahatma Gandhi, a Martin Luther King, know to their cost as to how gravely serious the WASP stings. It is no simple matter that knowledge available about river-ecology, scientific animal husbandry and 'progressive agriculture' generally remains outside the purview of hardware discourse on climate change and global warming?

Geographical history(ies) is/are critically important in this context. South Asia had had been the only niche on earth since long, or at least from the last 'ice-age' whenever it might had had occurred, where both lion and tiger as well as a large variety of middle-size cats lived and flourished at the apex of the ecological pyramid in the region. Besides, cattle evolved as the critical lynchpin in a large eco-chain. In South Asia Cow-dung dries or decays and transforms into bacterial matter in just about 24 hrs and provides food for a number of avifauna and animals. Cow and its progeny itself is the most favourite food of big wild cats. At the same time cow and many other herbivorous animals are essential light graziers to clean the forest soils for new vegetation. Thus cow and lion together constitute the food-cycle on the sub-continent. This natural food cycle was classified in a classical Sutra: Jeevasya Jeeva Bhojnam (a being survives on another being). Any deliberate disruption or distortion in this food cycle amounted to sin or violation of Dharma i.e. one's duty. Hence big cats were as sacred as the cow. Both were revered and worshipped.

Poverty is a sin because it pollutes. Our former Prime Minister, late Mrs. Indira Gandhi had informed the FAO Assembly in 1974 at Rome, 'Poverty is the greatest polluter.' Now we know for sure that pollution causes global warming. However, in South Asia poverty is a colonial category. (Cultural, social inequalities are a separate issue the two need not be confused with each other). All 'Progress and Development' are costly business and can sustain on loot and exploitation only (See Hind Swaraj by M.K. Gandhi 1909). 'Scientific civilization' is based on imperialism and directly cause global warming.

We are pleading for a closer scrutiny of both history and science of *regional ecologies*. European sciences and ecology

charted a path on the principle of uniformity and maximization of efficiency. We intend to propose a case study of climate change in South Asia. The South Asian sciences and ecology evolved on the foundations of diversity, coexistence and therefore natural laws. No other land or country knows better than South Asia (SA) that the climate of our planet had been under severe stress and duress for the last 250-300 years—from around mid 18th century. According to recorded ‘history’ SA began experiencing prolonged disturbed weather conditions, especially erratic monsoon, since 1760. Bengal faced a 30 years phase of disturbed monsoon around 1760-1790 and consequential famine. (Famine is not a climatic category. In our understanding it is a politico-economic category but generally ‘believed’ to be a ‘consequence of drought’.)

In South Asia, most experience about international exchange and world trade, even 60 years after independence, remains essentially colonial and exploitative. In whatever sector our governments adopt knowledge systems and development models other than based on people’s own skills and resources they become usury conduits and cause global warming. Our experience of western science and technology in the last 200 years, whether it emanated from the ‘liberal’ west or the ‘revolutionary’ east (Soviet Russia) had been that it is primarily imperialistic and colonial and is fundamentally motivated by the dynamics of political economies of the imperial masters. *The current global discourse on climate change is essentially Euro-centric, both culturally and scientifically.* Even in that limited context, the west, the main perpetrator of crime against climate and ecology, is not prepared to accept any minimal mutually agreed protocol. The American congress (read Euro-American MNCs (or corporate business)) declined to ratify the Kyoto Protocol.

Despite international ‘noises’ about the gravely adverse impact of increasing emissions of Green House Gases on world climate as the significant cause of global warming, *climatology has not been developed as a serious academic discipline.* Academics engaged in newly established faculty/centres of atmospheric sciences in

institutions of higher learning and research are generally toying with *computerised mathematical models* about the composition of gaseous-atmosphere around the globe and its likely impact on climate change with little concern about elements of ecology which together constitute differentiated bio-spheres or act as catalyst inducing interaction amongst them.

In our considered view a global discourse on climate change would be possible only when 'regional' theorems about causation of green house 'canopy' over the earth are settled on the basis of hard scientific data. [For example, it is now scientifically known that methane expulsions by cattle constitute a critical factor in global warming. In this context we are anxious to know if data about cattle raising in sun-baked South Asia is available and it has been compared with datas regarding dairy forming in wet-cold and rare-sun-shine Europe and North Americas?]

Discourse on global warming needs to be sincerely internationalised and given scientific orientation. Geologically and geographically speaking *ecology(ies) is/are a historical category*. 'Global Warming' and 'climate change' needs to be historicised to be scientific and therefore humanised. All anthropogenic climate change is about the emergence of the European civilization. Antropogeny has evolved as a geo-specific science. The discourse on climate change will globalise when regional studies are collated without prejudice to consequential reasoning and the sum-total of data-statistics' wisdom is recognised. Final freedom from the pressures of political economy is essential for initiating a global discourse on Global Warming.

In our simplistic, allegedly 'nonscientific', understanding of climate change the regional autonomy of the Himalayan ecology is not yet totally irrelevant to initiate corrective responses towards normalizing both global temperature and the disrupted water cycle of the South Asian chunk of land. Hence we propose, irrespective of the etiology and causal consequences of the 'thickening canopy' of Green house gases (CO_2 , CH_4 , N_2O , etc) emitted from all types of contemporary economic activities, *that regional mapping (both micro(s) and macro(s), as well as super-macro) of climate change is*

urgently needed to develop community based local, regional, sub-continental, continental, global responses to negotiate the crises generated by increasing global temperatures.

* * *

THE LANDSCAPE, CLIMATE AND BIODIVERSITY OF HINDUSTAN

1.1 Landscape

Hindustan of yesteryears, or what is denoted as 'South Asia' in current colonial times has been an unique region or landmass in many more ways than the singular context of richest bio-diversity on Earth. Speaking geologically, South Asia is a gift of the Himalayas, the sky-line of mother earth. In any understanding of the global climate, this ought not be forgotten that without the Himalayan shield South Asia would have been a continuity of Tundra and Siberia. The Himalayas, the terrace of mother earth together with the sub-continent of South Asia more than any other region or continent on earth, is an organic geographical commonwealth directly impacting climatic conditions of very large parts of Eurasia viz., South Asia, central Asia, China, west Asia, and Russia. This needs to be appreciated that most of Eurasia draws its fresh-water supply and atmospheric conditions from the Himalayas.

Even though organically united, this vast region of South Asia, nearly 3500 km. in east-west width from Arakan ranges (Myanmar) to Balauchistan in Pakistan, and about 3000 kms from Himalayan heads to feet in the Indian Ocean, is unnaturally divided into political nation-states on the pattern of 19th-20th century Europe viz. Afghanistan, Bangladesh, Bhutan, India, Myanmar (Burama), Nepal, Pakistan, Srilanka and the autonomous region of Tibet. However, as part of the 19th-20th century imperialist strategies, this fact has remained ignored, or deliberately not taken into cognizance, that the productivity of this singularly united grain-basket is directly proportionate to the unity of ecologically

strategic responses to the plurality of interactive and interlinked bio-spheres in the region. The least understood and appreciated reality is that South Asia is a single pattern of the most colorful mosaic of numerous bio-spheres on Earth—a natural unity of nature’s diversities. Briefly, South Asia was finally partitioned (rather Balkanized) into several countries by mid 20th century. The idea of as large a ‘common wealth’ as South Asia i.e., Hindustan is threatening proportion for the colonial powers that be.

The Himalayas, the highest mountain system in the world, shaped as an arc, spread over 2500 kms, from west to east shelters the fertile lands of Indo-Gangetic plains. The Himalayas and the snow-covered peaks stretch from the Hindu Kush in Afghanistan to Arakan in Myanmar, are spread over Kashmir, Ladakh, Himachal, Uttarakhand, Nepal, Tibet, Sikkim, Bhutan and Asam. It encloses the most fertile Indo-Gangetic plains watered by the three major river systems—the Indus, the Ganga and the Brahmaputra. The southern side of the Himalayas is a unique watershed, rather drainage, which is the key subject matter of our present essay.

The Himalayas consists of parallel ranges, high and very high (highest on earth) in the north and almost methodically lowering towards South, thereby constituting a southward meandering drainage. There are three distinct divisions of these north to South lowering ranges, (1) the perennially snow-clad highest peaks and plateaus in the farthest north with an average elevation of 20,000 feet—include Mt. Everest (Sargmatha) 290028 ft, Kanchanjanga and ten other peaks—above 26000 ft, than there are lower glaciers like Amarnath, Kedarnath, Gaumukh, Jamnotri, Trishul, Monkey-tail etc. which range between 14000 and 20000 ft., 2, the lesser or middle Himalayas consist of ranges like Gangotri, Badrinath, Uttarkashi, Pahalgaoon and then still lower ranges have Srinagar, Dharamshala, Mussorie, Nainital, Almorah, Pithoragarh, Katmandu, Darjling, Kalimpong etc ranging between 6000 and 10-11000 ft., 3, than we have the lower Himalayas or what are described as the outer-Himalayas which are the foot hills ranging from 500-600 feet to 4000-5000 feet.

As a matter of fact the most fertile Indo-Gangetic plains also constitute an integral part of the Himalayas. But they appear separated from the lower Himalayan Hills by a thick corridor, rather green belt called Terai (literally meaning a wet zone), a 2500 km long moist, rain forest of varying depths which is/was the Himalayan model of a rain forest. This 'tropical forest' belt was always revered as a sacred grove. It functioned as a cooling sieve for the hot winds that blew north-ward from the indo-Gangetic plains during summer and vice versa in winter, i.e. moderated the cold waves which came down from the snow-clad mountains, even the mid-Himalayas where snow-precipitation was quite common from early December to late January. Thus the Indo-Gangetic plains do/did shiver from the Himalayan cold waves but did not freeze. More about the Terai, hot winds, glaciers, (Tibet plateau) and snow-falls a little later. The South Asia winter, weather conditions prevailing over the lands of Baluchistan, Pakhtoonistan, the non-partitioned Punjab; and the Ganga basin from mid November to mid February, had have been a critical factor in the evolution of 'Indus-civilization'.

The Southern water-shed of the highest mountain system on earth flowing into the Bay of Bengal through Ganga and Brahmaputra in the east, and into the Arabian Sea through the Indus in the West, causes a strong and permanent current of fresh water stream under the surface of the high-seas, bounding an entire coast form Karachi in West, to Cape-Comrin in South, to Dacca in the East.

1.2. Climate and Weather of Hindustan

Very briefly, the Himalayas have created or formed the northern half of the sub-continent by providing the direct drainage-which is the constituting factor of both the vast amounts of 'hydro kinetic' energies generated first by the steep Himalayan gradients and subsequently the sloping plains, and soils along with their moisture regimes. At the same time the high mountains prevent the Siberian cold waves from directly entering the region. Albeit, paradoxically, the Siberian winds/

cold currents not only induce precipitation/formation of snow but help uninterrupted conservation of snow all along the Himalayan peaks and plateaus like Ladhak and Tibet.

Another noteworthy paradox is that the high and low passes between the Himalayas and the Hindu Kush (like the too well known Khyber-pass) let-in enough cold waves to enter the Indian continent, that an effective hundred-day winter prevails during which the mercury dips and waver around as low as 0 to 5°C (some times and in some places like Churu and Phalodi in Rajasthan even lower) and roses and a large variety of flowers, cereals, fruits and vegetables bloom. However, it is 'no' winter from north European standards and experience. This fresh Himalayan water stream and vast amount of sands constitutes a major factor of Indian, rather South and West Asian monsoon, as well as a highly diverse mosaic of South Asian bio-spheres. The Indian coast-line comprises a very large (several hundred) deltas, estuaries and variety of back-water-systems and mangroves—Karachi, Kachchh, Kathiawad, Khambat, Surat, Mumbai, Ratnagiri, Goa, Manglore, Kochin, Kovallum, Rameswaram, Trichi, Pudducheri, Chennai, Vishakhapatnam, Kakinada, Gopalpur-on-sea, Jaggannathpuri, Sundarbans and numerous others. No other coastline on earth compares with the rich bio-diversity of Indian coast line. It is an absolutely extra-ordinary landscape on earth. The large variety of mangoes (more than a few thousand) wild and cultivated fruits, cashew nuts, coco-nuts spices like peppers, cardamoms, nutmeg, cinnamon, cloves etc. are only a few examples of the rich bounty on the great Indian coast.

Monsoon, the South West (SW) trade winds which occur in the Indian Ocean – arrive in the Bay of Bengal and the Arabian Sea—and bring rains to the Indian continent from mid May to mid October, is now in usage as a generic term in climatic geography, meaning periodic (long duration) land and sea breezes on a continental scale. However, the word 'Monsoon' is derived from two Arabic words (1) *mauj* meaning wave, happy mood, enthusiasm, inspired zeal et. el. and (2) *Mausium*, meaning season, pleasant weather, time of the rains, or harvest. The Arab traders who sailed

from Arabian coast to the Indian West coast regularly used these two terms / words since hoary past viz Maujan (plural of Mauj) and Mausium / Mausam in numerous contexts but also for time of sailing and rains. According to the Oxford English Dictionary (OED) and Encyclopedia Britannica the term began to be used for rain carrying trade winds by Portuguese and Dutch sailors/visitors visiting ports on the West India coast around the 16th and 17th century. Briefly, the monsoon is a seasonal wind, that is a wind which blows continuously in a certain direction during one season or period of the year and in the opposite direction during another season. These seasonal winds are caused by differentials in temperatures over land and sea, or on two inter-related land regions-as it happens between Arabia and the Punjab. In summer the winds move from the Punjab to Arabia and return in winter.

The main regions/areas experiencing monsoon winds are Arabia and Persia in West Asia, eight republics of South Asia and most countries of Indo-China, China and Japan in South-Eastern Asia. In winter the monsoon blows outwardly from cold interior of South Asia (primarily) towards the Bay of Bengal. The rotation of the earth and tropical climate in the bay of Bengal and Indian Ocean deflects these winds so that they become North-Easterly over India and North-Westerly over China and Japan. Winter monsoons in South Asia are dry-winds because they blow from land to Sea.

Strangely enough, these reversing winter winds which originate from Arabia quite dry, as the moistures they had carried during the summer have been completely squeezed out in Persian and Arabian lands, did/do precipitate rains over the entire length and breadth of Indo-Gangetic plains, as well as lower and middle Himalayas. Further on, as these once again dried winter winds reach the high seas in Bay of Bengal, they again pick up moisture and deflect West-ward thereby causing substantial rains along some parts of the Andhra and the entire Tamilnadu coast, as well as some interiors of the Deccan Plateau even central India.

Unlike summer rains, the winter rains in the Indo-Gangetic plains are sui-generis. The eastward dry winter winds pick-up

moistures from the local flood plains of the Indus, Jhelun-Chenab, Vyas, Ravi, Satlej, Jamuna-Ganga, Brahmputra, and the Himalayan Terai-the tropical forest corridor which spreads, or once stretched from Peshawar to Burma. These winter rains are also responsible for causing / precipitating snow in the higher and middle Himalayas. This is critically important to note, all the factors which replenish these high glaciers and also inquire and compare the contribution from different sources, and directions.

In our understanding, The winter snow in the Himalayan peales and pleatus, renewed on annual basis, makes the highest plateaus most bountiful reservoir of fresh water for almost entire Eurasia, except the north Europe and distant west-Asia. Himalayas contribute about 40 percent of the total fresh water supply in the world.

The winter rains and snow precipitation in the Himalayas were/are singularly dependent on the moisture regime(s) available in the Indo-Gangetic flood plains, report FLOOD PLAINS and the Himalayan Terai. This aspect of South Asia monsoon has been the least understood or appreciated phenomena by our 'Scientists' and 'statesmen' alike.

Not surprisingly, every single habitat from the Punjab to Bengal was designed as an island surrounded by man-made water bodies, mostly utilising natural gradients and depressions-such landscaping was an all-India phenomena. These numerous water bodies were/are representative of the art and science of India waters-human relationship as they fulfilled five related purposes with regard to moisture regimes—

- (i) recharge the ground water,
- (ii) maintain the perennial water drainage both on surface and underground,
- (iii) preserve the local moisture regimes,
- (iv) supply adequate moistures for the winter rains-an arrangement for storing and replenishing the largest fresh water resource on our planet i.e., the Himalayan snow.
- (v) Supplied moistures to tame seasonal and unseasonal dust-storms. Pre-monsoonal showers are essential for setting the

tone. These welcome showers like winter rains in North Indian plains are directly dependent on local surface water bodies. Hence the landscape of a vast water-sheet.

This is a brief background to explain the fact that Southern Himalayan Drainage, rather the sub-continental drainage and the South Asian monsoon together constitute the water-cycle of our sub-continent. Any disruption in this cycle, causes havoc affecting not only South Asians but nearly half the mankind. As a geographical entity South Asia is a global common-wealth.

We have already mentioned that monsoons or trade winds occur as a consequences of differentials in temperatures of two inter-related regions. In the case of South Asian Water cycle-the emergence of monsoon, a major component of the needed heat is the convective latent 'heat release' which is most intense over the Tibetan plateau during summer.

This is the source of energy, or differential heating that stir the far-away Indian Ocean to set-in South-westerlies (SW). These sw-winds i.e. trade winds moving from the South of the globe, pickup sufficient moistures and deflect eastward (i.e. from west to east) even before reaching the subcontinent as a consequence of east to west movement of the earth. Thus these South Westerlies hit the west coast directly and also arrive in Bay of Bengal—Moving west to east.

In Bay of Bengal these winds heavily loaded with moisture hit the Burmese coast where the high Arakan ranges deflect and guide them north-west-ward. Very briefly, this is how monsoons arrive in the northeast region of South Asia and then move along the Himalayan curvature precipitating rains from Dacca to Rawalpindi, Peshawar and Baluchistan. These winds, and the residual moistures, continue their west-ward Journey, bringing about a favourable, rather welcome change in the weather over Arabia-dropping the residual moisture.

Laconically, the south face of the Himalayas and land shielded by it from Burmah-Bengal-Asam to Balauchistan-Phakhtoonistan in its east-west width (latitude-wise), and Saragmatha (Mt. Everest) to Cape Comrin (Kanyakumari) in its north-south length

(longitude-wise) is a landscape erected, evolved, developed by the twin processes of drainage and monsoon. The integral unity of numerous drainages into a single oceanic stream bounding the Indian coast and causing highly differential rainfalls from a single monsoonal system is a nature's own marvel in the art and science of landscaping.

Any rainfall and agro-climatic map of South Asia brings out in sharp focus the fact that in terms of water resources the sub-continent is two countries-vertically or longitudinally divided into two halves-one 'dry' (rather drier) and the other 'wet' (i.e. wetter). A look at an irrigation or water resources map of the region clearly reveals that the 'drier' region lies mainly to the west of longitude 78 which runs close to Delhi in the north and Kanyakumari in the South. Delhi, Punjab and parts of Haryana in the north, and Kerala and west coast up to Cambay are the only exceptions. A hydrologist would claim, this is only natural since all water, surface and underground, comes from rain and the sub-continent gets 70% to 80% of its supplies from Bay of Bengal. Moreover, the bulk of what comes from the Arabian Sea in the west-about 250 MAF of water-stops at the western Ghats on the west coast and almost immediately returns to the sea. Similarly the rains in the Eastern half return to Bay of Bengal. Albeit, slowly, rather perennially. The simple question is as to why scientist/climatologists do not look into the causes/etiology of differentials between the quantities of moistures laden clouds coming from two opposite directions? Why should the supplies of moistures from the Arabian Sea be less than those coming from Bay of Bengal?

True, that no part of drier half of our country is as dry as the Sahara or Arabia – not even the great Indian Thar deserts. The less fortunate 'dry' half country receives between 5" and 30" rain in the year, most of it in the usual 100 days of the summer monsoon, as well as one or two winter showers depending upon the locality pattern.

Thus a few of the noticeable salient features of the sub-continent's climate are :

i) three-fourth of the south westerly monsoon arrives on the

mainland from the Bay of Bengal i.e. blowing from east to west;

- ii) there exist two major integrated climate zones (bio-spheres) viz 'dry' and 'wet' criss-crossing each-other and flourish in complimentarity;
- iii) the monsoon precipitation in the two broad divisions is in direct proportion to the east and west drainage into the high seas in the respective zones-meaning that you get what you give; a significantly critical feature, but completely out of cognizance of all concerned.
- iv) even though most of the rainfall occurs during July, August and September (i.e. late summer), the summer monsoon time spreads over May to October-west coast regions in Kerala begun to experience showers as early as mid May, rains over Burma, Bengal, Orissa coasts in the east begin by mid April (Kali Baisakh), Mumbai, which never experienced any pre-monsoon, or even post monsoon showers, the monsoon date used to be June-7 until recently, north-western plains- the 'wheat-barley and cow' belt of India-experienced the last of summer monsoon upto mid-October. Then, of course, there used to be the winter-monsoon over northern plains and the south east coast-which happened during December and January, but nowhere throughout the length and breadth of the vast country few or more rainy days extended a stretch of 100 days.

Besides, the geological variations of topography of land, the differential rainfalls over time and place institutionalized the diversity of bio-spheres and climatic zones, along with a social-temperamental behaviour about conservation of moistures as the number of wet days in a year was never more than few days. But, water is needed for all the 365 days for human survival. Besides human and animal needs of water, the people(s) of the SA region also developed a sensitivity about maintaining the perennial drainage into the high-seas, as it was visualised in the beginning of the of the civilisation itself in this part of the Monsoon world that there is direct relationship between replenishment of the seas,

the natural reservoir/abode of water and availability of fresh/potable water. The axiom was that ocean, the provider, has first rights and needs of the last living beings, least organic matter near the mouth of the river must be carefully protected by ensuring normal flows during the leanest phases in summer. Now this wisdom (thumb rule) is necessary part of the science of river ecology.

However, as the British imperialism reached its zenith in 1859-60 and the paramountcy of the rule of crown was firmly and finally established over SA, the country began to pass through regular spells of prolonged drought. At the turn of the 19th century a seven year spell of drought prevailed, which culminated in the renowned 'cow decimating' drought of chhappana (Vikram Samvat 1956) i.e., A.D. 1899-1900 spread over nearly half of South Asia.

1.3. Ecology and Biodiversity of Hindustan

Our claim about 'reasonable autonomy' of climatic behaviour and the emergence of a resilient ecology is self evident from the fact the there had has been a high civilization in the region since 'pre-history', and even now the region is contributing substantially to the world kitty sustaining 'modernity' and the colonial 'elites' all the world over.

The diversity of climatic bio-spheres in the region is large and varied, albeit enigmatic, as it constitutes an unique unity which is organically and consequentially inter-dependent. Unthoughtful tinkering with any of these organically linked and interdependent diversities is always fraught with un-warranted, rather dangerous consequences. Appreciation of climatic interlinkages is critically important as each constituent of the organic whole (South Asia) functions as an interdependent unit.

Maybe, the region more than equals the entire bio-diversity of the rest of the globe. Despite usual regularity in the vagaries of nature, i.e. devastatingly long spells of alternating dry weather and deluges, the region has demonstrated unparalleled resilience for revival and rejuvenation. South Asia, thereby, had has ensured continuity of human habitation and high civilization since long-long ago.

Many such binaries, pluralities, multiplicities of opposites and complementarities construct the most bountiful bio-diversity(ies) of the additional supplement. South Asia is the only locale on our planet where fresh was not essential part of human diet. It was clearly appreciated that nature had evolved human kind-like cattle, deer/antelopes, private etc.—as a herbivore species. Himalayas, the indo-Gangetic plains, vallies of lowly Satpuda and Vindhya, and the Deccan Plateau. As we have noted above that whatever winter we had have was/is not entirely our own, it is necessary to point out that South Asia is closely connected climatically with west Asia as well as South Central Asia and Mongolia. We not only share climate with west central Asia and Monsolia but also celebrate a community of cultural values and social structures with west Asia and central Asia civilizations since eternity. Speaking racially we are a common people with numerous distinct ethnic identities representing vernacular geographies. However, in this essay our focus is only about the formation and emergence of South Asia climate and ecology.

However, it is necessary to point out, for the non-initiated, that 'Diversity' is a foundational stratagem of Nature's own survival in an environment of self-generated unknown uncertainties. Even though germ-plasma is structurally and constitutionally same for a single species, but no two human beings, or two apes, two cats, two dogs, or even two roses from the same plant are exactly the same. Even twins, triplets, quadruplets.... have to have numerous differentials in appearance or looks and characteristics. The same is true about landscapes and biospheres. Question about 'modernity' and 'modern sciences' aspiring to seek universal uniformities apart, first we must come to grips with our bounty of diversities of bio-plasma, bio-mass, landscapes and bio-spheres of the Himalayas and the South Asia. This must be noted with all the emphasis at one's command that all culture and civilization is imitative but not destructive of distinctiveness and diversities. Human beings, parrots and mynas are gifted with throats and sound-boxes which can mimic voices but no two voices of any human beings, animals or birds are same—they happen to be only similar by rule. This aught

not be forgotten that even the most precise machines cannot cast or manufacture two exactly same objects. The science of statistics is precisely about understanding the principles of diversities. Briefly, we are suggesting that 'Diversity' is absolutely unviolable law of nature. Therefore, attempts at achieving unnatural uniformities amounts to creating deformities and disabilities. Simultaneous processes of unity and diversity together constitute the dialectical dynamics in nature. But let us not digress from our subject-landscape of the Himalayas and South Asia.

1.4. Civilization and Culture of Hindustan

Indus civilization happens to be the only wheat-eating civilization in the world. Rice is only a side dish or an additional variety with the exception of Assam and Bengal where rice is the staple and wheat is eaten as an additional variety.

Such human sensitivity to nature laid the foundation of a socio-economic order which was based on nature's conservation with eco-specific reference to about 500-600 bio-spheres and their moisture regimes (not water alone). Hence the evolution of forest/green cover based land husbandry which meant cow-cattle economy as the primary mode of subsistence and cow-worshipping society. What came to be known or described as Rishi Krishi (Sage's Agriculture) was primarily a pastoral order in which the dairy products (milk, butter milk, butter oil, condensed milk i.e. sweets and confectionaries) constituted the main staple and source of elementary nutrition. All agriculture was only natural and therefore marginal. Albeit, these details about South Asian culture and society are not necessary for a preliminary discussion on the Himalayan ecology. Suffice it to say that cow in this region of high civilization acquired a centrality both in economy and cultural patterns as it fulfilled the following purposes :

- i) Food, fuel and motor power for a variety of transport and industry;
- ii) A natural manure that conserved soil moistures in a sun-baked terrain for more than nine months a year,
- iii) The decayed cow-dung generates a very large amount and

variety of amoeba bacteria, insects, microbes, zoogloea etc.– this is necessary matter on which a large variety of fowl–partridge, quail, codes, turkey etc-and birds like myna, bulbul, common sparrow, feed in the forest. Partridges are considered essential to save forests from white-ant/termite epidemics. However, routine provision for the partridges and peacocks grows in daily quantities of cow dung.

- iv) Helped generate fertilization of a large variety of vegetations which could not be easily seeded normally otherwise;
- v) During long spells of regional droughts the cowdung also acted as a medium of conservation of plant life awaiting return of favourable environmental conditions;
- vi) Cattle is also the favourite staple of big wild cats which were considered essential for conservation of forests–the main source of conserving moistures both for maintaining the perennial drainages and augmenting atmospheric supply of water-vapors during otherwise dry spells of the year.

The South Asian Terai was revered as a sacred grove. A territory earmarked as the abode of sages and reserved for cattle raising. No agriculture was ever practiced in this region. From Ksheer Bhawani temple in Kashmir to Kamakhya in Assam, the entire region was dotted with sacred establishments assigned to various incarnations of God Shiva and his consort Mother Durga – the female deity representing the source of creation of the cosmos. Thus big cats, assigned as the carriage of numerous incarnations of Mother Durga, were also revered as representing the deity Herself. There was no hunting of cats in this God's own land. Identified old cats, incapacitated by age, could be earmarked for selective game by high royalty, that too once in a while.

As there was absolutely no agriculture in the Terai, there were no permanent settlements all along the green-wet corridor. Van-Gurjars, who raised cattle (cow only) and lived as nomads, were strictly vegetarians. Some three four centuries ago they got converted to Islam but have remained vegetarian until this day.

Ecology is the science of linkages in nature and the etiology of its more than many manifestations. For the people and

communities living in the close vicinity of Terai, the tiger, panther and the great lion was as sacred as the holy cow. Presence of big cats—lions, tigers, cheetha panthers, was synonym of Mother's grace, meaning normal rainfall and adequate prosperity bestowed by mother goddess.

However, forest dwellers know it from experience that big cats (exception) who have a palate for the cow also practice distaste for buffalow. Wherever buffalows arrive/replacing cow, the cats begin to abandon and out migrate. In most ancient shrines, buffalow milk is still a prohibited commodity and cannot be offered to the deity as the animal is considered alien like potato and brinjal.

Despite unmindful destruction some—elephants and few rhinoceros still roam in patches of the Terai region. Even such scanty presence of these two big animals is an indicator that the sacred grooves can be reclaimed if there is a consensus on De-Reformation and revival of the spirit of 'Sacred'. Once this happens, soft footed cats will be back in the Terai.

In the legend of Mahabharat Mahatama Vidur had advised king Dhritrashtra, 'Only lions and tigers can protect jungle and lion-hearted men save the kingdoms and dynasties. Hence it is the sacred duty of a king to protect both—lions and lion hearted men'. The axiom holds valid to date. Vidur had further explained that forests alone ensured 'equilibrium in Rains (Sam Varsha)' — and subjects were happy in Sam Varsh Anchals — i.e. regions of balanced rainfall. There still exist remnants of such Sam Varsha regions like South Canara, Konkan, South Gujrat, Bundelkhand, five separate regions, Kuru, Panchal, Brij, Baghelkhand, and Awadh, in Ganga-Jamuna Doab. In all nearly 200 such regions of balanced rainfall can be classified from classical and folk literature from all over the country.

Drainage—the principle of Teertha—i.e. pilgrimage of water cycle, flowing water—was/is as sacred as God himself. In common man's belief the rivers were revered as mother of the earth and the most beneficial of all nature's endowment. Disrupting any current of a flowing stream was as grave a sin as killing of cow. In Mahabharat, elaborating the duties of a king Bheeshm Pitamah

(in Shanti Parva) noted that protection of river flows is an important function of the state and ensuring its compliance the duty of a king. It was Dharma for everyone to ensure that all the water which the rains bring from the oceans must return to the oceans. The rights of the last living being at the last point must be honoured.

However, all this has lain disrupted and scattered for more than a century now. Ever since the idea of ever increasing economic efficiency invaded the Himalayas in the 19th and 20th century, partly as a consequence of its contact with the imperial powers and partly as an influence of the glitter and the promise of more-than-plenty by modern science and technology, the sacred sylvan has become a spectacle of hunger, disease, death and insurmountable human conflict in the region.

1.5. Destruction of Global Environment in Europe and South Asia

We have recorded 'history' even detailed documentation, of the colonial times during which the world-landscapes had have been drastically altered disturbing the harmony of nature's climatic cycles in different parts of the world. But all that vast amount of data about massive destruction of forests which essentially determined the micro/macro and even super macro climate systems at local, regional and global levels respectively have yet not been considered a crucial causal factor in the now noticeable climate change. As yet there is little understanding about light and darkness affecting moisture conditioning, or nature's response to massive deforestation or mono-culture forestry etc.?

In almost all types of discourses about global warming it is almost unfashionable, rather unscientific to mention that by mid 19th century, the political economy of Britain had emerged as the world leader in devouring world forests and thereby changing the global climate. Ofcourse, the capital (chief metropolis) of world imperialism shifted from London and Paris to Washington-New York and Moscow during the 2nd great war. But that story is not important for our discussion at the moment.

What needs to be recalled is the fact that much before the

need of timber and fuel woods arose for industrial consumption, native Oak forests were vandalized in large parts of North Europe for ship-building by the end of 17th and beginning of 18th centuries. As a matter of fact even primitive mercantilism could grow in England and other parts of North Europe only after big loot was available from the Americas, Africa and South Asia. Nearly a 1000 shiploads of Bengal treasures alone was shifted to England between 1757 and 1780 i.e. on the eve of inventing steam engine? But that is none of our concern in this essay on 'Global Warming'. The issue is global climate and forests or vice-versa. A simple question that needs to be asked is, what was the minimum timber requirement for ship-building (17th, 18th, 19th centuries) for the European maritime powers that were competing for imperial hegemony in Americas, Africa, Asia and Oceania and how and from where these supplies were met? The basic question which needs to be asked again is about relationship between deforestation and climate, or deforestation and atmospheric composition?

Some idea of the British requirements of timber for ships alone can be estimated from the fact that the merchant navy tonnage tonnes (i.e. excluding the Royal Navy) increased from 1,278,000 tonnes in 1778 to 4,937,000 tonnes in 1860. Besides, the safety of the British empire, during the prolonged centuries of fierce competition amongst colonial powers depended on Indian teak(s) and long seasoned woods from the 'new world' the most durable of ship-building timbers. It was the strength and durability of walls of Royal Navy ships made from India teak(s) which saved England during the war with Napoleon and the later (early 19th century) maritime expansion in north Europe. As late as 1880s, the British admiralty made repeated requests to the newly set-up Indian forest department for large scale regular supply of Madras and Burma Teak.

Vandalism in the Himalayas is, of course, directly related to the development of Indian Railways—which as a matter of fact was 'necessary' for the development of world railway industry. It is, ofcourse, history that shipping and railways laid the foundation of industrialization and 'progress'. The idea of speed, consequent

powered 'efficiency' symbolising 'progress' was born out of the success of railways and speedier navigation. If this progress, symbolised by speed—concretely railways, motor cars, airways etc. etc., is defined as TINA then mankind ought to willingly sacrifice the Himalayas. There are no soft options. Global Warming is a real phenomena—consequent change in regional ecologies/climates, rains, impact on agriculture is all calculated by science (these are not estimated hocus-pocus).

Today the Himalayan glaciers, once the richest reservoir of fresh water, are rapidly shrinking. The green cover immediately below the glaciers have all but disappeared. The balding Himalayas are an awful sight. Still lower Himalayan hills which constitute the abode of over 20,000 communities and hamlets belonging to about a hundred distinct linguistic-cultural identities, have become fragile and brittle. The scale of devastation during the recent series of minor and major tremors; the increasing incidence of massive avalanches and land-slides and floods are an indicator of what disaster (s) can occur in this region.

It is rarely imagined that the damage to the terrace of the earth is not an ordinary catastrophe. This forehead of the globe is the critical thermostat to maintain cooling in this age of global warming. South Asia has already begun to experience severe water famines. The Himalayas, itself, the largest reservoir of fresh water is caught in the vortex of acute thirst. A four to twelve hour trudging exercise undertaken by Himalayan women to keep their families supplied with the minimum requirements of fresh water is a common sight. If intermittent spells of drought in the mid Himalayas and Afghanistan is any indicator it may be imagined what is in store for the entire Himalayas in the next two decades and what will be the climatic consequences of a series of such crises. Political developments in Nepal, Afghanistan and the autonomous region of Tibet are calling for urgent international attention.

To carry waters to the Rajasthan desert some tens of thousands families were displaced from the Pong Dam region more than half a century ago (1949-50) they are known as 'Pong Dam

Oustees'. They were natives of high lands in the Himachal in Himalayas but subsequent to displacement some of them were settled in Rajasthan canal colonies. They could never be rehabilitated. Nobody knows what happened to them? Again, the original inhabitants of Rajasthan canal colonies for whom the Himalayan waters were diverted have also disappeared. Hence it is necessary to understand the implications of 'enthusiastic' rather 'over-zealous' patriotism or 'Scientific Patriotism'?

All along time and space the Monsoon people of South Asia, lately described as 'Indus civilization' since the discovery of Mohan Jodaro and Harrapa, had flourished by a faith rather Dharma in which all nature—air, water, earth, ether, and sun—and all its manifestation like trees, ponds, rivers, mountains, avifauna, animals and flora were seen as forms of super and supreme spirits. But there was no reason for the British to respect or honour such 'irrational' belief or cultural structures. For them it was all conquered territory and all nature was commodity, meaning wealth. Thus the Terai began to be cleared of sacred trees, which were quite ancient and therefore strong too. Strongest of timbers were needed for ship-building to defend the empire and subsequently similarly strong timbers were needed to sustain the industry of railways, only very strong sleepers could support the rail-road pressures.

Devastation of Nature apart, the imperialist Christianity was also armed with the idea of an abstract God who was strictly formless. It was only natural that the 'native pagans' resolved to reform themselves. Sacred was thus soon transformed into profane. Therefore, whatever of the sacred Terai was left from colonial vandalism (100 years) was finally cleared by the 'nationalist patriots', the inheritors of colonial Raj and its state and social structures, in the name of settling refugees of Hindustan's partition (1947). Thus within a decade of independence the region was finally abandoned by the cats

The nomenclature Terai (the wet region) has completely lost its meaning. The summer curtain (thick forest cover) that prevented hot winds rising in the Indo-gangetic plains during summer from entering the Himalayas was first vandalised by alien rulers, who

were not only uncivilised but practically barbarian to appreciate the meaning of beauty. Whatever was left of the Terai by vandals of the WASP race could have been restored to its pristine glory after the departure of the British. But it was unceremoniously removed/vandalized by an illustrious son of India, Pt. Govind Ballabh Pant, the first Chief Minister of United Provinces now known as Uttar Pradesh. This should not shock or surprise anyone that Hon'ble Pantji had done this in consultation, approval and inducement of the greatest spokesman of 'science and scientific Modern India' Pt. Jawaharlal Nehru.

It is a long and most violent story of the company rule and later the British Raj carrying out a devastating onslaught on the sub-continent's forests. Along with the ship-building requirements for merchant navy and Royal admiralty arose the need of fuel for iron-smelting and running railway engines by late 18th century.

It is more or less the same story which was enacted in the United States and other Americas. The last act of the drama of balding earth is being enacted in Amazonian valley.

The processes of SA forest devastation was further intensified with the development of railways for the colony from 1853 onwards. Very large chunks of forests were destroyed all over the sub-continent to supply sleepers for laying the rail roads. It is all on official records by numerous 'famine commissions' and 'official-enquiries' and simple 'administrative' notings that the Himalayan forests of Garhwal, Kumaon and Terai were largely felled in to desolation—hundreds of thousands trees were felled under imperial orders but could not be lifted for use. Very briefly, suffice it to note : On occasions, but not infrequently, the violent devastation of Indian jungles/woods/green sylvans was used by the British to symbolise political victory.

In this context, again from colonial documentation itself, this needs to be recalled that it was evident to a large number of British Raj administrators by 1870s that irrespective of consequence 'the main supply of railway fuel must come from the natural Jungles', which obviously caused 'alternate cycles of flood and drought' through-out the length and breadth of the country of south Asia,

subjugated by the race of WASPs (White Anglo Saxon Protestants), thereby seriously affecting crop production. This was only the beginning of 'civilization' hence it was not hoped that the race of wasps would have known elementary climatology- that there exists a delicately sensitive relationship between forests and rains. The water cycle of a vast region was thus disrupted without any regard for the alien ecology. Of course now it is a much tom-tomed issue but the 'civilization' is caught in a vortex of TINA. The show must go on, and it is going on.

It needs to be added here that the trail of most violent destruction of SA water cycle was not one dimensional-thinning Indian forests- the construction of rail roads, which could be carried out only on 3-4-5 meteres high and fairly-wide-on-top dams, the drainage of flood plains, almost three-fourth of an entire landmass, was disrupted permanently. It is not even remembered that malaria and kalazar had have been special gifts to South Asia by the imperial masters. In our view any debate or discourse on global warming without considering the history of malarial epidemics in South Asia is non-scientific.

Similarly the fresh water current which bounded the Indian coast had has been grievously obstructed in the last 50 to hundred years. No one has an inkling as to what would be the consequences in short and long run of such 'scientific' notion that waters flowing into the seas constitute wastage? India is as thickly populated along its vast coast as it is in its river-valley mainland's. Our deltas and backwater systems are directly dependent on drainage. Bengal, Orissa, Andhra, Tamilnadu, Kerala, Karnataka, Goa, Maharashtra, Gujrat and Sindh are largely coastal systems. Half the population of these states is dependent on coastal eco-systems which are essentially dependent on drainage. Our river valleys are flood plains of our river-systems. Any tampering with drainage will destroy these most fertile and bountiful river basins.

The victims of 2008 Kosi floods are still waiting for the floods to drain out to return home. Which will never happen as drainage is largely blocked by rail roads and roadways and drying up takes longer than the cycle of monsoon. The Kosi flood victims 'know

for sure' that floods or no floods, there is no alternative (TINA) to railways 'i.e. modernity and development' for sheer survival. That is every-body else's view also, flood or no flood, drainage or no drainage, relief or no relief railways are a must for survival? Issues of 'climate justice' are mere rhetoric, the momentum of juggernaut of development cannot be obstructed or even slowed.

Agenda for Resurrection

2.1. Restoration of Indian Agriculture

- To meet the challenge of global warming first and foremost task before mankind is to save the earth from environmental destruction. In this regard some small steps are suggested.
- Every Indian South Asian must be informed and educated about sub-continent's agricultural potential which is in the range of 1000 million tons of food grain. These are scientific estimates by eminent world farm-scientists. India must pledge to achieve this and abolish hunger from the face of the earth.
- Judging from the example of Bharatpur Ganna, a tiny park of 29 sq. kms, hosting many a million guests from all over the world without any stress or strain, South Asia has the potential to produce sufficient food for the entire mankind only if we allow the nature its own sweet will. We only need to act as we did in Bharatpur and Bundelkhand.
- Restoration of labour-intensive and natural unirrigated traditional agriculture and multiple cropping, combined with adequate fallowing for cattle husbandry—must be restored sooner than later. Jaiselmer Khadins are a model as to what we can achieve in the drier half of the sub-continent. This will automatically lead to food security for an entire people.
- To achieve the above, Spirit of Teertha must be restored. We must actively think in terms of returning to traditional dry sanitation and thereby save our rivers from continuous pollution by urban wastes—which should be sifted and directly carried to agricultural farms to decay faster and thereby save energy.

2.2. Resurrection of National /Patriotic Science and History

- Science, its achievements and failings apart, we are making a simple plea for understanding and re-developing affinity with the SA landscape. Without deep reverence for the landscape 'patriotism' becomes spurious, as it happened during the colonial times.
- South Asian monsoon, its rise in the Indian ocean, advancing towards the sub-continent, arrival on west coast and in Bay of Bengal, than movement along the Himalayas are all directly related to the plurality of bio-spheres. Based on moisture regimes South Asian bio-spheres can be classified into four broad categories : (1) the snow-covered high mountains, (ii) regions of normal rainfall (40 to 100 inches), (iii) regions of excessive rainfall (100 to 500 inches) (iv) dry regions of negligible rains (4 to 30 inches). Now this is nature's own arrangement—we can decipher and discern, understand some of it, but most of it is likely to remain a desideratum. Science has discovered that the 'convective heat' processes in the Tibet plateau is the cause of stirrings in the Indian ocean—but as yet we do not know its etiology. Maybe, in the long-run, very very long run, we may become the scientific-kinow-all. But that is yet too far off.
- Similarly we know that dry hot regions of SA landscape create the necessary conditions for movement of dry and wet monsoons. Obviously, it is a simple fact of South Asian rains that diversity of moisture regimes is a causal factor of monsoon movement and precipitation of moisture laden—clouds. But our scientist had have been claiming that they can, and they would alter the order of nature and bring about a 'socialism' or uniformity in nature and do away with diversity—i.e. shift enough water form the wet regions to the direr half of the sub-continent. These are very good intentions—bringing parity (equality) between cool climate of Srinagar snow-falls and hot-humidity of Kanyakumari. Our humble suggestion is that this 'scientific patriotism' and 'socialism in nature' needs critical scrutiny.

- It needs to be retold that all conservation of water in India was designed to enhance drainage. The Chandela 1100-1300 AD-Bundela 1400-1800 water harvesting technology is an all time wonder. Ten Bundelkhand rivers—Betwa Kain etc. which find no reference in Puranic literature, are perennial water systems not linked to any resource or natural storage like the Himalayas. It should not surprise anyone to note that the quantity of stone used in Chandela-Bundela tanks is sufficient to raise half a dozen China walls. Despite massive, contemporary damage and obstruction to minimum flows in Ganga and Yamuna, the Prayag confluence at Allahabad is not yet dead—it is a Chandel marvel of water art of India. This North-South Bundelkhand drainage is certainly a human intervention—perhaps unknown anywhere else in the world.
- It needs pointing out that any science which people cannot adopt and develop on their own is a spurious science like the orientalist patriotism evolved during colonial times based on ideas of ‘self-reform’ and ‘development’.
- A detailed course on the Indian art of water and spirit of teertha which is different from Christian pilgrimage and Islamic haj must be introduced in our schools and college curricula.
- This cannot be done simply. We have to urgently abolish ‘history’ invented by the colonial masters and their ‘toadies’ including various shades of ‘orientalists’ and pseudo patriots like those scientists who are bent upon destroying the Water Art of India and the South Asian drainage. If we can learn and know the events of last 300 years we would know eternal India. Most of our ‘history’ was ‘discovered and designed’ to enslave us. ‘Today’ is always designed by recent past. And this recent past does not stretch beyond 200 to 300 years. Like the Art of Water drainage we had always known that no present stretches beyond two three hundred years in the past and therefore reference to future is futile because it is shaped by shaping our ‘today’. We therefore, never needed a ‘Golden History of India’ to be disrupted, and once again restored by the colonial masters. Itihas is what people remember, and not

'narratives' by 'historians'. Folk wisdom is based on oral memories.

- Surely in the year of Mahatama Gandhi's 'Hind Swaraj' centenary we may attempt to write a new geography for our high school curricula. At the same time we need to urgently develop studies in anthropology of modern European sciences and technologies. This is necessary to appreciate the true nature of man-machine relationship. Which is the basis of all modernity.
- I will conclude this part by proposing that urgent processes are need to help the 'patriotic scientists' to enable them find their own level (like water) sooner than later. If we fail to appreciate the true anti-Indian nature of 'patriotic science' serious trouble lies ahead. What we need is simple people-oriented science and technology. The River-linkage programme is no ordinary threat to the existence of India/South-Asia.

2.3. Non-Violence and Plurality

- Indian plurality is based on the diversity of Indian waters—it is a consequence of South Asia's *herringbone drainage*. Our unity is the unity of a single monsoon system which is governed by the vast diversity of moisture regimes. It is a mosaic of a million different waters which is called India/South Asia. To conclude we must remember that restoration of SA plurality is necessary to restore Himalayan drainage, which will save the Himalayan glaciers—which in turn, may be of
- The first and foremost truth which need be admitted by all concerned about global warming is that 'anthropogenic climate change' has a longer history of 'barbarism' (international crime) than 'science', 'Industry' and 'Civilization'. If this obvious truth is accepted by the present-day descendants of the pioneers of crime, an international court of Ecological Justice should be established to assess the damage, its impact, and determine the corrective measures and atonement and penitance for the direct beneficiaries of vandalising nature.

- If international community is serious about curbing global warming, we propose a global law: No regional or national economy be allowed to stretch beyond environmental limits—as had have been happening with regard to scientific dairy development and pork industry in Europe. All genetically modified animals and crops must be urgently banned and allowed to gradual elimination making space for natural way of life.
- The clearing of Terai to reclaim most fertile lands for agriculture brings us to underline the central issue of *non-violence*, which is the foundational Bhava (spirit) of SA Society. This means that all consumption related to Bhasha, Bhajan, Bhojan, Bhusha, Bhawan and Bheshaj (all material life) must be spiritually non-violent. Meaning thereby that all production i.e. culture of food, fodder, fuel, apparel, shelter etc. and spirituality must be based on the twin principles of minimum violence and obtaining optimum efficiency from every unit of natural energy consumed.
- The two illustrious Pandits, Nehru and Pant, could order the clearing of Terai, without any qualms because they suffered from amnesia about the Indian spirit of *non-violence*, presence of divinity in all nature—which meant nearly total alienation from their landscape. Many of our best intellectuals, scholars and leaders in various sectors of economics, academics, administration and society suffer from similar myopia. It is none of their fault. Decolonization had has never been on international agenda. And our elites are strictly and truly international.
- The creed of *non-violence* is an outcome of the understanding that the bounty of germ-plasma is the basis of all prosperity on earth. It is the greatest resource of natural energy on our planet. The ideology of non-violence has remained reduced to ethnic-communal peace and disarmament. It is now rarely remembered that non-violence is the most scientific way of life on earth. The promise of plenty can be fulfilled only by adopting the science of non-violence and not the so called

‘science’. Extra-ordinary violence is involved in generation of hydro-electricity as it is destructive of river ecologies. Energy calculus and eco-mathematics need to be more scientific. And the Himalayan drainage is directly energy based on Eco calculus and environmental mathematics.

- Europe can be helped to adopt strict vegetarianism and true non-violence. Global peace is pre-condition for global-cooling.

2.4. Un-answered Questions for Further Exploration:

There is need to list numerous manifestations of our more than many drainages to know and appreciate the heritage of our natural endowments and the principles of human interaction with them. Attempts to tame Ganga and other drainages without adequate understanding of the flowing waters in nature amounts to practicing a destructive rather negative science. But we have eminent ‘scientists’, and ‘sages’ too, talking about the waters flowing into the seas as a ‘gross wastage’?

We wish to emphasize that ‘Scientific’ innocence, in this age of science and technology as the basis of efficiency is far more dangerous as compared to ordinary man’s ignorance. With a sense of deep regret we point out that most of our common and eminent scientists betray their unfamiliarity with South Asia landscape and its constitution, even elementary knowledge of native geography.

Besides ignorance about hydro-kinetics of Himalayan rivers, there is little appreciation of latent energies generated by the continuous tectonics. They are known, but not exactly understood except that these disturbances underneath create new terrains, at regular intervals, in the Himalayan and Sub-Himalayan regions. Thus the Himalayas remain and flourish as an eternally youthful mountain system.

This should never be missed that the rich bounty of the Himalayas is in direct proportion to its fragility – which is again related to the fact that it is an ever growing, ever evolving, ever re-organising phenomenon of our planet. Hence a great deal of experimentation and experience oriented empiricism observed over

thousands and thousands of years must have gone into the making of such complex civilizations and numerous communities that subsists in undulating vallies, hills, slopes, and plateaus of the Himalayas, and plains created by its numerous drainages.

- Most unfortunate is the fact that manifest energies like water and moisture regimes or constantly replenishing bio-mass and biological organizations (natural germ plasma) remains neglected and unaccounted in an age of 'scientific' data and statistics. It is painful to note that the dynamics of an uniquely dynamic mountain remain shrouded by mysticism and ignorance of the size of the Himalayas. There is an urgent need to strip off the South Asian and international elites of their Himalayan ignorance. The mountains are a global heritage and a commonwealth of the mankind. The Himalayas need to be protected as a global-common.
- On the basis of references from epics like Ramayan and Mahabharat, and folk's view-point we have surmised that all water must find its own level i.e. return home—its oceanic abode. Related to this mythology of SA drainage we have talked about a fresh-water stream underneath sea binding Indian coast. This is certainly not difficult to ascertain from practitioners of oceanic science, if it is a fact or not? Whatever it does or does not do can also be ascertained.
- However, we most regretfully admit that we could not know or discover the immediate moisture resource for snow precipitation in the Himalayas. Albeit, it is critically important to note here, in the very beginning of our essay, that the annual precipitation of show in the Himalayas is yet an unknown/unmeasured quantity. Hence variations are also not known. No estimates are available either in size or weight-nobody knows if it is in millions of tons or billions of tons, or much more, or much less? Such Himalayan ignorance apart, the shocking surprise is that atmospheric scientist and expert meteorologists have never ever wondered about the immediate source of moisture for this astronomically large volume of snow precipitation in the Himalayas? To say that westerlies and

north-westerlies (tradewinds moving from west to east and south-west to east respectively) carry the moisture is a highly innocent statement. South-Westerlies cause summer monsoon which happen from May to September-October. Snowing is never earlier than late November and later than March. If westerlies alone are responsible than the source of moisture must be identified.

Our submission is that annual snow recurrence of fresh snow in the Himalayas is a critical factor in the monsoonal cycle of West Asia, and a critical factor in the maintenance of normal global climate. Therefore we need to know/understand this critical and very large factor of world climate and its science.

- The relationship between speedy decline of Himalayan glaciers and global warming is not finally settled—there is dispute about ‘cause and effect’? However we have some data for rains, temperatures, deforestation for South Asia, as well as pace of industrialization in the region for more than a hundred years. ‘Scientists’ engaged in research on atmospheric changes can examine these data and recorded details on the basis of their scientific models and determine which came first—global warming or glacial melting. Once Science and scientist demonstrate by their own models that global warming came earlier than receding Himalayan glaciers than western discourse about climate change will be scientific and hold valid.
- These climatologists and atmospheric scientist can also begin to examine the numerous impacts of hydro-kinetic-energies generated by the Himalayan drainage, and their relationship with atmospheric composition in near vicinities and globally. Once they declare that the impact is minimal or insignificant—all Himalayan drainage can be dammed and tunnelised. The so-called ‘clean energies’—viz. hydro power, nuclear power, petroleum power, solar power, air power etc. must be assessed in relation to global warming.
- Big, big, very big science apart, the alleged adverse impact of clearing the Terai, hot winds entering the Himalayas, reaching the high mountains disturbing the stability of glaciers should

be discernable even otherwise. If this is found non-scientific then chunks of remaining patches of Terai can be cleared for numerous development refugees. The Tehri Dam oustees had been settled in the Terai of Rishikesh–Doon valley. Many others can be settled in the remaining patches?

- Another critical inference of our essay is that winter rains in the Indo-Gangetic plains are directly responsible for timely, adequate snow-precipitation in the upper reaches of the Himalayas. ‘Scientists’ should have no objection to examine this aspect of local climate and the radical alteration in the landscape–water surfaces, moisture regimes and destruction of productive soils. If this examination can begin now—we will forget why such scientific effort had remained ignored for long?
- As for as the bounty of bio-diversity of our coast–line is concerned it ought to be ascertained by simple but world–wide data. The Mediterranean coasts are well known for their bounty and beauty, Hong Kong and Shanghai are not far off. New Australia is essentially a coastal metropolis—comparisons ought not be difficult. U.S. Americans have pressed in all science and know how at their command to develop and beautify their sea–faces—comparing facts and data should not be difficult?
 - In the context of drier half of India—it is the duty of the meteorological scientists, geographers and other specialist to explain why direct South Westerlies from the Arabian sea do not reach or interact with Aravallies while the southern and eastern Rajasthan experiences normal rainfall from eastern monsoon? The monsoon winds neither lack ferocity nor lack of moistures upto Narmada Delta in between Bharooch and Baroda. In Kachh and Kathiawar the monsoons are as weak as the flows of Luni and Sabarmati? Why?
 - No doubt, nature had been extraordinarily benevolent in South Asia, but ‘science and climatology’ must explain the unique bounty? And if this is not true and there are equally endowed coasts elsewhere in the world than this

myth needs to be smashed. Maybe, there is no linkage between the bounty and the fresh water stream in Bay of Bengal and the Arabian sea- but science must explain the uniqueness of the West Asia's coast line and whatever else is the impact of Himalayan water-stream in the Indian Ocean? Only Bengal-sea specialist pilots can navigate in the disturbed troubled waters of the Bay of Bengal?

- It is a debatable issue if findings regarding cattle pollution in Europe are also applicable to the sun-baked ecology of South Asia. However, eco-specific data needs to be generated in the context of cattle ecology and gaseous composition in the immediate regions and globally. Moreover this needs to be examined if cow is endemic to Europe, specifically North Europe. Disposal of cow-dung (produced in astronomical quantities on a daily basis) has assumed most hazardous dimensions in Europe and North Americas. Data analysis by drawing comparative tables and charts about the life and deeds of European dairy breeds like Holstein, Guernsey etc. and numerous eco-specific breeds of the Brahman cow of South Asia will surely illumine some shockingly dark corners about the history(ies) and science(s) of 'Development, Progress and Civilization'? Lest there is misunderstanding. We need to clarify that we are making two simple submissions.
 - i. Global warming began much earlier than 20th century or even 19th century industrial revolution. European cow began to be transformed into factory more than 200 years ago. Disposal of slurry from pigspys(ies) and dairy farms is an equally old problem-but never considered as a climatic hazard?
 - ii. The most well intentioned current 'scientific' undertaking about developing technologically (rather biotechnologically-genetically modified) evolved cattle breeds with specific reference to the context of global warming is fraught with unknown consequences as had has been the case of 'scientific civilization' all along its course. Most European cattle breeds, at present, are 'scientifically' evolved

breeds? Beside, who pays for the development of technologies?

- iii. Both cow disease and swine flu need to be seriously inquired for contribution to global warming?
 - iv. In solar-heated oven-like South Asia cow-dung, irrespective of quantities, is tackled and disposed off on daily basis. In Europe and the new world, scientists have yet not designed technologies/methodologies/procedures towards hazard-free disposal of cow-dung. Europe and North Americas are daily contributing to global warming, without respite and any reasonable solution in foreseeable future as million of tons of cow-dung produced daily by factory-type cattles which is causing pollution by constantly producing foul gases. The conditions in beef and pork manufacturing/treatment plants, besides causing severe hazard to human health, are most un-hygenic and add to industrial effluents on a massive scale—all leading to global warming. It is an old story—at least a century and a half old in Europe. The day pigsties are abolished and factory cattles and dairy plants are banned in Europe, normalcy in global climate will begin to be restored.
- Many more unanswered questions about climate change happening need to be asked. Our effort is a small beginning in this endeavour. help in cooling global atmosphere.

* * *

LANDSCAPING – PRAXIS OF COMMUNITY WITH NATURE

(i)

Universe is a typical landscape. A view of the vast skies and numerous galaxies on a dark but clear night speaks to us the essence of landscape. Vastness of space needs to be appreciated by the engulfing darkness, the face of space, despite star-lit galaxies

illumine the skies. Darkness is not absence of light. It is the face of space. Landscaping is the art of arranging light and shade in space to ensure that face of space is not distorted. All landscaping is about widening the horizons into the vastness of space and restoring darkness broken by the light of numerous galaxies.

Landscaping is primarily about providing 'vertical' openings and connectivity's into space/skies, and horizontal expansion on earth. It is also about filling empty spaces with natural organism/green organics, even inorganics, both mobiles and stills to break the bleakness of wilderness—scenarios and provide multi-dimensional relief to the viewer.

But any exercise in aesthetics and beautification, which is not about life and human existence on the 'lonely' planet is futile. Life on earth is a community business. Nothing on Earth, least of all man, can exist in isolation. Man now usually forgets that he has a community of self-interest with the community of nature. Man's existence on earth is linked to a very large variety of neighbourhood consisting of flora, fauna and a 'million' microcosm, or a 'billion' microbes etc. In essence landscaping is also about reconstituting our immediate neighbourhood.

Until man lived in nature and with nature, he was part of the natural landscape. His house and hearth blended with the skyline. He lived in a neighbourhood that was responsibly responsive i.e. surviving and thriving by a natural theory of community of all nature. Man's social environment was not self-centred (i.e. specie-specific). It is now rarely recalled or remembered that 'social' in India did not relate to specie-specific community. In the Indian context Samaj is a derivative from Samashti, which is, an all-inclusive term for all that exists. Meaning of Samaj was never homo-sapien centric, as it has been reduced to by our so-called 'educated elites', whose consciousness has remained colonial despite freedom since 1947.

It was for this reason that until encounter with modernity most Indian cities, forts etc. were walled townships situated amidst thick forests. As was the case with Delhi, Jaipur, Jodhpur, Udaipur, Golconda, Hyderabad, Nagpur, Madras, Pune, Kolhapur, Sholapur,

Murshidabad, Burdwan and numerous other urban centres. On the other hand village and Cusbah (rural mart) were located amidst farm-lands where farming was based on the idea of social forestry and all farming was punctuated by tiny forests. In fact farms, fields, orchards, fallow lands were considered synonym of jungle. In the Hindustani-speaking region in North-West Doab all agriculture/horticulture was described as jungle.

However, Indian city centres were never close to the rural areas and were generally surrounded by forested corridors. These corridors, even if narrow strips, 'distanced' the cities from the farm-yards, and helped sanitization of human consciousness on both sides the urban and the rural country-side.

(ii)

The Tale of Pink city, how its hygiene and sanitation was destroyed in the second half of the twentieth century, illustrates whatever we have said above. Even during early 1950s Jaipur was known as one of the most neat and clean city in the world. Briefly, it practiced perfect hygiene and sanitation- and was renowned for its toy-train that went round the city collecting garbage every morning. The bell it rang, as it moved round the city morning after morning, did sound an alarm that all household and street garbage has to be collected, packed and readied before a fixed time every morning to be dispatched for disposal away from the city. By mid fifties the garbage train was abolished-nobody knows who, how and why of the tale of its banishment.

By early 1970s the cleanest of world cities was full of stench and filth and dirty drains. As citizens made some noise, the University of Rajasthan (Jaipur) stepped in to study the problem. Many a faculties were involved in a two year study towards the end of 1970s. The report had listed a number of causes. Abolition of the old system of sanitation was one of them. The report asked as to why the old system instead of up-gradation was replaced? But that is not all. The disappearance of crows from the city was listed as the central cause of insanitation in and around Jaipur.

The idea emerged as an obvious suggestion by some elder citizens of Jaipur. A team of Biology sciences was engaged to enquire and analyse this suggestion. It was discovered, to the surprise of everyone, that crows who perform scavenging in human habitats on a mass scale had abandoned the pink city for quite some time, and no replacement for this large army of scavenging volunteers was possible.

Simple question asked was why can't the crows be persuaded to return to work and normalcy restored. The simple finding was, crows would never return to the city as the landscape of Jaipur has been altered forever. Now Jaipur is doomed to remain dirty. Landscapes are easy to be destroyed but difficult, rather impossible, to restore.

Crows nest on very special kind of a tree-tall trunk with dense foliage, longish sky high umbrella, tender stems but sturdy long leafy branches for nesting, no edible fruits but man-friendly nature like that of Neem and Kadamb.

The habitat of Jaipur crows was not confined to a few thousand such trees within the city which had have been abolished unceremoniously. It comprised of a dense forest on the southern and South-Western side of the town which lay from East to West. From Ram Nivas Bagh, outside Sanganeri gate to Bunny Park in west of the city it was all a social forest. It is rarely remembered that 'Bunny' was actually a game-park where the Jaipur royalty went hunting for supply of fresh table birds and minor game for the royal kitchen. But all hunting was based on strict rules of the game and seasonal chores. Those were the times when not even emperors violated the rules of the game. These forests surrounding the Jaipur city also served as grass lands for the urban cattle (only cow) sheep and goats could graze on Magras (lowly Aravalli hills) on the east and north side of the city.

Another cause about the disappearance for crows relates to a subtle but very fundamental change in the human consciousness. The entire edifice of human society, in South Asian praxis, has been erected on the sensibility of Gratitude- the triple debt (Pitra Rin, Risi Rin, Dev Rin). These three secular values – indebtedness

to one's parentage, teachers (Gurus who had had revealed the mysteries of the world) and nature (Panch bhootas- Earth, Water, Ether, Fire and Air) respectively, constitute the ontology of all Indian philosophy. Under this scheme the relationship with crows had have been specifically categorised as part of ancestor-worship, even though the service they render constitutes a Deva Rin. As long as Hindu belief system did not doubt the efficacy of the social order based on 'gratitude and indebtedness', it continued to share with the community of nature. Under modern sensibilities, sharing with nature is gross inhuman wastage, unhygienic and unaesthetic? As is dry sanitation.

(iii)

To appreciate the manifest potential of Himalayan hydro-kinetics, life in nearly a 100,000 or more valleys-located from the foot-hills to the high mountains at 10-11 thousand feet needs to be scientifically classified in respect of diversity of germ-plasmo and numerous manifestation of biological matter. Doon valley in the foot hills of Garhwal is world famous for finest varieties of rice and leechies. A very large variety of fruits and flowers bloom round the year. Most prosperous impact of the Himalayan hydro-kinetics, however, is to be seen in the riverine plains immediately next to the foot-hills or Terai.

Cherries, strawberries, aspberries, pears and peaches flowish as famously in these plains as they do in their native homes. Bharapur's Ghanna (Thicket) internationally is an ideal example to illustrate the meaning of our suggestion about the manifest power Himalayan hydro-kinetics. Bharatpur Ghanna, 50 kms west of Yamuna at Agra, is a unique park on earth. This thumb-nail size (a mere 29 sq. kms. i.e. 2900 ha) of a natural haven for the world avibauna has a well document list of over 450 species of birds-both residents and visitors. This is an extra-ordinary wonder on earth, as no other bird or animal sanetuary, even hundred times larger in size, can boast of more that 150 species ever residing or visiting there. Ghanna, symbolic of Kadamb eco-systems in this

region represent a minor manifestation of the Ganga drainage. There exists a large variety of such eco-systems/through out the Indo-Gangetic plains. There is need to list these numerous manifestations of our drainage to know and appreciate the most prosperous natural heritage on the planet.

It is important to note that Ghanna, very close to Fatehpur Sikri-the capital of emperor Akbar (the Great) was for long a part of the royalty's game park, where the king regularly went hunting with his jaguars (Cheetah). However, Ghanna is a remnant of long history, of human interaction and intervention. Jainism flourished in this region from 8th century onwards. During the British empire period, bird-shoot was limited to once or twice a year around Christmas and New Year. It was designated grazing yard for old cows. It was open for cattle grazing round the rear. Even large herds of sheep and goat were permitted from autumn to spring time. The Park was walked only during 1970s + 80s, after it was proclaimed as a national park and reserved forest.

Its shallow lakes had have been mostly dry since last two decades. The old glory is lost-it wears a desolate look now.

(iv)

To appreciate the basics of traditional wisdom about landscapes, in simple and comprehensible terms, we will take a brief trip to the Rann of Kachchh. This tiny chunk of landmass jutting out of mainland India into the Arabian Sea is a North-South drainage constituted by Luni and quite a few other westward minor rivers of north Gujrat, Kathiawar and Kachchh. According to local legend 'Kachchh' is derived from Kachchhap i.e. tortoise. The formation of Kachchh is like the convex umbrella of a tortoise top which provides for north-south drainage.

In 1988, Centre for Social Studies-Surat, had invited me to undertake a comparative study of Drought Management and coping Mechanism in Gujrat and Rajasthan, the two severely drought affected and contiguous regions of Western India.

Conducting this study, I arrived in Chhachhala – a Maldhari

(cowherd) village near Bhuj – the district headquarter of the Rann of Kachchh towards the end of 1988 when drought was at its peak. Two Gujrati damsels were with me to record responses of women about scarcities and hardships. I was myself talking to the men folk. We were there in this village for about four days. On the second day of inquiry I had interviewed the village cobbler (Mochi). The next morning, Cassim Khan, an elderly senior citizen of the village summoned me. He inquired about my identity and the work I was doing in great details. I had no choice but to explain my conduct as a charitable task aimed at finding solution to the problem of drought.

Cassim Khan was angry beyond reason. He rebuked:

‘Babu, you are blind. The government is an ass which provides you money to visit famine-stricken villages picnicking with these young girls to spread disturbance (बदअमनी), Aren’t you all city dwellers and educated persons cheats and frauds. The government does not know that it has destroyed the entire nature – सरकार को मालूम नहीं, सरकार ने कुदरत का सत्यानास कर दिया – Don’t you know that who has brought about this massive destruction of nature. The Rann was known for its sturdy cattle. What has happened to those beautiful cows, who has destroyed their gene (गायों की नस्ल का किसने ना । किया है), who has destroyed the rich vegetation of this Bunny (minor forest). Who has sown this juliflora? विलायती बबूल (prosopis juliflora) किसने बोया है – The government is blind and deaf. The government does not know what it has done in the last 40 years (now 60).’

‘When our own Kachchhi King ruled, there used to be droughts, even long spells of drought, but famine never visited the small Rann. Our Bunny always enjoyed plenty of vegetation. Our cattle flourished all through.’

Cassim Khan then explained in his volatile but expressive style as to how the development of minor irrigation in the region has resulted in the destruction of a world renowned grassland—a major world heritage which sustained the grand breeds of Kachchhi Cattle. The salinity in Kachchh was controlled by regular flushing

of the soils - which happened only once in three to four years when normal monsoon visited the region. Now sea salinity is ingressing into the main land.

Here a brief word about Kachchh flamingoes, whose disappearance from their home in great Rann was not even mourned, would not be out of place. It was noticed during the monsoon of 1975 that an entire community, did not hatch eggs and suddenly abandoned their colony.

It is not even known as to what happened to those millions of Jeevatmas (living beings) who inhabited the great Rann until mid 1975 – they perished or out-migrated? When the largest colony of flamingoes remained continuously abandoned for four years, a Commission of Inquiry was announced in 1979 – but no report ever came out. However, the flamingoes' habitat has remained abandoned ever since. This woe-tale relates to what is called minor dams or check damming. It is hardly understood by our scientists, specifically the soil and water scientists that India's civilizational crises is not of conservation of water but essentially pertains to the damage to drainage which has been destroyed continuously since 1850. About conservation and drainage a little later. We must return to Cassim Khan.

The old man's pent-up anger had released and exhausted by now. He coolly explained that modern city dwellers like this author could neither appreciate the law of Kudrat, i.e. God, nor the words of book. He explained that the two terms Khuda and Kudrat were synonym in Islam. He asked me to name a book which prescribed such unthoughtful destruction of nature as had been wreaked with vengeance in the Rann for the sake of 'development' of small agriculture in that region of cattle breeding. (Readers are requested to compare it with what modern civilization has done the world over since about last 500 years).

He also pointed out that Kudrat (Khuda) prohibited the sale of milk. Only Ghee (butter oil) could be exchanged or bartered for basic necessities. 'As long as the tradition (बड़ेरों की रीत-ways of the elders/ancestors) was observed there was no shortage of either milk

or butter-milk even for dogs – what to talk of cobbler, other human beings or women. Fresh hot milk, which was being slow-heated in mud pots on cow-dung fire for curdling and churning was available in every household round the clock. Now you have seen with your own eyes that the government van comes every morning, collects every drop of milk available in the village and disappears. Can't you see our tragedy... .. we own these fat buffaloes, serve them twenty four hours, milk them twice a day but whiten our tea with imported powder while you city dwellers use the milk. As long as we observed the dictum – दूध बेचा सो पूत बेचा (selling milk is selling your progeny) – there was no trouble. Everyone was healthy and prosperous. Now we have abandoned God and his word, we are a sad people, Don't hurt us any more.'

बाबू हमारे घाव बहुत दुखते हैं, यह घाव तुमने और तुम्हारी सरकार ने लगाए हैं, ऊपर से यही सरकार हमारे जख्मों में नमक रगड़ने तुम्हें भेज देती है। अपना काम खतम करो और यहां से निकल जाओ।

('Babu! Our wounds are deep, you and your government has inflicted these injuries. On top of it, the same government sends you here to rub salt to these wounds. Please stop all this drama and get lost as soon as you can.')

(v)

Talking of dry landscape, it is important to highlight the immense potential of South Asia's un-irrigated or naturally irrigated i.e., rain-fed lands or the magic of the diversity of moisture regimes. Land and water husbandry had/has been a highly developed form of art and culture in India. Jaisalmer, with an average rainfall of about 80 to 100mm per annum has been exporter of wheat since time immemorial and has been able to develop mango orchards. Amarsar, 50kms West of Jaisalmer, is a marvel of architecture, water-harvesting planning and experiment in horticulture with a renowned mango orchard. Equally fantastic are the tales of innovation/ evolution/raising of Malani horses and Jaisalmer cow (the Tharparkar). All special grasses of the region are not nature's endowment. Khoi village, where Malani horses (descendents of

the Kathiawari breed) are raised is also famous for a special Kathiawari grass. The Khoi Ghee (butter oil) fetches ten percent higher price as compared to common ghee as it has a special flavour and waft which is unique. However, these subtle difference of wafts and flavours or shades of grass cannot be measured or even comprehended by scientific instrumentation, but function as important tools in highly sophisticated techniques and technologies, e.g. high grade steel production. Human sensory organs (eyes for colour of fire, skin for intensity of fire, nose for smell of smelting etc.) constitute the sensitive instrumentation and tooling of high grade carbon steel made by our Agarias. U.S.–German Laboratories could not yet design the scientific instrumentation to produce similar malleable steel. We are not indulging in fiction or even glorification. We are talking what exists and can be seen with naked eyes.

Remnants of Jaiselmer khadins—the massive size farms producing the sweetest wheat on earth are still in existence to be seen with one's own eyes. Our tale is neither about ancient glory, nor science fiction. In 1987, early summer, I was on a long march from Tannot (Border post on our Western frontiers) to Jaipur. A decade long spell of drought was on its peak. As I reached near Jaiselmer, 30 kms outside, on an early morning I noticed a bevy of rural women armed with sickle, proceeding west-ward. Curiosity revealed, they were going to harvest wheat in a nearby khadin. Despite all kinds of modern vandalism—railways and roads—numerous khadins (water harvesting fields used for growing wheat) continue to flourish in India's Thar desert. The wonder of all wonders is that even during severe drought years when monsoon crop is a total loss, the khadins are productive. They fail only when the rain is absolutely nil—which is not more than twice or thrice in a century. The Khadins are designed to function even during 50 percent failure of average rain. It is important to note here that conserved soil-moisture is critically important, otherwise there cannot be any sprouting. But growth is largely dependent on dew formation—which is considered as a celestial endowment. The sowing and maturing cycle is related to lunar calendar to ensure at

least one extra dark-fortnight. The legend is that dew formation as well as plant growth on dark nights is higher compared to moonlit nights. Indian scientists have never even pondered about the multiplicity of calendars in India? Traditional wisdom related to time and space has remained forgotten.

(vi)

Nonetheless, landscaping as a subject of inquiry belongs to the realm of traditional knowledge system in which sharing with nature is considered absolutely necessary for survival. Both hygiene and aesthetics relate to survival. And survival is a community value—an all-inclusive category. Hence landscaping is about survival and that is why it must lead to sharing and community with nature. Women in Rajasthan villages, even towns, walk miles into the wild every morning to provide food and water for birds and other animals.

However sanitation and hygiene are minor considerations compared to the basic morality about survival. Hence centrally critical question relates to the phenomenon of darkness and its relationship with life and living matter. Ever since modern science isolated energy and introduced electric lights, darkness has been considered as something very condemnable or at least a symbol of 'backwardness'. There may be a few exceptions, the likes of Mahatama Gandhi, who reject the idea of electric light, which grievously hurts darkness, i.e. the face of space.

Biological sciences need to seriously examine if any flowering and fruition is possible without darkness. Peasants practicing non-irrigated agriculture had have believed that starry nights were more beneficial for growth of plants as compared to moonlit nights.

If science can, it must measure and compare the formation of dew on a dark night and a moony night. In this context it is important to ask: Is science really neutral, as is professed by all and sundry, or it carries a cultural baggage about conquering darkness, changing nature by altering moisture regimes, establish equality of climates? How come electricity and artificial light has become a moral value? Any epistemology(ies) and the ontology on which

it is based has to be inclusive of morality(ies). All morality, brought in from outside the ontology of any epistemology causes schizophrenia. Native morality grafted on alien knowledge of science and technology is spurious and constitutes primary cause of our distress.

(vii)

Any exercise in landscaping in and around any city, micro academic campus, or a large township, or a region (Anchal) must relate to the historicity (social, physical and natural) of the region and the locality-as was the practice until mid 19th century. But since the arrival of industrialism and western urbanity in late 19th century both rural and urban histories are woe-tales, of nature's displacement. It is therefore only natural that the most central and critical issue is of rehabilitation and restoration of neighbourhood, on the basis of pristine glory of nature.

Such restoration needs a comprehensive view of natural history of the eco-specificity, drainage and moisture regime. All landscaping must lead to energy conservation, production and not energy expenditure. Enhancement of drainage is critically significant in India. All water must be used and conserved or regulated to promote and stabilize drainage. Indian landscape is primarily a gift of the Himalayan eco-system—the monsoon rains and consequent drainage. Any obstruction or damage to drainage is sure to distort and destroy India's landscape(s). Even minimal interference with flow of water must be based on long and large data stored in human memory, rather than statistics generated over less than a century. Water-bodies for storing fresh rain water or recycling of sewage and dirty water must be designed with great caution. The key note in this connection is obviously (i) low energy input, (ii) strengthening of drainage and (iii) elimination of aliens who obstruct the growth of natives.

Landscaping as an academic discipline ought to be a thorough exercise in establishing an inter-face between science and humanities including literature. It is proposed that landscaping is

introduced as a major academic discipline, an autonomous faculty in educational institutions of higher learning. If evolved with rigour and vigour of serious academics, it is likely to lead to the evolution of new epistemologies in all branches of knowledge and academics, which may help bridge the widening gap between science and society.

As a 'new academic discipline' the Art of Landscaping will have to be designed as a training of young minds which can equip and help them to critically compare the options between traditional wisdom and modern science. Such discernability would essentially be based on profound comprehension of modern epistemics and ontologies and a deep orientation in classical literature. The critically important issue of our times is the absence of human sensitivity about earth shaking changes occurring in the global landscape. This is the context wherein lies the touch-stone of morality in modern science and technology. We cannot ignore the fact that our information about changing global landscape is primarily based on the latest sciences and technologies of communication and informations, especially satellite imagery and its memory, digitalized storage and easy access for wider communications, and interpretations. But no technology can inform us about the morality of a landscape. Literature and folk memory can. Science and scientific instrumentation can be of some use only if we are otherwise equipped in the ethics of landscaping and practice thick community with it.

(viii)

Academics in landscaping, if evolved as a discipline based on Indian tradition of knowledge and epistemics can lead to transforming all education and academics and all 'Development' as an art and practice in cultivation of human mind in Dharma (duty). All Dharma, i.e. duty is about self discipline, restrain and basics of communal harmony i.e., peace both on earth and in heaven. The central theme of all Indian classical literature is the relationship between Dharma (duty) and Prakriti (Nature).

In Valmiki's Ramayan, there is an episode about Rama and his forces (Vanar Sena-The army of monkeys) needing to cross over the high seas to reach Lanka where Sita was held a hostage by Ravana. When the sea did not, even though requested humbly, allow a passage to Sri Rama, nor did the sea-god care to appear in person before him and explain his conduct, Sri Rama was angered grievously. Sea-god appeared only when threatened with ultimate destruction. Then follows a lively discussion, between the almighty God and the Sea-god about the duty of Nature (Dharma of Prakriti-the eternal law of Nature governing it). Sea-god reminds the almighty (Sri Rama) why He had Himself ordained 'earth, air, ether, water and fire to remain fixed in their nature, abiding (as they do always) by the eternal law (which is the Dharma of Nature). Accordingly, Sea, which is part of nature, is fathomless and incapable of being walked across'. Sea-god explained to Sri Rama (who happens to be the almighty lord of all nature Himself) why He should not attempt to violate laws of nature that He had Himself ordained. This is not a singular version of the art of Indian science and pedagogy. All our mythology and classical literature is a detailed description of landscape(s) and human community with landscape.

Strictly speaking, most Indian classical literature is about Prakriti (Nature) its genesis and unity of life. From Valmiki to Kalidas and Kabir, Rahim, Surdas, Tulsi, Nanak, Raskhan and more recently Ghalib, Premchand and Maithli Sharan Gupta, Firaq Gorakhpuri all Indian literature is about landscapes and the Dharma of man and cosmos.

(ix)

Studies in landscaping, academic engagement, would do one thing for sure. It would help and enable our scientists to resume thinking for themselves-a singularly critical value of all existence. And when Indian scientists begin to think for themselves, strictly within the realms of science i.e. Dharma of Nature, it is hoped that social scientists and other leaders in society will also be able to do so. We

need to remember that we live in the age of science. But we had have been imitative, rather apish of a west—which had has the opportunity to be ‘cultured and civilised’ only recently—in our sciences during the last five six decades i.e. since independence. Earlier it was not so. In the first half of the 20th century we did have many a J.C. Bose, C.V. Raman, P.C. Mahalnobis and many others who could, by habit, think for themselves, and made serious effort in widening the landscape of knowledge. Shri J.C. Bose had made an outstanding beginning by proposing the principle of ‘unity of life’. Future studies in landscaping can begin from where Shri Bose had arrived.

Contemporary science must squarely face two fundamental questions: first, what is the objective of science—to promote unity of life forms or separateness; and second, why do we need to have scientific knowledge—to promote diversity or conquer it?

(x)

Landscaping of any locality, community, campus or region or country would be a meaningful exercise only if the community (both permanent and transitory) is actively involved to revive community with nature. Every household must aspire to reconstitute itself as a host to the surroundings, both living and inanimate. Everyone is spiritually involved in sharing with and enjoying the immediate neighbourhood i.e. nature. A Punjabi pithy saying summarises this relationship: wells and neighbourhood belongs to them who use and deal with them regularly (khnoo te gwand oonah de je bartan) (खू ते ग्वांड औन्ना दे जे बरता). Traditions of active involvement with neighbourhood are calling for urgent restoration.

To sum up we need to remind ourselves that like space our planet is also a model in landscape. Imagine for a moment, if earth was a flat block or mass, not a sphere, and that man could reach the end of it? A step further, the man could cross the brink and enter space, rather than exist both in space and on earth. At the same time man can exist on flat space only. We are attempting to

say that all landscaping is about enhancing spaces both within and without the human consciousness to enable man to live and experience the vastness and yet hold on to his feet on earth. The measure of space is that it cannot be measured; on the other hand all spaces are measured quantities in all their dimensions. Even though bound by circumference in all directions, earth is an unmeasured space as you can go on walking in all or any direction across it without ever finding an end. Earth and all spaces on it are measured quantities but by an opening into the sky, every space becomes an immeasurable idea. Hence all landscaping is about appreciation in measurements of spaces in Space.

Regrettably, in the last 60 years, i.e. since independence, we have distanced ourselves from both macro and micro landscape(s) of our land. This has resulted in shrinking of both spiritual and physical spaces. Our alienation from natural surroundings has led to the absence of genuine patriotism and thereby enhancement in a shrill nationalism, bordering on jingoism. This is a critical factor in the etiology of our current schizophrenia. We have been violently vandalising all scenic beauty of our motherland and transforming ourselves into an ugly people and society. It is rarely noted that we live in an age in which the nation's elite had has been alienated with native landscape for nearly a century now. A close and revered intimacy with landscape is a primary condition for becoming a good citizen, or citizenship with genuine patriotism.

It has to be noted with a saddened heart that common sparrows have already abandoned the Indian landscape. Recalling my own childhood, I sudder to imagine a childhood without the chirping companionship of common sparrows and mimic of parakeets. However, it is a matter-of-fact ground reality that Indian children had have been unfamiliar with these two commonest of Indian birds now for almost a decade. Yes, the common sparrows have disappeared since long! We need to be alarmed about the disaster sooner than later.

बिहार में बाढ़ : क्या है समाधान ?

विजय कुमार और सत्येंद्र रंजन

Flood Scourge in Bihar: Is there any Solution?

Vijay Kumar and Satyendra Ranjan

Summary

Floods are said to be the nemesis of North Bihar. The geographical situation of the State is such that saving it from the scourge of floods may not be possible. Many rivers originating from the Himalayas and flowing through Nepal come down to this part of Bihar. This source of fresh water could also be a boon for the state. However, during the monsoon these rivers become troublesome for the people. Koshi is one such river in North Bihar that has been a source of misery for the people due to its changing course.

Some experts concede that floods are a natural phenomenon that could not be stopped. It is better that human beings learn to live with floods. Yet, under the hubris of industrial civilization, the attempt has been made by the hydrocracy to tame the rivers by modern technological know-how. The experience on the ground over the last 5-6 decades has demonstrated the futility of this effort. The golden promise of saving the people of Bihar from furies and devastations of floods by erecting dams and embankments has proved to be a mirage only.

Whenever we talk about floods in Bihar, we must keep in mind that it is also attributed to be the cause of widespread poverty and hunger, but it's not the only cause of it. During draught or even in normal times, starvation like situations keep cropping up in the state. Actually, the biggest cause of hunger is corruption in

the governance and administration of the state. For the political leaders, contractors and middle-men, floods and draughts have become a profitable industry. We have discussed all these aspects of the problem in the First Chapter of the monograph.

The Second Chapter is focused on Koshi River. Its geography, recent history of the river's behaviour and floods caused by it and the dreadful devastation caused by the breach of eastern embankment at Kusaha and resulting deluge of August 2008 is discussed in this chapter. The questions related to actual factors behind the breach of embankment and the government's responsibility for this have been raised in several quarters, but not been answered yet. The people of the affected areas and many mass organizations put the blame on the government and local administration. If this is valid, the govt. and administration should own up the responsibility and the guilty should be punished. Koshi floods of August 2008 again sharpened the debate on the utility of dams and embankments in Bihar in the overall strategy of controlling floods and providing safety to the people in the affected areas. We have tried to go into depth of these questions and have discussed the logics for and against the dams and embankments and politics behind it. This forms the Third Chapter of the monograph.

The deluge after the Kusaha breach, Koshi exposed the inefficiency of the government's administrative machinery in providing rescue and relief to the victims. It became obvious that successive governments in Bihar have not learnt any lessons from past mistakes and are not able to maintain the infrastructure erected for flood control. The political parties and leaders always care more for their vested interests than affected population. Hence, in the fourth chapter we have taken up the issue of floods and governance. The issue of governance also has an international dimension. Therefore, in the Fourth Chapter itself we have tried to go into the issues of flood and flood management in the context of India-Nepal relationship. It must be recalled that certain experts are of the view that floods of August 2008 could become such a big issue only because of the Nepal aspect of it. This gave it an international dimension. We have tried to look into the relevance of old policies

of flood control in the context of new political circumstances in Nepal.

As we see it, flood is a complex issue in Bihar. It has many social and technical dimensions as well as governance issues related to Central-State relationships, in addition to inter-country relationships in the region. The and govt. negligence as well as web of corruption has added to the complexity of the issue. We are groping in the dark in search of a solution. The people's organizations in Bihar and pro-people technical experts have deliberated on these complex issues and have come forward to raise various charters of demands based on people's perceptions and experiences. If these demands could be accepted and implemented by the state machinery, the people might get some relief from the scourge of floods. These demands include immediate as well as medium and long term steps. Long term steps are essentially related to our vision regarding floods and nature. It's a topic of serious and long debate, but we can't escape from indulging in this discourse. In the Fifth Chapter we have looked into the issues of this debate.

However, it's not enough that we just mention some preventive measures and present a different vision of our own on this subject. When strong vested interests are active in favor of obsolete policies, governments won't accept new suggestions, only because they sound more realistic and logical. For that governments will have to be pressurized and it could be done only when people are able to mobilize, raise their voice and seek accountability from the agencies of the state. The fact of matter is that, we need mass mobilization at large scale so that people oriented politics may begin and governments are forced to listen to the people's wisdom. But the moot question is who will start this politics or what's the point of making a beginning? In the Sixth Chapter, issues related to this question have been discussed.

This monograph has been written on the basis of experiences of many mass organizations, their pamphlets, their demands, write-ups published in different reputed journals of the country, newspaper reports and comments, and interviews of experts. The list of source materials is given at the end of the monograph.

सार—संक्षेप

उत्तर बिहार से बाढ़ का नाता पुराना है। उस इलाके की भौगोलिक स्थिति ऐसी है कि उसे बाढ़ से बचाया नहीं जा सकता। हिमालय से निकलने वाली कई नदियां नेपाल से होते हुए बिहार के इस इलाके में उतरती हैं। ताजा जल का यह स्रोत वरदान भी हो सकता है, लेकिन बरसात में ये नदियां पेरशानी का सबब भी बनती रही हैं। कोशी एक ऐसी नदी है, जो अपनी चंचल धारा की वजह से कुछ ज्यादा ही कहर ढाती रही है।

जानकार कहते हैं कि बाढ़ एक कुदरती परिघटना है, जिसे रोका नहीं जा सकता। मनुष्य के हित में यह है कि वह बाढ़ के मुताबिक जीना सीख ले। लेकिन जब तकनीक से प्रकृति को जीत लेने का भरोसा इंसान में कुछ ज्यादा ही भर गया तो नदियों को नाथ कर बाढ़ रोकने के तरीके अपनाए गए। बहरहाल, पिछले पांच-छह दशकों के अनुभवों ने यह भरोसा तोड़ दिया है। बांध और तटबंधों के जरिए बाढ़ रोकने की उम्मीद निराधार साबित हो गई है।

जब बिहार के संदर्भ में बाढ़ की बात होती है, तो यह ध्यान में रखना चाहिए कि इस गरीब राज्य में भुखमरी की यह एक बड़ी वजह जरूर है, लेकिन यह सिर्फ एक वजह है। सूखा और सामान्य स्थितियों में भी भुखमरी के हालात पैदा होते रहे हैं। इसका सबसे खास कारण भ्रष्टाचार है। भ्रष्टाचार ने बाढ़ और सूखा राहत को नेताओं, ठेकेदारों और बिचौलियों के लिए फायदेमंद उद्योग बना रखा है। इन सभी पहलुओं पर इस पुस्तिका के पहले अध्याय में नजर डाली गई है।

दूसरा अध्याय कोशी पर केंद्रित है। नदी की खास बनावट, उसकी ऐतिहासिक स्थिति और अगस्त 2008 में आई भयानक बाढ़ पर। यह बाढ़ नेपाल में कुसहा में तटबंध के टूटने से आई, लेकिन तटबंध क्यों टूटा और इसके लिए कौन जिम्मेदार है, इन सवालों के जवाब अब तक नहीं मिले हैं। आम लोग और जन संगठन इसके लिए सीधे तौर पर सरकार और प्रशासन को दोषी मानते हैं। जाहिर है, लाखों लोगों पर आफत आई, उसकी जिम्मेदारी भी उन पर ही है। दूसरे अध्याय का यही विषय है।

कोशी में अगस्त 2008 की बाढ़ ने तटबंधों और बांधों की उपयोगिता पर सवाल को और गहरा कर दिया। तटबंधों के पक्ष और विपक्ष में क्या तर्क हैं और इनके पीछे कैसी राजनीति है, इस पर निगाह डालने की कोशिश हमने तीसरे अध्याय में की है। कोशी की बाढ़ ने सरकारी लापरवाही को बेनकाब कर दिया। पूरी स्थिति पर ध्यान दिया जाए तो यह साफ हो जाता है कि सरकार अतीत की

गलतियों से सीखने को बिल्कुल तैयार नहीं है, साथ ही वह बाढ़ नियंत्रण के जिन उपायों में यकीन करती है उस पर भी अमल में चुस्ती नहीं बरतती। राजनीतिक दल और नेता जनता से ज्यादा अपने निहित स्वार्थों का ख्याल करते हैं। चौथे अध्याय में हमने बाढ़ और राजकाज से उसके रिश्तों पर नजर डाली है। राजकाज से ही जुड़ी बात इस मसले का अंतरराष्ट्रीय आयाम है। इसलिए इसी अध्याय में कोशी की बाढ़ और बाढ़ के प्रबंधन से जुड़े भारत और नेपाल के पहलू पर भी गौर किया गया है। दरअसल, कई विशेषज्ञ तो यह मानते हैं कि अगस्त 2008 की बाढ़ इसलिए इतना बड़ा मुद्दा बन पाई, क्योंकि उससे नेपाल का पहलू जुड़ा था। इससे बाढ़ को एक अंतरराष्ट्रीय आयाम मिल गया। नेपाल की नई परिस्थितियों के बीच बाढ़ नियंत्रण की पुरानी नीतियां आज कहां खड़ी हैं और इनका क्या भविष्य है, हमने इसे समझने की कोशिश की है।

बिहार में बाढ़ का मामला पेचीदा है। इससे कई बुनियादी तकनीकी सवाल जुड़े हुए हैं, इसका एक अंतरराष्ट्रीय पहलू है, सरकारों की अनदेखी और भ्रष्टाचार के तंत्र ने हालात को और गंभीर बना रखा है। तो आखिर समाधान क्या है? बिहार के जन संगठनों और जनपक्षीय रुझान रखने वाले जानकारों ने इस पर काफी सोच-विचार किया है। अपने अनुभवों के आधार पर उन्होंने कई मांगें तैयार की हैं। ये मांगें राज्य की जनता को बाढ़ से राहत दिलाने के उपाय सुझाते हैं। इनमें कुछ फौरी कदम हैं, जिन्हें तुरंत उठाया जाना चाहिए, कुछ मध्यम अवधि के कदम हैं और कई दीर्घकालिक कदम। दीर्घकालिक कदमों का संबंध नजरिए से है। बाढ़ और कुदरत को लेकर कैसा नजरिया हो, यह गंभीर बहस का विषय है। लेकिन इस बहस को अब जरूर चलाया जाना चाहिए। पांचवे अध्याय में इस मसले के इस पहले पर गौर किया गया है।

लेकिन बात सिर्फ यह नहीं है कि कुछ उपायों की चर्चा कर ली जाए या कोई नया नजरिया पेश कर दिया जाए। जब पुरानी नीतियों और उपायों के पीछे बड़े-बड़े निहित स्वार्थ हों, तो सुझाव चाहे जितने अच्छे, यथार्थ और तार्किक हों, सरकारें उन्हें स्वीकार करने को तैयार नहीं होंगी। इसके लिए सरकारों को मजबूर करना होगा। ऐसा तभी हो सकता है जब जतना जागरूक हो और अपनी मांगों को लेकर दबाव बनाने के रास्ते पर उतरे। दरअसल, जरूरत एक बड़ी जन-गोलबंदी की है, जिससे ऐसी लोक-राजनीति शुरू हो जिसके आगे सरकारों को भी झुकना पड़े। लेकिन सवाल है कि यह राजनीति कौन करेगा और कहां से इसकी शुरुआत हो? इस मसले से जुड़े संभवतः इस सबसे अहम पहलू पर छठे अध्याय में चर्चा की गई है।

यह पुस्तिका बहुत से जन संगठनों के अनुभवों, उनके पत्रों, उनकी मांगों,

देश की मशहूर पत्रिकाओं में छपे विशेषज्ञों के लेखों, अखबारी रपटों एवं टिप्पणियों और जानकारों से बातचीत के आधार पर तैयार की गई है। जिन संदर्भों का इसमें सहारा लिया गया है, उसकी सूची पुस्तिका के अंत में है।

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अध्याय—1. बिहार और बाढ़

बाढ़ बिहार की एक बड़ी समस्या है। बिहार की गरीबी की एक वजह हर साल बाढ़ से होने वाली तबाही भी मानी जाती है। उत्तर बिहार का बड़ा इलाका हर साल पानी में डूबता है, लेकिन हर साल यह बाढ़ उतनी बड़ी खबर नहीं बनती। कई जानकारों का कहना है कि 2008 में कोशी की बाढ़ इसलिए उतनी बड़ी खबर बन पाई, क्योंकि एक तो नेपाल का पहलू उससे जुड़ा होने की वजह से यह एक अंतरराष्ट्रीय मसला बन गया, और दूसरे लोकसभा चुनाव करीब होने की वजह से राजनीतिक दलों को इसमें सियासी मुद्दा मिलने की संभावना नजर आई।

वैसे बिहार की समस्या सिर्फ 'कोशी' नहीं है। अगर बिहार को राहत मिलनी है तो वह तभी मिलेगी, जब उत्तर बिहार में बाढ़ से निपटने की एक संपूर्ण रणनीति बनाई जाए। उत्तर बिहार का इलाका भारत-नेपाल सीमा के मध्य पूर्वी हिस्से, पश्चिम में घाघरा नदी और पूरब में महानंदा नदी के बीच में बसा है। यह इलाका कई बड़ी नदियों का जल ग्रहण क्षेत्र है। ये नदियां हैं—घाघरा, बूढ़ी गंडक, बागमती, अधवरा समूह की नदियां, कमला बलान, कोशी और महानंदा। यह इलाका तकरीबन 56 लाख हेक्टेयर में फैला है और विशाल गांगेय क्षेत्र का हिस्सा है। इलाके की नदियां आगे चल कर गंगा में मिल जाती हैं। इनमें से अधिकांश नदियां हिमालय से निकलती हैं और नेपाल में बहते हुए उत्तर बिहार पहुंचती हैं। बिहार में अक्सर ये नदियां, खासकर बरसात में धारा बदलती रहती हैं। इनका प्रबंधन आज भी एक बड़ी चुनौती बना हुआ है।

बरसात में मैदानी और हिमालय के पहाड़ी इलाकों के जल ग्रहण क्षेत्रों में जोरदार बारिश होने पर इन नदियों का पानी बढ़ने लगता है। अगर बंगाल की खाड़ी में हवा का दबाव बनता है, तो उसके असर से होने वाली बारिश का असर भी इन नदियों के जल स्तर पर पड़ता है। पानी बढ़ने के साथ बाढ़ की हालत बन जाती है और तटबंधों के टूटने की खबरें आने लगती हैं। नतीजा बड़े इलाके के डूब जाने के रूप में सामने आता है। इस आपदा से लाखों लोग बेघर हो जाते

हैं, फसलें तबाह हो जाती हैं, और बड़ी संख्या में पशु मारे जाते हैं। एक अनुमान के मुताबिक उत्तर बिहार की ये नदियां हर साल 217 क्यूबिक मीटर पानी, जिसमें 43 करोड़ टन गाद होती है, गंगा में पहुंचाती हैं। गंगा नदी से जो पानी फरक्का तक पहुंचता है, उनमें 47 फीसदी पानी इन्हीं नदियों से आया हुआ होता है। गंगा जितना गाद फरक्का पहुंचाती है, उसका 59 फीसदी हिस्सा नदियों से आता है। यहां यह गौरतलब है कि ये नदियां ताजा जल का बहुमूल्य स्रोत हैं। जल स्रोतों के बारे में संयुक्त राष्ट्र के अध्ययन से दुनिया भर में जब चिंता की लकीरें गहरी हो गई हैं, तब इन नदियों के बारे में गंभीरता से सोचने की जरूरत और शिदत से महसूस की जा रही है। संयुक्त राष्ट्र के इस अध्ययन के मुताबिक आने वाले वर्षों में पीने और औद्योगिक उपयोग के लिए ताजे जल की भारी कमी हो जाएगी। बिगड़ते पर्यावरण और बढ़ती आबादी की वजह से यह समस्या लगातार गंभीर हो रही है। एक अनुमान के मुताबिक धरती पर कुल जितना पानी मौजूद है, उसका सिर्फ 0.014 फीसदी ही ताजा जल के स्रोतों से आता है। उत्तरी बिहार की नदियां अनुमानतः 4 खरब 12 अरब क्यूबिक मीटर पानी उपलब्ध कराने में सक्षम हैं। इसलिए यह जरूरी है कि जल संसाधन के संरक्षण और इसके सही उपयोग की वाजिब नीतियां बनाई जाएं, ताकि वर्तमान एवं भावी पीढ़ियों के हित सुरक्षित हो सकें। (तथ्य एमबी वर्मा के आलेख से)

बहरहाल, यही नदियां बरसात के मौसम में कहर बन जाती हैं। उत्तर बिहार हर साल बाढ़ से प्रभावित होने वाला इलाका है। गौरतलब है कि भारत दुनिया में बाढ़ से सबसे ज्यादा प्रभावित होने वाले देशों में है। दुनिया भर में बाढ़ से जितनी मौतें होती हैं, उसका पांचवा हिस्सा भारत में होता है। तकरीबन 4 करोड़ हेक्टेयर इलाका यानी भारत की कुल भूमि का आठवां हिस्सा ऐसा है, जहां बाढ़ आने का अंदेशा रहता है। दुनिया में जो इलाके बाढ़ से सबसे बुरी तरह प्रभावित होते हैं, उनमें गंगा के मैदानी इलाके भी हैं। बाढ़ इन इलाकों के बाशिदों के लिए लगभग हर साल दुख और विनाश की कथा लिख जाती है। उपलब्ध आंकड़ों के मुताबिक पिछले पांच दशकों में भारत में बाढ़ नियंत्रण पर 27 खरब रुपए खर्च किए गए, लेकिन इस दौरान बाढ़ से हर साल होने वाली क्षति 40 गुना बढ़ गई। इसी अवधि में हर साल बाढ़ से प्रभावित होने वाले इलाकों में 1.5 फीसदी का इजाफा हुआ। (जियोग्राफी एंड यू. जुलाई-अगस्त 2008)

जानकारों के मुताबिक बाढ़ का आना एक कुदरती परिघटना है, जिसका नदी के प्राकृतिक रूप को बचाए रखने में अहम योगदान है। एक खास अंतराल पर नदी में ज्यादा पानी आएगा, यह बात हमें मान कर चलना चाहिए। बाढ़

दरअसल नदी के बहने और इसके कायम रहने की प्रक्रिया का हिस्सा है। बाढ़ खतरनाक इसलिए हो जाती है, क्योंकि लोग उन इलाकों में रहने लगते हैं, जहां तक खास मौसम और स्थिति में नदी का पानी पहुंचता है। इन्हीं लोगों को बचाने के लिए बाढ़ नियंत्रण के उपाय अपनाए जाते हैं। लेकिन यह तो तय है कि बाढ़ नियंत्रण के उपाय प्रकृति में इंसान का हस्तक्षेप है।

यह भी एक तथ्य है कि पिछले तीन दशकों में भारत में सबसे ज्यादा बाढ़ उत्तर बिहार के मैदानी इलाकों में ही आई है। इसका मतलब यह हुआ कि वहां बाढ़ नियंत्रण के उपाय या तो कारगर नहीं हुए या थोड़े समय के लिए कारगर होने के बाद नाकाम हो गए। ऐसे में उत्तर बिहार और असल में पूरे देश के अनुभव के आधार पर यह जरूर स्वीकार कर लिया जाना चाहिए कि बाढ़ नियंत्रण की दोशमुक्त या संपूर्ण व्यवस्था करना लगभग असंभव है। बाढ़ को संभालने के जो भी कार्यक्रम बनाए जाएं, यह बात जरूर ध्यान में रखी जानी चाहिए कि इनसे लोगों में सुरक्षा का झूठा भरोसा भरने की कोशिश ना हो।

जनकारों का सुझाव है कि बाढ़ नियंत्रण के कार्यक्रम बनाते वक्त इन बातों पर जरूर गौर किया जाना चाहिए : 1 – बाढ़ नियंत्रण कार्यक्रम स्थानीय परिस्थितियों के मुताबिक हो, 2 – इस पर जितनी लागत आए उसकी तुलना में उससे लाभ ज्यादा हो, और 3 – बाढ़ नियंत्रण के प्रतिकूल प्रभावों से बचा जाए। बाढ़ नियंत्रण के प्रतिकूल प्रभावों से मतलब वैसे असर से है, जो इन कार्यक्रमों की वजह से देखने को मिलते हैं। मसलन, नदी के रास्ते में बदलाव, किसी इलाके में पानी जमा होना, और बाढ़ की आशंका वाले इलाकों में बढ़ोतरी।

बाढ़, सुखाड़ और भुखमरी

आखिर बिहार की पूर्व सरकारों और राजनीतिक दलों ने पहले भी कोई सबक नहीं सीखा था। इसीलिए बिहार गरीबी और दुर्दशा का पर्याप्त बना हुआ है। इसके पीछे प्राकृतिक आपदाओं, खासकर बाढ़ की बड़ी भूमिका रही है। कुछ अनुमानों के मुताबिक राज्य की एक तिहाई आबादी राज्य के बाहर जाकर रोजी-रोटी कमाती हैं मजबूरी में होने वाले इस पलायन की पीड़ा को समझने की कभी कोशिश नहीं की गई। अपनी जमीन से उखड़ कर जाना, अपने प्रिय लोगों से बिछोह, अपनी संस्कृति और माहौल से कट कर दूसरी जगह जाकर जीने की विवशता—बिहार के लाखों लोगों की कहानी हैं। आखिर इसके लिए कौन जिम्मेदार है? क्या राजनीतिक दल इस बात से इनकार कर सकते हैं कि बिहार में बाढ़ से पैदा हुई समस्याएं उनके आपराधिक कुशासन और कुप्रबंधक का परिणाम है?

इस मुद्दे और प्राकृतिक आपदा से जुड़े इस पहलू पर गंभीरता से विचार-विमर्श की जरूरत है। बिहार में दशकों से सक्रिय रहे सामाजिक और राजनीतिक कार्यकर्ता इस तरफ सरकारों का ध्यान खींचने की कोशिश रहते रहे हैं, लेकिन सत्ताधारी और विपक्षी दलों के लिए यह सवाल आरोप-प्रत्यारोप का एक विशय होने से ज्यादा कुछ नहीं रहा है। सत्ता में चाहे कोई रहे, इससे हालात नहीं बदलते कोशी की बाढ़ के बाद जब ये कार्यकर्ता पटना में बाढ़ और भूख पर संवाद के लिए इकट्ठे हुए तो बिहार की विकट स्थिति कुछ ज्यादा साफ हुई। यहां हम उस संवाद में सामने आए अहम मुद्दे पेश कर रहे हैं—

उत्तर बिहार में भूख की स्थिति बाढ़ और दक्षिण बिहार में सूखे से जुड़ी हुई हैं लेकिन इस सवाल पर बिहार में सभी चुप हैं। अगर पिछले पांच साल में विधानसभा में हुई चर्चाओं पर गौर किया जाए तो यह सामने आता है कि भूखमरी के सवाल पर न तो कोई चर्चा हुई है, और ना ही कोई सवाल उठाया गया है राजनीति, खासकर चुनावी राजनीति में भूखमरी कोई मुद्दा नहीं है।

2008 में वैशाली जिले के वान्थु, गोरइया और परवारी गांव के बारे में एक अखबार ने खबर छापी कि दो मुसहर भाई भूख के कारण मर गए। जब 'वादा ना तोड़ो' अभियान की तरफ से वहां सर्वेक्षण किया गया तो सर्वे में गए लोगों ने महसूस किया कि वहां हालात इतने खराब हैं कि एक क्या, सभी लोग भूखमरी का शिकार हो सकते हैं।

लोग वहां आलू की जड़ और उसकी गुठली को निकाल कर खाने को मजबूर थे। जब वो लोग आलू की जड़ को उबाल रहे थे तब इतनी ज्यादा बदबू आ रही थी कि उसके सामने खड़ा रहना भी कठिन था।

हकीकत यह है कि भूखमरी का एक कारण बाढ़ है, लेकिन बाढ़ न आने की स्थिति में भी भूखमरी होती है यानी इसके कुछ दूसरे कारण भी हैं लेकिन राजनीतिक दल इस मुद्दे पर असंवेदनशील हैं।

इसलिए सामाजिक कार्यकर्ता यह जरूरत महसूस करते हैं कि भूख की समस्या को आज की राजनीति के केन्द्र में लाना चाहिए। बाढ़ से उत्पन्न भूखमरी की स्थिति को भी राजनीति में लाना चाहिए। अगर संसदीय राजनीति में भूख की समस्या का हल नहीं हो सकता तो आखिर यह समस्या कैसे हल हो सकती है, इस पर चर्चा होनी चाहिए।

भूखमरी, बाढ़ और सूखे दोनों ही स्थितियों में होती है। इसका सबसे बड़ा कारण दरअसल भ्रष्टाचार है अगर किसी इलाके में बाढ़ आ जाए तो सरकार और दूसरे स्रोतों से मदद पहुंचाई जाती है, लेकिन वह जरूरतमंदों तक नहीं पहुंच पाती नदियों के पानी को रोकने के लिए पैसे तो मिलते हैं, लेकिन

पदाधिकारी उससे जरूरी काम नहीं कराते, खुद खा जाते हैं जब तक ऐसा रहेगा, भुखमरी बनी रहेगी।

बगमती नदी पर तटबंध बनाने के लिए जो इंजीनियर निरीक्षण के लिए आए थे, उन्होंने रिपोर्ट दी थी कि बागमती नदी पर तटबंध नहीं बनाया जा सकता। लेकिन बागती पर तटबंध बनाया गया। इससे पहले स्थानीय नेताओं ने अपने लोगों को ठेके दिलवाए, फिर कमीशन लिया। यानी जब भी बांध या तटबंध बनने की योजना बनती है तो भ्रष्टाचार शुरू हो जाता है। नेता बीडीओ और कलेक्टर से कमीशन लेते हैं, यहां तक कि उन्होंने इंदिरा आवास योजना में भी कमीशन लिया।

सरकारी अधिकारियों और नेताओं के बीच एक बिचौलिया तबका तैयार हो गया है। बाढ़ इन सबके लिए एक उद्योग है। यह उद्योग चलता रहे इसके लिए वो हमेशा किसी न किसी समस्या को जन्म देते रहते हैं। बागमती का बांध टूटने से जगह-जगह गड्ढे बन गए, दूर-दूर तक रेत फैल गई, लेकिन इसकी जांच के लिए कोई टीम नहीं आई। ऐसे मामलों में कोई पहल न होने से लोग खेती-बाड़ी छोड़ी कर दूसरे राज्यों में पलायन करते हैं इस तरह बाढ़ और भुखमरी एक-दूसरे से जुड़े हुए हैं।

तटबंध बने या नहीं, इस पर आज भी चर्चा जारी हैं सामाजिक कार्यकर्ताओं ने राय जताई कि बिहार और देश के लगभग 99 फीसदी बाढ़ विशेषज्ञों की रोजी-रोटी इसी मुद्दे से चल रही है सरकार से ज्यादा ये लोग बाढ़ के लिए जिम्मेदार हैं बाढ़ के मुद्दे पर काम करने वाले जन संगठनों, आंदोलनकारियों से पूछ लिया जाए, उसका अध्ययन किया जाए तो आपको पता चलेगा कि सरकार द्वारा की गई गलतियों के लिए भी यही विशेषज्ञ जिम्मेदार हैं। इन लोगों ने बाढ़ जैसे सवाल पर बहस से आम जनता को कभी नहीं जोड़ा। बहस जितनी तकनीकी होगी, आम आदमी उससे उतना कटा रहेगा असली सामाजिक कार्यकर्ता उससे कटे रहेंगे।

सामाजिक कार्यकर्ताओं की यह राय बाढ़ और उसके प्रबंधन से जुड़े कई पहलुओं की तरफ इशारा करती है। इससे यह उभर कर सामने आता है कि बाढ़ सिर्फ एक समस्या नहीं है, बल्कि यह भुखमरी जैसी घोर समस्या की एक वजह भी है इससे दूसरी बात यह उभर कर सामने आती है कि बाढ़ महज एक प्राकृतिक आपदा नहीं है, बल्कि यह एक राजनीतिक सवाल है। जब तक इस सवाल को मुख्यधारा और राजनीति के केंद्र में नहीं लाया जाएगा तब तक बाढ़ प्रबंधन की जन पक्षीय नीतियां नहीं बन पाएंगी। तीसरी बात यह है कि बाढ़ से संबंधित बहस महज तकनीकी नहीं है, बल्कि इसके माननीय और जन साधारण

से जुड़े सवाल भी संबंधित हैं। बाढ़ प्रबंधन के वो तरीके शायद अपना मकसद हासिल नहीं कर सके, जिन्हें अपनाने से पहले जनता की राय नहीं ली गई हो। इसलिए यह अब बेहद जरूरी हो गया है कि बाढ़ नियंत्रण एवं प्रबंधन के बारे में एक समग्र नजरिया अपनाया जाए, जिसमें सरकार, वैज्ञानिक और तकनीकी लोगों के साथ-साथ आम जन के खयालात भी अहमियत रखते हों।

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अध्याय-2. कोशी नदी में बाढ़ की पृष्ठभूमि

कोशी जो नेपाल और भारत के एक बहुत बड़े इलाके पर पसरी हुई है। यानी यह एक ऐसी नदी है, जो दो देशों में बहती हैं इसका जलग्रहण क्षेत्र 95,646 वर्ग किलोमीटर में फैला हुआ है। यह इलाका माउंट एवरेस्ट और कंजनजंघा से होते हुए गंगा नदी तक जाता है। लेकिन गंगा में मिलने से पहले कोशी बिहार की कई प्रमुख नदियों, मसलन-कमला, बागमती, बूढी गंडक और भूतही बलान को खुद में समेट लेती है। चतरा में उतरने के पहले कोशी नदी नेपाल की तराई में 48 किलोमीटर का सफर तय कर चुकी होती है। फिर यह उत्तर बिहार में 15 धाराओं में बंट जाती है। पिछले दो सौ साल में यह नदी उत्तर बिहार में पूरब से पश्चिम की तरफ 150 किलोमीटर से ज्यादा खिसकी है।

नेपाल में सात बड़ी नदियां कोशी में मिलती हैं, इसलिए नेपाल में इसे सप्त कोशी कहा जाता है। अपने स्रोत से चलकर गंगा में मिलने तक कोशी 729 किलोमीटर की दूरी तय करती है। इसमें से 260 किलोमीटर का इलाका भारत में है।

कोशी में पानी का औसत प्रवाह 1,564 क्यूबिक मीटर प्रति सेकंड है। बाढ़ के समय यह प्रवाह 18 गुना बढ़ जाता है। उपलब्ध आंकड़ों के मुताबिक कोशी में सबसे भयंकर बाढ़ अगस्त 1968 में आई थी, जब जल प्रवाह 25,878 क्यूबिक मीटर प्रति सेकंड तक पहुंच गया था। इसके पहले एक और भयंकर बाढ़ अगस्त 1954 में आई, जब इसमें 24,200 क्यूबिक मीटर प्रति सेकंड का जल प्रवाह देखने को मिला था।

इंजीनियर और बाढ़ विशेषज्ञ दिनेश कुमार मिश्र के मुताबिक, “कोशी की विभिन्न धाराओं के नक्शे 18वीं सदी के प्रारंभ से उपलब्ध हैं। 15 अलग-अलग धाराओं में बहने वाली इस नदी के एक धारा से दूसरी धारा में बहने का कारण उसमें आने वाली गाद थी ऐसी नदी को एक धारा में बहाने का दुस्साहस 1950

के दशक में हमारे राजनीतिज्ञों और इंजीनियरों ने किया। जिस नदी का पानी और उसकी गाद 15 धाराओं में किसी न किसी मात्रा में बहती थी, वह एक धारा में सीमित हो गई। इस मूर्खता का परिणाम यह हुआ कि बहुत सी धाराओं में बहने वाली नदी की सिर्फ एक धारा के बीच सारा पानी और सारी गाद बहने लगी। जो नदी पहले से ही भोर थी, वह तटबंधों के बीच बंध जाने के बाद पहले से कहीं ज्यादा ताकतवर हो गई, क्योंकि अब उसकी केवल एक धारा की पेट्टी का स्तर बाकी सभी धाराओं और साथ की जमीन से कहीं ज्यादा ऊपर हो गया। ऐसी नदी स्थिर नहीं रह सकती थी।”

कोशी में हर साल बरसात में पानी बढ़ता है। जून से सितंबर तक मानसून के मौसम में कोशी के जल ग्रहण क्षेत्र में तेज बारिश होती है, हालांकि यहां हर साल एक जैसी हालत नहीं रहती। कोशी जल ग्रहण इलाके में बादल फटने की घटनाएं आम हैं, जिस दौरान एक दिन में 500 मिलीमीटर तक बारिश हो सकती है। जानकारों के मुताबिक जल ग्रहण क्षेत्र में दिखने वाला यह रुझान कोशी के अनोखे और खतरनाक व्यवहार का एक कारण है।

जैसा कि ऊपर कहा गया है, कोशी के अक्सर कहर ढाने का एक कारण उसके पानी में आने वाली गाद है। बादल फटने के दौरान बड़े पैमाने पर मलबा नदियों में आता है। पहाड़ में जमीन धंसने की घटनाएं आम तौर पर होती रहती हैं। इससे भी पानी और गाद नदी में आती है। ये सारी घटनाएं अचानक होती हैं और इतना वक्त नहीं होता कि संभावित बाढ़ के दायरे में आने वाले लोगों को चेतावनी दी जा सके।

पिछले साठ साल में हिमालय में ग्लेशियर पिघलने की रफ्तार तेज हुई है। इससे कई बार बर्फ पिघलने से बनने वाली झीलों में अचानक उफान आ जाता है। इससे तेज रफ्तार से पानी नदियों में पहुंचता है और इसके साथ ही पहुंचता है झीलों के टूटने से पैदा हुआ मलबा। जब इन नदियों की बाढ़ नीचे पहुंचती है, तो पानी और गाद खेतों और बस्तियों में तबाही मचा देते हैं अध्ययनों से यह बात सामने आई है कि कोशी हर साल 12 करोड़ क्यूबिक मीटर गाद लाती है, जिनमें 95 फीसदी मानसून के दिनों में आता है। (अजय दीक्षित, ईपीडब्लू, 7 फरवरी 2009)

कुसहा पर पूर्वी कोशी तटबंध की टूट

कोशी का कहर अगस्त 2008 में बिहार के एक बड़े इलाके पर टूट पड़ा। कोशी को कभी बिहार का शोक कहा जाता था। जब यह नदी पूर्णिया जिले में बहती थी तब एक कहावत बड़ी चर्चित थी कि ‘जहर खाओं, न माहुर खाओ, मरना है

तो पूर्णिया जाओ।' इस नदी का यह स्वभाव था कि वह अपना रास्ता बदलती रहती थी। यह कब अपना रुख बदल लेगी, इसका अंदाजा लगाना मुश्किल होता था। इसलिए लोग इससे डरे रहते थे।

लेकिन यह तब की बात है, जब माना जाता था कि प्रकृति के कोप से बचना मुश्किल है। बाद में नदी के किनारे तटबंध बनाए गए और बाढ़ से लोगों को बचाने के इंतजाम किए गए। लेकिन 2008 में कोशी का विकराल रूप एक बार फिर देखने को मिला। और इसके साथ ही बाढ़ रोकने के लिए किए इंतजाम एक बार फिर सवालों के घेरे में आ गए। नदी को बांधने की कोशिश में इंसान नाकाम रहा है, यह बात एक बार फिर जाहिर हो गई।

बाढ़ 18 अगस्त 2008 को नेपाल में कुसहा तटबंध में दरार पड़ने से आई। इसका असर बिहार के 8 जिलों पर पड़ा। ये जिले हैं— सहरसा, सुपौल, मधेपुरा, पूर्णिया, अररिया, कटिहार, खगड़िया और नवगछिया (पुलिस जिला)। सरकारी आंकड़ों के मुताबिक 527 जानें गईं और 35 लाख से अधिक लोग इस तबाही का शिकार हुए। हालांकि कोशी इलाके में काम करने वाले कई जन संगठन मृतकों की संख्या साढ़े तीन हजार से 20 हजार तक मानते हैं। बाढ़ की वजह से लाखों लोग बेघर हो गए। लाखों की आजीविका चली गई। एक लाख छह हैक्टेयर जमीन पर खड़ी फसलें नष्ट हो गईं।

नुकसान इतने बड़े पैमाने पर हुआ कि केन्द्र सरकार को कोशी की बाढ़ को राष्ट्रीय आपदा घोषित करना पड़ा। बिहार सरकार ने बाढ़ के वक्त 9,000 करोड़ रुपये के नुकसान का अंदाजा लगाया। केन्द्र सरकार की तरफ से भेजे गए टास्क फोर्स ने 16 सितंबर 2008 को 25,000 करोड़ रुपये के नुकसान की बात कही बिहार सरकार ने पुनर्निर्माण के लिए 14,500 करोड़ रुपये की मांग की। कई संगठनों का कहना है कि नुकसान एक लाख करोड़ रुपये से ऊपर का हुआ है। जबकि केन्द्र सरकार ने मात्र एक हजार करोड़ रुपये ही दिए हैं।

18 अगस्त के बाद 24 दिन तक लगातार पानी फैलता रहा। खबर आती रही कि आज यह इलाका डूब गया है तो आज अमुक इलाके में पानी भर गया है कोशी का पानी रेल पटरियों और सड़कों से टकराता रहा, उन्हें तोड़ता रहा और इलाके—दर—इलाके इसकी चपेट में आते रहे।

बाढ़ की वजह से हजारों पशु मर गए। तालाब बह गए, जिनके साथ मछलियां मर गईं। इससे लाखों लोगों के रोजगार पर असर पड़ा। इस हालत में लोग आखिर क्या करते? तकरीबन 12 लाख लोग बिहार से पलायन कर गए। विनाश के बीच सरकार को जैसे लकवा मार गया। करीब दो हफ्तों तक बाढ़ पीड़ित इलाकों में सरकार का कहीं नामो—निशां नहीं था। सरकार ने बाद में

दावा किया कि उसने साढ़े छह लाख लोगों को राहत शिविरों में पनाह दी लेकिन सवाल है कि जब बाढ़ की विपत्ति 30 लाख लोगों पर टूटी थी तो बाकी लोगों के साथ क्या हुआ। इसकी खबर उसके पास क्यों नहीं थी? विपक्ष को जरूर बाढ़ में अपना राजनीतिक फायदा नजर आया और तत्कालीन रेल मंत्री लालू प्रसाद यादव ने 160 मुफ्त रेल गाड़ियाँ चलवा दीं। जिससे बाढ़ पीड़ित लोग उस इलाके से बाहर जा सकें। बहुत से लोगों ने ट्रेनों के डिब्बों में ही कई हफ्तों तक पनाह ले रखी थी। जब बाढ़ उफान पर थी, तो बहुत से लोगों ने पेड़ों की टहनियों से लटक कर अपनी जान बचाई। कई-कई दिन तक लोग भूखे-प्यासे उस हाल में रहे, या फिर जान बचाने की जुगत में लगे रहे।

विपत्ति के उन दिनों में लोगों का कोई सहारा था तो वो खुद थे या उनका समाज था। एक दूसरे की मदद का ही आसरा था। जिन लोगों ने पलायन किया उनमें से बहुत से लोग साल भर बाद तक नहीं लौटे। वे फोन से अपने घर-गांव की खबर लेते, लेकिन यह जान कर कि लौटने के बाद जिंदगी बसर होना मुश्किल है, वापसी का इरादा छोड़ देते थे।

बाढ़ से नुकसान के जो आंकड़े सामने आए, उसमें वह नुकसान शामिल नहीं है, जो बाढ़ के दीर्घकालिक असर से होगा। कई जानकारों ने कहा है कि बाढ़ की वजह से खेत लंबे समय तक बंजर बने रहेंगे, जिससे लोगों को बदहाली का सामना करना पड़ेगा। बाढ़ के साथ आई रेत और गाद खेतों में जम गई। साथ ही इनकी वजह से सिंचाई के लिए पानी पहुंचाने के मकसद से बनाए गए रास्ते जाम हो गए। साफ है, इसका असर लंबे समय तक दिखता रहेगा।

कोशी ने एक बार फिर अपना खौफनाक रूप दिखा दिया था। लेकिन दुर्भाग्य की बात यह है कि इस तबाही में भी सरकारें और राजनीतिक दल अपने तुच्छ स्वार्थों से ऊपर नहीं उठ पाए। प्रधानमंत्री मनमोहन सिंह पूर्णिमा पहुंचे, तो राष्ट्रीय आपदा की बात कह गए। लेकिन जब सामाजिक कार्यकर्ताओं ने केन्द्र सरकार के अधिकारियों से बात की तो उन्हें बताया गया कि राष्ट्रीय आपदा जैसी कोई चर्चा दिल्ली में नहीं है। तो क्या बिहार के लाखों बाढ़ पीड़ितों के साथ धोखा हुआ?

क्यों बरपा कहर?

अगस्त 2008 में नदी की धारा इतनी तेज नहीं थी। इसके बावजूद भारी तबाही हुई। वजह थी नेपाल में कुसहा तटबंध का टूटना। इससे वहां जमा पानी तेजी से बह निकला। और नेपाल की तराई में मौजूद सुनसरी जिले से लेकर बिहार में सुपौल, मधेपुरा, सहरसा, अररिया, पूर्णिया, खगड़िया, कटिहार और नवगछिया

आदि जिलों पर विपत्ति टूट पड़ी। नेपाल में पचास हजार लोग इस बाढ़ से प्रभावित हुए।

उस बाढ़ ने तटबंधों की उपयोगिता को चर्चा के केंद्र में ला दिया। इसलिए भी कि तटबंध उस वक्त टूटा, जब नदी में पानी का बहाव अगस्त के औसत बहाव से कम था। इसीलिए अनेक जानकारों की राय है कि 2008 में कोशी की बाढ़ से हुई तबाही की वजह मानसून में आने वाली बाढ़ नहीं थी। कुदरत को इसके लिए जिम्मेदार नहीं ठहराया जा सकता। यहां यह भी गौरतलब है कि 2008 के अगस्त के पहले पखवाड़े में कोशी के जलग्रहण क्षेत्र में मौजूद पहाड़ियों पर हुई बारिश सामान्य से कम थी। इन जानकारों का कहना है कि अगर तटबंध टूटने के समय कोशी में जल प्रवाह ऐतिहासिक रूप से सबसे ज्यादा होता, तो और भी भयानक तबाही देखने को मिलती। तटबंध टूटने के दिन कोशी में जल प्रवाह 1968 में दर्ज सर्वोच्च स्तर का तकरीबन छठवां हिस्सा ही था। जब तटबंध टूटा तो नदी का पानी पुराने रास्तों से बहने लगा, प्रवाह जिधर आसानी से मुड़ सकता था मुड़ गया, और निचले इलाके डूब गए। (राजीव सिन्हा, ईपीडब्लू, 15 नवंबर 2008)

तटबंध टूटने के समय दो असामान्य घटनाएं देखी गईं। पहली यह कि नदी अपनी मौजूदा धारा से पूरब की तरफ मुड़ी, जबकि पिछले दो सौ साल से इसका रुझान पश्चिम की तरफ मुड़ने का रहा है। और दूसरी असामान्य घटना यह दिखी कि नदी की धारा ने करीब 120 किलोमीटर की दिशा बदली। यह किसी एक मौके पर धारा के इतनी दिशा बदल लेने का रिकॉर्ड है।

बाद में सामने आए तथ्यों से यह जाहिर हुआ कि कुसहा के आसपास पूर्वी तटबंध पिछले कुछ वर्षों से दबाव में था। बल्कि उपग्रह से हासिल तस्वीरों से साफ होता है कि नदी कम से कम 1979 से पूरब की तरफ मुड़ रही थी। 5 अगस्त 2008 को कुसहा तटबंध में दरार पड़ती नजर आई। अगर उसी वक्त जरूरी कदम उठा लिए गए होते, तो शायद इस विपत्ति से लाखों लोग बच जाते।

वैसे यह आठवां मौका था, जब कोशी के पूर्वी तटबंध में दरार पड़ी। हां, ऐसा पहली बार हुआ, जब बैराज के ऊपर तटबंध टूटा। 1968, 1984 और 1987 में पूर्वी तटबंध में पड़ी दरारें कम घातक नहीं थीं तब भी बड़ी संख्या में लोगों को बाढ़ का कहर झेलना पड़ा था ये तटबंध 1963 में बन कर तैयार हुए थे। यानी अब ये 46 वर्ष से ज्यादा पुराने हो चुके हैं ऐसे में जानकारों की राय है कि इनमें दरार पड़ना आश्चर्यजनक नहीं है। (राजीव सिन्हा, ईपीडब्लू, 15 नवंबर 2008)

तटबंध बनने के साथ ही कोशी नदी के पूरब में मौजूद इलाके में सड़कें,

नहर, रेल लाइनों आदि बना दी गई। इससे नदी से पानी बहने के पुराने कुदरती रास्ते बंद हो गए। नदी बेसिन में अवरोध खड़े हो गए। पानी का बहाव नियंत्रित करने के लिए नदी पर बैराज बनाया गया। इससे नदी के ऊपरी बहाव स्थल पर गाद जमा होने लगी और कोशी नदी अपने ऊपरी इलाके में अस्थिर रूप से बहने लगी।

उपरोक्त तथ्यों की रोशनी में यह बात साफ कही जा सकती है कि कोशी ने अगस्त 2008 में जो तबाही मचाई, उसकी परिस्थितियां इंसान ने ही पैदा की थी। तटबंध से बाढ़ रोकने की नीति से लेकर धरती के गर्म होने की वजह से हो रहा जलवायु परिवर्तन इसके कारणों में शामिल है। दोहराव के बावजूद इन दो तथ्यों पर गौर किए जाने की जरूरत है – धरती के गर्म होने की वजह से ग्लेशियर पिघल रहे हैं और इसका असर नदियों से लेकर पूरे वातावरण पर पड़ रहा है। प्रकृति को टेक्नोलॉजी से जीत लेने का अंधविश्वास तटबंध पर अंधआस्था के रूप में सामने आया है, और इसका परिणाम अब भुगतना पड़ रहा है।

इस संदर्भ में कुछ बातें गौरतलब हैं: 1 – कोशी बैराज की वजह से सिंचाई की सुविधा तो मिली, लेकिन बहुत कम इलाके में। 2 – इस परियोजना से जितनी बिजली मिलने का वादा किया गया था, उतनी बिजली कभी उपलब्ध नहीं हुई। नहर में बड़ी मात्रा में गाद जमा होने से बिजली संयंत्र का शिकार हो गया। 3 – कोशी परियोजना की बाढ़ नियंत्रण की क्षमता पर भी सवाल लगातार गहरा होता गया है। एक बड़ा इलाका तटबंध के दायरे से बाहर पड़ता है और उस इलाके को इस परियोजना से कोई सुरक्षा मिली है, ऐसा नहीं कहा जा सकता। अगस्त 2008 में तटबंध में दरार पड़ने से बाढ़ सुरक्षा का दावा और कमजोर साबित हो गया है।

अब ऐसी आम धारणा बन गई है कि पचास साल में तटबंधों में आठ बार दरार पड़ने के बावजूद कोई सबक नहीं सीखा गया है। इसकी एक मिसाल अक्टूबर 2008 में जल संसाधन के बारे में भारत-नेपाल की एक उच्चस्तरीय कमेटी की बैठक है इस बैठक के बाद जारी विज्ञप्ति में बिहार में बाढ़ नियंत्रण के लिए सप्त कोशी परियोजना पर अमल के ऊपर खास जोर दिया गया। लेकिन इसमें दरार पड़ने की घटनाओं और अभी दो महीने पहले ही मची तबाही के बावजूद बैराज एवं तटबंधों के जरिए बाढ़ रोकने के तरीके पर पुनर्विचार की कोई जरूरत महसूस नहीं की गई।

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अध्याय-3. क्या बांध और तटबंध हैं उपाय ?

कोशी बाढ़ नियंत्रण पर कुछ आधारभूत विवाद

बात आगे बढ़ाने से पहले सप्त कोशी बहुउद्देशीय परियोजना पर एक सरसरी नजर डाल लेना उचित होगा। इस परियोजना का मकसद बाढ़ नियंत्रण, सिंचाई, पनबिजली पैदा करना और नौवहन (navigation) बताए गए हैं। प्रस्तावित बांध त्रिवेणी और चतरा के बीच के पहाड़ी इलाके में मौजूद बराहक्षेत्र में बनना था। बांध की संभाव्यता (feasibility) रिपोर्ट 1953 में तैयार की गई थी। लेकिन तब ज्यादा लागत के अनुमान की वजह से बांध का निर्माण छोड़ दिया गया। तब इसकी जगह नेपाल के इलाके में बैराज बनाया गया और साथ ही नदी के दोनों किनारों पर तटबंध बनाए गए।

1953 में भयंकर बाढ़ आई थी। उसी से बने माहौल के बीच 1954 में कोशी परियोजना की रूपरेखा बनी। इस परियोजना के तहत ये निर्माण होने थे : 1 - भीमनगर में एक बैराज, 2 - बैराज के नीचे नदी के दोनों किनारों पर तटबंध, 3 - पूर्वी और पश्चिमी दिशाओं में नहर, 4 - पूर्वी नहर पर पनबिजली संयंत्र, और 5 - बराहक्षेत्र में एक बड़ा बांध। शुरुआत में इस परियोजना का मकसद बाढ़ नियंत्रण और सिंचाई की सुविधाएं देना बताया गया। परियोजना पर काम 1959 में शुरू हुआ और 1963 में बैराज के जरिए नदी की दिशा बदल दी गई। बराहक्षेत्र में प्रस्तावित बांध को छोड़ कर परियोजना के तहत होने वाले बाकी सभी निर्माण या तो पूरे हो चुके हैं या उन पर काम चल रहा है। (राजीव सिन्हा, ईपीडब्लू, 15 नवंबर 2008)

भारत सरकार ने 1981 में बराहक्षेत्र में बांध की संभावना पर फिर से हुए अध्ययन की रिपोर्ट जारी की, जिसमें सुझाव दिया गया कि बांध की ऊंचाई 269 मीटर रखी जाए। 1984 में एक जापानी कंपनी की मदद से फिर से इस परियोजना की पड़ताल की गई, जबकि उसी साल नेपाल सरकार ने कोशी बेसिन मास्टर प्लान बनाया। 1997 नेपाल और भारत सरकार के विशेषज्ञों की एक बैठक के बाद सहमति बनी कि कोशी बांध के बारे में साझा अध्ययन किया जाए। इस सारी चर्चा का सार तत्व यह था कि कोशी पर बांध बनाना भी कोशी नदी की बाढ़ को नियंत्रित करने का कारगर तरीका है, तटबंध सिर्फ इसके फौरी उपाय हैं।

सरकारी चर्चाओं में जब कभी बिहार में बाढ़ रोकने पर चर्चा हुई तब अक्सर बड़े बांध ही उपाय बताए गए हैं। कहा गया कि मुख्य और उनकी सहायक नदियों के बहाव के पहाड़ी और ऊपरी हिस्सों में बांध बनाए जाने

चाहिए। चूंकि बिहार में बहने वाली ज्यादातर नदियां नेपाल से आती हैं, इसलिए बांध नेपाल की जमीन पर ही बन सकते हैं और इसलिए अक्सर भारत सरकार की चर्चाओं में इस संबंध में नेपाल का सहयोग जरूरी बताया जाता है। यह अनुमान जताया गया है कि कोशी नदी पर बराहक्षेत्र में प्रस्तावित बांध से 42,475 क्यूबिक मीटर प्रति सेकंड तक बहाव वाली बाढ़ के असर को कम किया जा सकेगा। साथ ही बांध गाद को रोक लेगा, जिससे नीचे नदी का बहाव ज्यादा स्थिर हो सकेगा।

लेकिन यह परियोजना तभी हकीकत में बदल सकती है, जब नेपाल सरकार का सहयोग मिले। यानी नेपाल सरकार अपनी धरती पर बांध और उससे जुड़े सभी निर्माण पर राजी हो। जब तक नेपाल में राजतंत्र था, नेपाल की तरफ से भारतीय परियोजनाओं में ज्यादा रुकावट नहीं आती थी। लेकिन अब हालात बदल गए हैं। अगस्त 2008 की बाढ़ के समय जिस तरह कोशी परियोजना का विरोध नेपाल मीडिया में हुआ, उसे देखते हुए यह नहीं लगता कि आगे नदी परियोजनाओं को कार्यरूप देना आसान है। नेपाल की जो भी सरकार इस दिशा में कदम उठाएगी, उसे भारत का पिट्टू या भारत के आगे घुटने टेकने वाली सरकार बता दिया जाएगा।

वैसे सवाल सिर्फ नेपाल के पहलू का ही नहीं है। उससे बड़ा सवाल यह है कि जिस माध्यम से बाढ़ को नियंत्रित करने का सपना देखा गया है, क्या अब भी उसकी वकालत की जा सकती है। तटबंध के जरिए बिहार को कोशी के कोप से नहीं बचाया जा सका। सरकारें भले अब भी इसी माध्यम पर भरोसा करती हों, लेकिन यह साफ है कि ऐसा वो, बांध और तटबंधों से जुड़े जोखिम की अनदेखी करते हुए ही कर रही हैं। उन्होंने बड़े बांध से बनने वाले जलाशय में गाद जमा होने से जुड़े खतरों पर ध्यान नहीं दिया है। भूकम्प की स्थिति में हो सकने वाले विनाश पर भी उन्होंने गौर नहीं किया है। बांधों से जुड़े पर्यावरणीय सवालों पर उन्होंने नहीं सोचा है। भारत में टिहरी और सरदार सरोवर बांधों के सिलसिले में इन सभी मुद्दों और खतरों पर खूब चर्चा हुई है। इस बारे में आज पर्याप्त अध्ययन और जानकारी उपलब्ध है। सवाल यह है कि क्या कोशी या नेपाल से आने वाली किसी दूसरी नदी पर बांध या तटबंध बनाने की योजना बनाते वक्त इन अध्ययनों और जानकारियों की उपेक्षा वाजिब और भावी पीढ़ियों के हित में है?

कोशी परियोजना के तहत बैराज के नीचे नदी के दोनों किनारों पर बनाए गए तटबंधों का मकसद उत्तर बिहार और नेपाल में 2800 वर्ग किलोमीटर के इलाके को बाढ़ से बचाना बताया गया था। परियोजना को अपने बाकी उद्देश्यों

में कितनी सफलता मिली, इस पर बहस हो सकती है, लेकिन यह तो साफ है कि बाढ़ से बचाव के मकसद में कामयाबी नहीं मिली। तटबंध बनने के बाद भी भयंकर बाढ़ें आती रहीं। तटबंधों में दरार का पड़ना जारी रहा। इसके अलावा पानी निकलने के रास्तों में जाम हो जाने और खेतों में पानी जमा होने जैसे इसके दूसरे दुष्प्रभाव भी सामने आए। नदी का तल पहले से ऊंचा हो गया और नदी के पानी के साथ उपजाऊ मिट्टी के कम आने की वजह से खेतों में पैदावार भी घटी। कहने का तात्पर्य यह है कि तटबंधों से बाढ़ की समस्या का हल नहीं निकला, बल्कि इनकी वजह से कई दूसरी समस्याएं सामने आ गईं।

अगर कोशी परियोजना के पूरे इतिहास को ध्यान में रखें, खासकर तटबंधों में बार-बार हुई टूट को तो यह नहीं लगता कि 18 अगस्त 2008 को कुसहा तटबंध में पड़ी दरार कोई अनोखी घटना थी। तटबंध टूटने के बाद 80 से 85 फीसदी पानी नदी के सामान्य रास्ते से अलग पूर्वी दिशा में बह निकला। ज्यादा पानी आने से नदी की चौड़ाई बढ़ती गई। एक हफ्ते बाद यह चौड़ाई 22 किलोमीटर थी और बाद के हफ्तों में यह 35 किलोमीटर तक हो गई। जैसा कि हमने पहले भी कहा है कि कुसहा में तटबंध का टूटना उसके पहले नदी के दोनों तरफ तटबंधों में पड़ी दरारों से दो मायने में अलग था। पहला यह कि 200 साल के रुझान से उलट इस बार नदी पूरब की तरफ चल पड़ी और दूसरा यह कि इसने 120 किलोमीटर दिशा बदली, जो एक रिकॉर्ड है।

क्या इसकी वजह यह थी कि नदी के कुदरती प्रवाह में इंसान के दखल की इंतहा हो गई है? नदी का पूरब की तरफ जाना, और वह भी 120 किलोमीटर बदलाव के साथ – यह इस बात का संकेत हो सकता है कि नदी के पश्चिम की तरफ जाने की गुंजाइश खत्म हो चुकी होगी। ज्यादातर जानकार इस बात से सहमत है कि तटबंधों में कोशी को बांधने से स्थिति और बदतर हुई। इससे नदी के बहाव में बदलाव आया। बैराज के नीचे के कई इलाकों से पहले नदी के तल के ऊंचा होते जाने की खबरें मिलती रही थीं। इससे निकली नहरों और पानी बहने के दूसरे रास्तों में गाद के जमा होने के निशान पहले ही दिख रहे थे। बैराज के ऊपर के इलाकों में भी ऐसा होने के निशान दिखते रहे हैं।

कोशी में बाढ़ पहले भी आती थी, लेकिन उपरोक्त तथ्यों की रोशनी में यह जरूर कहा जा सकता है कि 2008 में आई बाढ़ नियंत्रण के जो तरीके हम सोच और अपना रहे हैं, वो पुराने पड़ चुके हैं। अब वह समय आ गया है, जब इन तरीकों पर पुनर्विचार किया जाए और नए तरीके सोचें जाएं।

अगर उत्तर बिहार पर गौर करें तो वहां बाढ़ नियंत्रण के लिए तटबंधों पर सबसे ज्यादा भरोसा किया गया है। उत्तर बिहार में तटबंधों की लंबाई 3,400

किलोमीटर से ज्यादा है। इनमें से ज्यादातर तटबंध 1954 की भयंकर बाढ़ के बाद बनाए गए। इन तटबंधों की मौजूदगी के बावजूद उत्तर बिहार में बाढ़ आती रही है— कभी नदी में तटबंधों की ऊंचाई से ज्यादा पानी भर जाने की वजह से, तो कभी तटबंधों में दरार पड़ जाने की वजह से।

बागमती नदी बेसिन में बाढ़ नियंत्रण के उपाय 1942 में शुरू हुए। तब से 466 किलोमीटर से ज्यादा तटबंध बनाए गए हैं। शुरूआत में नदी के निचले इलाके (डाउनस्ट्रीम) में तटबंध कारगर रहे। लेकिन जब ऊपरी इलाके (अपरस्ट्रीम) में तटबंध बनाए गए, तो निचले इलाकों में बाढ़ आने की घटनाएं बढ़ गईं और तटबंधों में भी बार-बार दरार पड़ने लगी। इस रूप में कहा जा सकता है कि तटबंधों ने सिर्फ इस समस्या से प्रभावित होने की जगह बदल दी है। तटबंध नदी के कुदरती प्रवाह में हस्तक्षेप करते हैं। इनकी वजह से जो इलाके बाढ़ से बच भी जाते हैं, वहां पानी और गाद जमा होने जैसी दूसरी मुश्किलें पेश आने लगती हैं। असल में तटबंधों से बाढ़ रोकने की रणनीति पर अब अंतरराष्ट्रीय स्तर पर सवाल उठाए जा रहे हैं। अमेरिका और चीन में भी तटबंध बाढ़ से राहत दिलाने में नाकाम रहे हैं। (जियोग्राफी एंड यू जुलाई-अगस्त 2008)

पूर्वी-पश्चिमी कोशी तटबंधों के बीच रह रहे लोगों की त्रासदी

कोशी का तटबंध टूटने से इतनी बर्बादी झेल चुकने के बाद भी यह सवाल आखिर क्यों नहीं उठाया जाता कि अगर कुसहा तटबंध नहीं टूटता तो पानी आखिर कहां जाता? जानकारों के मुताबिक तब पानी उस रास्ते से जाता? जानकारों के मुताबिक तब पानी उस रास्ते से जाता, जिसे 1950-60 के दशक में तटबंधों से रोक दिया गया था। इन तटबंधों के बीच भारत में 386 और नेपाल में 34 गाँव बसे हैं। भारत में करीब दस लाख और नेपाल में डेढ़ लाख की आबादी वहां रहती है। अगर तटबंध नहीं टूटता तो दुर्भाग्य से तटबंधों के बीच बसे ये लोग ही तबाही का शिकार होते। पानी इन्हीं गांवों से होकर बहता। यानी तटबंध टूटें या नहीं, इंसानों के किसी न किसी हिस्से पर इनकी वजह से आपदा जरूर आएगी।

तटबंधों ने जैसी परिस्थिति खड़ी की है, उसे समझने के लिए उस कमेटी पर भी गौर करना चाहिए, जो तटबंधों के बीच फंसे लोगों की दुर्दशा पर विचार करने के लिए बनाई गई थी। चंद्रकिशोर पाठक की अध्यक्षता में बनी कमेटी ने तटबंधों के बीच रह रहे लोगों के आर्थिक पुनर्वास और उनके विकास के लिए बनी एक प्राधिकरण बनाने की सिफारिश की थी। 1987 में कोशी पीड़ित विकास प्राधिकरण का गठन हुआ। इस संबंध में अपने संदेश में बिहार के तत्कालीन

मुख्यमंत्री बिदेश्वरी दुबे ने कहा था – “कोशी तटबंधों के बनने के बाद से लाखों लोगों ने अनकही पीड़ा झेली है। देश में शायद ही कोई और ऐसी जगह हो, जहां इतने सारे लोग नदी की धारा के सामने रहते हों। अपने दुर्भाग्य से पीछा छुड़ाने की कोशिश करते-करते इन लोगों ने अब अपनी उम्मीद खो दी है।” लेकिन वह प्राधिकरण भी इन लोगों के दुख-दर्द दूर नहीं कर सका।

दरअसल, तटबंध कोशी बेसिन के बाशिदों के गले में लिपटे सांप की तरह बन गए हैं। अगर ये तटबंध सलामत रहते हैं, तो तटबंधों के बीच रहने वाली 12 लाख की आबादी की परेशानी की वजह बनते हैं, और अगर ये टूट जाते हैं तो इनके बाहर रहने वाली पांच लाख से लेकर 30 लाख तक की आबादी पर कहर टूट पड़ता है। तटबंध टूटने की हालत में कितनी आबादी बाढ़ की चपेट में आएगी, यह इससे तय होता है कि नदी कौन से रास्ते अपना लेती है। लेकिन बर्बादी तो हर हाल में होती है।

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अध्याय-4. बाढ़ की समस्या और राजकाज की चुनौतियां

अगर हाल के अनुभव देखे जाएं तो कहा जा सकता है कि भारत में सरकारें अभी ऐसी किसी नई पहल के प्रति जागरूक नहीं हैं। पर्यावरण में आते बदलाव से नदी का व्यवहार बदल सकता है, या तटबंध बनाने जैसे जो उपाय किए हैं, वो कभी धोखा दे सकते हैं, इन बातों का अहसास सरकारी हलकों में नजर नहीं आता। इसलिए पहले से कोई एहतियात नहीं बरती जाती। अगस्त 2008 में जब कोशी में बाढ़ आई तो ऐसे इलाके भी डूब गए, जहां काफी समय से बाढ़ का पानी नहीं पहुंचा था। अचानक आई बाढ़ से वहां के लोग सकते में रह गए। उनके पास न तो बचाव का कोई उपाय था, और ऐसी परिस्थिति से निपटने की कोई तैयारी थी। उन लाखों लोगों ने इसे तकदीर की मार समझ कर संतोष कर लिया।

लेकिन असल में वह लापरवाही थी। इससे यह साफ हुआ बड़े बांध और तटबंधों को बनाने के लिए विज्ञान और आधुनिक आविष्कारों की दलील देने वाली सरकारें बाढ़ का पूर्व अनुमान लगाने और पीड़ितों के बचाव के लिए कुशल व्यवस्था करने की कोई तैयारी नहीं करतीं। इन मामलों में वे सब कुछ कुदरत पर छोड़ देती हैं। कुदरत से छेड़छाड़ कर वो उसका कोप भुगतने के लिए आप लोगों को असहाय छोड़ देती हैं। यही उत्तर बिहार में दशकों से हो रहा है।

कोशी की बाढ़ से शोर खूब मचा। लेकिन इन हालातों में कोई बदलाव होगा, ऐसी कोई उम्मीद नहीं दिखती।

सामाजिक कार्यकर्ताओं और पीड़ित लोगों के संवाद से यह बात भी साफ होती है कि राजनीतिक दल लोगों की दुर्दशा के लिए सीधे जिम्मेदार हैं। उनके निहित स्वार्थ और गलत फैसलों का नतीजा आम लोगों को भुगतना पड़ता है। राज्य और केंद्र—दोनों ही सरकारों के कर्ताधर्ताओं से अब सीधा सवाल यह है कि बाढ़ के बाद राजनीतिक नेताओं ने भोलेपन का मुखौटा पहनते हुए दलील दी कि जब नदी ने अपनी दिशा ही बदल ली तो प्रशासन क्या कर सकता था? लेकिन उन्होंने यह बताने की जरूरत नहीं समझी कि जब नदी की धारा को नियंत्रित करने के लिए तटबंध बनाए गए थे, तो उसके बावजूद नदी की दिशा कैसे बदल गई?

सच्चाई यह है कि तटबंधों के रखरखाव, उनकी ऊंचाई बढ़ाने, उन्हें मजबूत करने और नए तटबंध बनाने के नाम पर लगभग हर साल बड़े पैमाने पर सरकारी पैसा आता है, जिसका फायदा राजनीतिक दलों से जुड़े ठेकेदार और दलाल उठाते हैं। ये ठेकेदार और दलाल चुनाव के वक्त पर नेताओं के काम आते हैं। इसलिए नेता चाहे किसी पार्टी का हो, वह ठेकेदारों और दलालों के हितों पर चोट करने की हिम्मत नहीं जुटा पाता। संभवतः इसी वजह से नेता बाढ़ रोकने की अब तक अपनाई गई नीति पर उठाए जाने वाले हर सवाल को नजरअंदाज कर देते हैं।

यहां तक कि इस बारे में राष्ट्रीय आयोग की टिप्पणियों की भी अनदेखी कर दी गई। आयोग ने ध्यान दिलाया था कि तटबंधों की उपयोगिता का कोई व्यवस्थित अध्ययन नहीं किया गया है। सामाजिक कार्यकर्ताओं की यह पुरानी शिकायत रही है। उनकी मान्यता है कि कभी अपने समाज की सामाजिक—आर्थिक स्थितियों के मुताबिक बाढ़ रोकने के उपायों की प्रभावशीलता का सर्वे नहीं किया गया और ना ही कभी आम लोगों को इस प्रक्रिया से जोड़ने की कोशिश की गई। जबकि 2004 में बाढ़ प्रबंधन एवं भू—क्षरण नियंत्रण के बारे में प्रधानमंत्री के टास्क फोर्स ने तटबंधों के रखरखाव में सामुदायिक भागीदारी को बढ़ावा देने की सिफारिश की थी।

जनता से कट कर और निहित स्वार्थों के असर में बनाई जाने वाली नीतियों का ही यह परिणाम है कि तटबंधों के दुष्परिणाम जग—जाहिर हो जाने के बावजूद सरकारी स्तर पर इन पर आज भी कोई सवाल नहीं उठाया गया है। हकीकत यह है कि सरकारी स्तर पर तटबंधों को लेकर जो विचार 1950 के दशक में मौजूद थे, वे ही आज तक प्रचलित हैं। तब माना जाता था कि

तटबंधों और ऊंचे बांधों के जरिए बाढ़ को रोका जा सकता है। वह आधुनिक तकनीक और बड़े निर्माणों पर आधारित विकास नीति में पूरे भरोसे का दौर था।

लेकिन 1980 का दशक आते-आते विशेषज्ञ इस नीति पर सवाल उठाने लगे थे। उत्तर बिहार के संदर्भ में उन्होंने ध्यान दिलाया कि वहां बाढ़ रोकने के लिए हिमालय से निकलने वाली नदियों पर बांध को उपाय माना गया, जिसके तहत बड़े जलाशय बना कर नीचे ज्यादा पानी उतरने से रोकने की बात सोची गई। लेकिन विशेषज्ञों ने कहा कि उस इलाके की भूगर्भीय और भूकंपीय स्थितियों की वजह से ये बांध बड़ा खतरा पैदा कर सकते हैं। फिर संकरी घाटी की वजह से विशाल जलाशय बनाना शायद संभव भी नहीं है और नदियों में आने वाली गाद जलाशयों के दीर्घकालिक और आर्थिक फायदे को और सीमित कर देती हैं।

लेकिन इन सब बातों का सरकारों की सोच पर कोई असर नहीं हुआ। 2007 में बिहार सरकार ने बाढ़ नियंत्रण योजना के लिए केंद्र सरकार से 17 हजार करोड़ रुपए से ज्यादा की विशेष सहायता मांगी। कहा गया कि यह रकम तटबंधों और नदियों से गाद निकालने पर खर्च की जाएगी। उधर केंद्र में राष्ट्रीय जनतांत्रिक गठबंधन सरकार अपने कार्यकाल में विभिन्न नदियों को जोड़ कर बाढ़ और सूखे का हल निकालने की योजना लेकर आई थी। इस योजना में बिहार की भी कई नदियों को शामिल किया जाना था।

विशेषज्ञों ने ध्यान दिलाया कि अगर नदियों को जोड़ने की योजना लागू की गई तो इससे पर्यावरण को अपूरणीय क्षति पहुंचागी। नदियों को जोड़ने की योजना इस सोच पर आधारित थी कि बाढ़ नदियों के ऊपरी जलग्रहण क्षेत्र में ज्यादा बारिश से आती है। ऐसे में ज्यादा पानी को बड़े बांधों के जरिए रोक कर उसे इन इलाकों में पहुंचाया जा सकता है, जहां पानी की कमी है। साथ ही इक्टा पानी से बिजली भी पैदा की जा सकेगी।

इस योजना ने बस यही साबित किया कि हमारे राजनीतिक नेतृत्व ने अतीत की भूलों से कुछ नहीं सीखा है। उसे न तो बड़ी परियोजनाओं से होने वाली विस्थापितों की पीड़ा से कोई हमदर्दी है, और ना ही इन परियोजनाओं से पर्यावरण को पहुंचाने वाले स्थायी नुकसान की कोई चिंता है। कई जानकारों ने ध्यान दिलाया था कि नदियों के कुदरती रूप को बदलने और कृत्रिम नदियों या नहरों का जाल बिछाने की योजना सारा प्राकृतिक संतुलन बिगाड़ देगी, जिसके परिणामस्वरूप में प्रकृति का कोप आने वाली पीढ़ियों को झेलना पड़ सकता है। लेकिन अक्सर ऐसी समझ का उन लोगों में अभाव होता है, जिनकी निगाह सिर्फ स्वार्थ और फौरी फायदे पर होती है।

केंद्रीय जल संसाधन मंत्रालय के तहत काम करने वाले केंद्रीय जल आयोग का दावा है कि देश में बाढ़ के खतरे वाले कुछ इलाके में तीन चौथाई से भी ज्यादा को बाढ़ से बचाने के इंतजाम आज मौजूद हैं। इसके बावजूद हर साल बाढ़ से तबाही होती है। जाहिर है, किसी भी बाढ़ प्रभावित इलाके में जाकर ऐसे दावों की असलियत आसानी से देखी जाती है। फिर भी ऐसे इंतजामों पर जनता का धन खर्च करने या कहें बर्बाद करने का सिलसिला जारी है। इस संबंध में जवाबदेही तय करने की कोई कोशिश कहीं होती नजर नहीं आती।

सरकारें बाढ़ जैसी आपदाओं को लेकर कितनी गंभीर हैं, इसकी पोल इससे भी खुल जाती है कि खुद सरकारी आयोगों, कमेटियों और टास्क फोर्सों ने जो सिफारिशें की हैं, उन पर कभी ठीक से अमल नहीं किया गया। खुद केंद्रीय जल आयोग ने 2005-06 की अपनी सालाना रिपोर्ट में कहा था कि विभिन्न आयोगों, कमेटियों और टास्क फोर्सों की सिफारिशों पर अमल की दिशा में ज्यादा प्रगति नहीं हुई है। यानी सरकारों पुराने अनुभव से सीख लेने को तैयार नहीं हैं, वह पुराने ढांचे में सुझाए जाने वाले उपायों को लेकर भी गंभीर नहीं है। इसीलिए सभी बाढ़ प्रभावित इलाकों के लोग मानव निर्मित संकट को भुगतने के लिए मजबूर हैं।

नेपाल का पहलू

कोशी की बाढ़ ने एक तरफ भारी तबाही मचाई तो दूसरी तरफ इसकी वजह से भारत और नेपाल के संबंधों का एक पेच भी उभर कर सामने आ गया। नेपाल में भारत पर विस्तारवादी रवैया अपनाने का आरोप लगाने वाली ताकतों को इससे अपनी मुहिम तेज करने का एक मौका मिला। निशाने पर आया 1954 का कोशी समझौता। नेपाल की भारत विरोधी ताकतों का आरोप है कि यह समझौता असमान शर्तों पर हुआ था। इसी समझौते के तहत सीमा पर बैराज बना। यह नेपाल की जमीन पर बना। जबकि आरोप है कि बैराज का 96 फीसदी फायदा भारत को मिला। नेपाल को सिर्फ चार फीसदी लाभ मिला। 2008 की बाढ़ के समय अखबारों में इस विषय की काफी चर्चा रही।

वहां छपे लेखों में कहा गया कि कोशी परियोजना मुख्य रूप से बाढ़ नियंत्रण की परियोजना है, यह सिंचाई परियोजना नहीं है। नेपाल को सिंचाई का कुछ लाभ जरूर मिला, लेकिन इसकी वजह से वहां बाढ़ का खतरा बढ़ गया। इस परियोजना से नेपाल को होने वाले कथित नुकसानों की चर्चा वहां खूब बढ़ा-बढ़ा कर की गई और कोशी समझौते पर पुनर्विचार की मांग जोरदार ढंग से उठाई गई। कई टीकाकारों ने इस समझौते को नेपाल के लिए राष्ट्रघाती

बताया। राजनीतिक विश्लेषक श्याम श्रेष्ठ ने लिखा— इस समझौते से नेपाल को नुकसान के अलावा और कुछ नहीं हुआ। नेपाल की जमीन पर बांध बनाने में स्वामित्व नेपाल का होना चाहिए। लेकिन कोशी परियोजना के संचालन पर पूरा हक भारत का है। यानी इस समझौते से नेपाल की संप्रभुता में भारत का हस्तक्षेप सुनिश्चित हुआ है। इसलिए असमान एवं राष्ट्रघाती चरित्र वाले कोशी समझौते का पुनरावलोकन जरूर होना चाहिए। ऐसे ही विचार कई दूसरे लोगों ने भी जताए।

कई जानकार यह मानते हैं कि कोशी नदी के दो देशों में बहने और कोशी परियोजना में दो देशों के शामिल होने की वजह से आपदा रोकने के उपाय कारगर ढंग से नहीं किए जा सके हैं। इस पहलू की अगस्त 2008 की बर्बादी में एक खास भूमिका रही। जल संसाधन विशेषज्ञ अजय दीक्षित ने इस बात का जिक्र किया है कि 1966 की संशोधित कोशी संधि में परियोजना के रखरखाव एवं इससे संबंधित अन्य कार्यों की जिम्मेदारी भारत को दी गई। नेपाल सरकार अपनी सभी सड़कों, जल मार्गों, तथा परिवहन और संचार के दूसरे रास्तों के इस्तेमाल का हक भारत को देने पर राजी हो गई, ताकि भारत बैराज और दूसरे संबंधित निर्माण एवं रखरखाव की जिम्मेदारी निभा सके। लेकिन दीक्षित का कहना है कि यह संधि बैराज और तटबंधों के नियमित रखरखाव के बारे में अस्पष्ट है। संधि में नेपाल को संचालन एवं प्रबंधन संबंधी कोई जिम्मेदारी नहीं दी गई है, जबकि बैराज के ऊपर नदी नेपाल में ही बहती है।

जानकारों का कहना है कि नेपाल में राजनीतिक बदलाव की चल रही प्रक्रिया ने हालात को और उलझा दिया है। राजतंत्र का ,खात्मा, संविधान सभा के चुनाव और उसके बाद माओवादियों एवं दूसरे राजनीतिक दलों के बीच बढ़ते टकराव ने भारत-नेपाल संधि को एक ज्यादा ज्वलंत राजनीतिक मुद्दा बना दिया। नेपाल की राजनीति में भारत विरोध की एक धारा लंबे समय से मौजूद रही है। अगस्त 2008 में भारत विरोधी ताकतों ने यह बात जोरशोर से उछाली कि संधि से नेपाल को सिर्फ क्षति ही हुई है। इस तरफ ध्यान खींचा गया कि कोशी परियोजना से जो फायदे होने की बात कही गई थी वे नहीं हुए या जितने फायदे बताए गए थे उसकी तुलना में बहुत कम हुए।

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अध्याय-5. समस्या का हल

मुद्दा यह है कि उत्तर बिहार के लोगों को हर साल बाढ़ की विपत्ति झेलने से कैसे बचाया जाए। इस संबंध में कई मांगें उठी हैं, जिन्हें अब ठोस रूप में पेश किया जा सकता है।

तात्कालिक हल

यह तो साफ है कि कुसहा की घटना से अगर कोई सीख नहीं ली गई तो फिर लोगों को बाढ़ जैसी आपदाओं से बचाने की बात सोचना भी शायद मुश्किल है। सबसे पहली जरूरत यह है कि बन चुके तटबंधों का उचित रखरखाव हो और उनकी लगातार निगरानी की जाए अगर इनमें कहीं दरार पड़ती है और उसे भरने के फौरी उपाय नहीं किए जाये हैं, तो उसके लिए कौन जवाबदेह होगा, यह पहले से तय किया जाए।

तात्कालिक मुद्दे आपदा की स्थितियों में बचाव और राहत से संबंधित है। कोशी इलाके में हुए अनुभवों के आधार पर सामाजिक कार्यकर्ताओं ने कुछ खास मांगें रखीं। ये मांगें अभी भी प्रासंगिक हैं और मौजूदा हालात को देखते हुए कहा जा सकता है कि आने वाले वर्षों में भी रहेंगी। इनके मुताबिक,

- केंद्र सरकार एक राष्ट्रीय आपदा राहत कानून बनाए। इसमें किसी परिस्थिति को राष्ट्रीय आपदा घोषित किए जाने के प्रावधानों को स्पष्ट किया जाए। राष्ट्रीय आपदा घोषित होने के बाद केंद्र और राज्यों की क्या जवाबदेही बन जाती है, इसे भी बिल्कुल साफ किया जाना चाहिए। यानी यह बात स्पष्ट होनी चाहिए कि कितनी गंभीर स्थिति होने पर उसे राष्ट्रीय आपदा माना जाएगा और उस हालत में राहत के क्या कदम उठाए जाएंगे।
- बिहार सरकार अपनी राहत नियमावली को दुरुस्त करे।
- अगस्त 2008 में आई बाढ़ के लिए कौन जिम्मेदार है, इसकी पहचान की जाने की जरूरत बनी हुई है इसके लिए तब से कई जन संगठन सीबीआई जांच की मांग उठाते रहे हैं दरअसल, यह मांग उस इलाके में जन आंदोलन की एक महत्वपूर्ण मांग है।
- आगे तटबंध बनें या नहीं या मौजूदा तटबंधों के बारे में क्या रुख अपनाया जाए, यह सवाल भी बेहद महत्वपूर्ण है। लेकिन फौरी तौर पर सबसे महत्वपूर्ण बात यह है कि मौजूद तटबंधों के न टूटने की गारंटी की जाए। इसके लिए मरम्मत और निगरानी की विशेष वयवस्था की जाए। साथ ही स्पष्ट रूप से यह तय किया जाए कि अगर किसी तटबंध में दरार पड़ती

है तो यह किसकी जवाबदेही होगी। तटबंध टूटने के लिए जिम्मेदार लोगों को सजा देने के लिए कानून बनाया जाए।

- तटबंधों की मरम्मत का काम हर हाल में हर साल अप्रैल तक पूरा कर लिया जाए। ऐसा अनुभव है कि इसके बाद होने वाले मरम्मत के काम पर भ्रष्टाचार हावी रहता है। काम सिर्फ कागज पर होता है और बताए गए निर्माण को बाढ़ में बह गया बता दिया जाता है।
- बाढ़ से हुए नुकसान का अंदाजा लगाने के लिए एक स्वतंत्र आयोग का गठन हो।
- अगस्त 2008 की बाढ़ से जिन आठ जिलों में जान-माल, घरेलू सामान, पशुपालन, रोजगार, उद्योग-धंधों, बाग-बगीचों, पोखर-तालाब आदि का नुकसान हुआ, सरकार उन पीड़ितों को उनका पूरा मुआवाजा दे।
- अगस्त 2008 बाढ़ से क्षतिग्रस्त सड़कों, नालों, रेल पटरी, स्कूल, अस्पताल, डाकघर, खेल के मैदान, चरागाह, सामुदायिक भवन आदि का पुनर्निर्माण जल्द से जल्द कराया जाए।
- भविष्य की किसी बाढ़ से निपटने की पूर्व तैयारी की जाए। बाढ़ के पानी को रोकने के लिए जलाशय बनाए जाएं, टीलों पर राहत केंद्र बनाने की तैयारी रहे, नावों का खास इंतजाम हो, जिससे फंसे लोगों को राहत शिविर तक पहुंचाया जा सके।
- प्रभावित गांवों में हर 1000 की आबादी पर कम से कम 20 नावों का इंतजाम हो, प्रति परिवार के लिए 100 किलोग्राम अनाज की व्यवस्था पहले से रहे और विस्थापन के दौरान लोगों को बसाने की योजना पहले से तैयार रहे जहां लोगों को ठहराया जाए, वहां पानी और शौचालय का समुचित इंतजाम रहना चाहिए।
- पीड़ित गांवों के लोगों को राष्ट्रीय ग्रामीण रोजगार गारंटी योजना के तहत लगातार रोजगार दिया जाए, ताकि लोग पलायन न करें और जो लोग पलायन कर गए हैं, वे वापस आ सकें।
- जब तक किसान मजदूरों के लिए जीविकोपार्जन के वैकल्पिक साधन उपलब्ध न हो जाएं, विशेष राहत कार्यों को जारी रखा जाए।
- खेतों में रेत भरने की वजह से खेती और पशुपालन पर बहुत बुरा असर पड़ा है। सरकार रेत हटाने के लिए ठोस इंतजाम करे।
- इन इलाकों के लिए विशेष एवं नए कर्ज की व्यवस्था की जाए।
- पिछले पांच दशकों के अनुभवों के आधार पर तटबंधों के फायदे और नुकसानों का संपूर्ण आकलन किया जाए साथ ही तटबंधों की वजह से

प्रभावित परिवारों को हुए चल एवं अचल संपत्ति के नुकसान के बदले उन्हें मुआवजा दिया जाए।

इसके अलावा जन संगठनों ने कुछ अन्य मांगें भी उठाई हैं, मसलन,

- बाढ़ प्रभावित गांवों में आपदा की चेतावनी की व्यवस्था की जाए।
- एक आपदा प्रबंधन प्राधिकार बनाया जाए, जो बाढ़ प्रबंधन में हुई गलतियों पर फौरन कार्रवाई करे और तय किए गए कायदों के मुताबिक राहत सामग्री का वितरण सुनिश्चित करे। आपदा प्रबंधन पर सरकारी एजेंसियों के बजट व खर्चों में पारदर्शिता सुनिश्चित करने की जिम्मेदारी भी इस प्राधिकरण को सौंपी जानी चाहिए।

राहत और बचाव से संबंधित इन मांगों के अलावा जन संगठनों ने कोशी नदी की बाढ़ की मारक क्षमता को कम करने के लिए भी कुछ सुझाव दिए हैं। इस सुझावों को मांग के रूप में पेश किया जा सकता है और इनके इर्द-गिर्द जन गोलाबंदी की जा सकती है। मसलन,

- कोशी नदी के पानी का गंगा में सहज प्रवाह सुनिश्चित करने के लिए मनिहारी से कुरसेला और फरक्का से नौगछिया तक गंगा नदी में भरी हुई रेत को निकाला जाए।
- जल निकासी पर खास ध्यान दिया जाए एनएच 31, एनएच 57 एनएच 106 और रेल खंड बरौनी-कटिहार, मानसी-दरभंगा वाया समस्तीपुर, पूर्णिया-सहरसा से फारबिसगंज, सहरसा से मानसी, दरभंगा से निर्मली, फारबिसगंज से जोगबनी रेलखंडों में जल निकासी का खास इंतजाम पुलिया बना कर किए जाएं।
- दोनों कोशी तटबंधों के बीच बन रहे एनएच 57 तथा रेल पुलियों की चौड़ाई दो किलोमीटर से बढ़ा कर आठ-नौ किलोमीटर की जाए ताकि तटबंधों के पास के करीब पचास हजार परिवारों को विस्थापन से बचाया जा सके। अगर ऐसा नहीं होता तो विस्थापित होने वाले परिवारों की पूरी जायदाद का मुआवजा देकर उनका उचित पुनर्वास किया जाए।

दीर्घकालिक हल

कहा जाता है कि इंसान अपनी गलतियों से सीखता है सभ्यता के इतने विकास के बावजूद मनुष्य अभी सीखने के ही दौर में है बड़ी परियोजनाओं से बाढ़ पर नियंत्रण का एक प्रयोग मनुष्य ने पिछली सदी में किया लेकिन वक्त ने साबित

किया कि वह प्रयोग न सिर्फ अधूरा था, बल्कि उसके कई दुष्परिणाम भी हुए। खासकर प्रकृति के लिए कई विनाशकारी नतीजे सामने आए। इनसे सीखते हुए प्रकृति पर विजय पाने की महत्वाकांक्षा और उसके लिए बनाई नीतियों पर सवाल उठने लगे। पिछली सदी में जो उपाय और तरीके प्रचलन में आए, आज उन पर गंभीर सवाल हैं इसलिए अब वैकल्पिक तरीकों और उपायों पर सोचा जा रहा है। दुर्भाग्यपूर्ण यह है कि जिनके हाथ में सत्ता और प्रयोग के संसाधन हैं, वो अभी तक नहीं जागे हैं।

इसलिए सक्रिय समूहों की तरफ से आए सुझावों पर गौर करना बाढ़ नियंत्रण के लिए फिलहाल काफी महत्वपूर्ण है – तात्कालिक मुद्दे तय करने के लिए भी और दीर्घकालिक संघर्ष की रणनीति बनाने के लिए भी।

असली सवाल दीर्घकालिक हल निकालने का है बाढ़ एक समस्या हैं इससे ही मुक्ति दिलाने के लिए बांध और तटबंध बनाए गए। लेकिन पिछले पांच दशकों का अनुभव यह है कि बांधों और तटबंधों ने बाढ़ से बचाव तो नहीं किया, बल्कि कई नई समस्याएं खड़ी कर दीं। बहरहाल, बांधों और तटबंधों का अस्तित्व अब एक हकीकत है सबसे अहम सवाल यह है कि इन ठोस परिस्थितियों के बीच ऐसे क्या दीर्घकालिक या टिकाऊ महत्व के मुद्दे हो सकते हैं, जिन्हें केंद्र में रख कर कोशी इलाके में जन राजनीति आगे बढ़ाई जा सकती है।

इस संदर्भ में यह गौरतलब है कि बाढ़ को परंपरागत रूप से ज्यादा बारिश से जोड़ कर देखा जाता रहा है। बाढ़ नियंत्रण को इंजीनियरों का क्षेत्र समझा जाता रहा है। इसी समझ के आधार पर बाढ़ प्रबंधन का मतलब नदी को नियंत्रित करना माना जाता है। लेकिन अब बहुत से जानकार यह स्वीकार कर रहे हैं कि ऐसी ही समझ की वजह से दुनिया भर में बाढ़ प्रबंधन की कोशिशें नाकाम रहीं।

इसे आंकड़ों से साबित किया जा सकता है कि बाढ़ पर काबू पाने के तमाम उपायों के बावजूद भारत में बाढ़ प्रभावित इलाके और बाढ़ से होने वाले नुकसान—दोनों में बढ़ोतरी हुई है। बाढ़ आज देश, खासकर उत्तर बिहार में सबसे ज्यादा नुकसान पहुंचाने वाली प्राकृतिक आपदा है। इसलिए अब बाढ़ नियंत्रण के उपायों पर सोच बदलने की जरूरत है। अब वैकल्पिक सोच अपनाए जाने की आवश्यकता है। जानकार अब नदियों व स्वभाव समझने और उसके मुताबिक भूमि एवं जल प्रबंधन के उपाय करने की जरूरत पर जोर दे रहे हैं।

लेकिन मौजूदा राजनीतिक माहौल में क्या यह संभव है?

तटबंधों के जरिए बाढ़ रोकने की कोशिश चूंकि दुनिया भर में नाकाम हो चुकी है इसलिए अब इसके वैकल्पिक तरीके विकसित करने के प्रयास हो रहे

हैं बांग्लादेश में छोटी सिंचाई योजनाओं के जरिए हुई ऐसी कोशिश को काफी सफल बताया जा रहा है गंगा बाढ़ नियंत्रण आयोग ने उत्तर बिहार के बागमती बेसिन के सिलसिले में ऐसे कुछ उपाय सुझाए हैं। इनमें नदी के ऊपरी बहाव इलाके में मौजूद बेलवा गांव में छोटा बांध बनाना शामिल है। साथ ही जल मार्ग में सुधार, वाटरशेड मैनेजमेंट, भूमिगत जलाशय बनाने जैसे उपायों के भी सुझाव दिए गए हैं। बहरहाल, ये सारे उपाय अभी विचार के स्तर पर ही हैं, और इनसे निकट भविष्य में लोगों को राहत मिलने की आशा नहीं की जा सकती।

तो आखिर अब तक के अनुभवों से क्या सीख ली जाए? जानकारों का कहना है कि सबसे पहले हमें अपना नजरिया बदलने की जरूरत है। हमें नदी 'नदी के नियंत्रण' की रणनीति छोड़नी चाहिए और 'नदी प्रबंधन' के तरीकों पर सोचना चाहिए। हमें नदी बेसिन प्रबंधन की योजना बनाने पर विचार करना चाहिए। इसके लिए यह समझना जरूरी है कि नदी के बनने और सदियों से उसके कायम रखने की प्रक्रियाएं क्या रही हैं, जल संचय कैसे होता है और कैसे नदी में आने वाले अतिरिक्त पानी का बेहतर इस्तेमाल किया जा सकता है। दुनिया भर में अब बाढ़ प्रबंधन के बारे में विचार करते हुए इस पर सोचा जा रहा है कि क्या आने वाले अतिरिक्त पानी का छोटी सिंचाई योजनाओं में उपयोग संभव है और अगर ऐसा है तो इसके लिए क्या उपाय करने होंगे।

जानकारों के मुताबिक बाढ़ से विनाश को रोकने के लिए यह जरूरी है कि नदी बेसिन में, जहां बाढ़ आने का खतरा रहता है, उनके बेहतर नक्शे तैयार किए जाएं और बाढ़ आ जाने के बाद निर्णय लेने की प्रक्रिया को सुगम और सक्षम बनाया जाए। परंपरागत रूप से ऐसे नक्शे जमीनी सर्वे और हवाई सर्वेक्षण के आधार पर तैयार किए जाते हैं लेकिन अब इन्हें पुराना तरीका माना जाता है। उनके मुताबिक इन तरीकों से नक्शा बनाने में जरूरत से ज्यादा समय लगता है और यह महंगा भी पड़ता है साथ ही सही वक्त पर हवाई सर्वेक्षण संभव नहीं हो पाता, क्योंकि मौसम के मिजाज का पहले से अंदाजा लगा पाना मुश्किल होता है। विशेषज्ञों की राय है कि अगर भौगोलिक सूचना प्रणाली (जी आई एस), रिमोट सेसिंग इमेजेज, जनसंख्या संबंधी आंकड़े और संबंधित जगहों के नक्शों का इस्तेमाल कर बाढ़ के खतरे वाले क्षेत्रों का नक्शा बनाया जाए, तो बाढ़ के प्रबंधन में वह ज्यादा सहायक होगा। साथ ही इसमें अब नदियों के जल ग्रहण क्षेत्रों में जंगल की कटाई, बारिश के इतिहास, तटबंध टूटने की घटनाओं के इतिहास आदि के पूरे आंकड़ों के इस्तेमाल पर भी जोर दिया जाता है।

इसलिए जानकारों के मुताबिक कुछ फौरी तकनीकी उपाय जरूर किए जाने चाहिए। उनके मुताबिक —

1. गाद नदियों की एक बड़ी समस्या बन गई है। ज्यादातर गाद अपस्ट्रीम बेसिन इलाके से आती है। इसकी वजह से नदी का जल मार्ग भरने लगता है और नदी में पानी इकट्ठा होने की क्षमता घट जाती है। जाहिर है, गाद बाढ़ की एक बड़ी वजह है जानकारों का कहना है कि अगर नदी बेसिन इलाके में पेड़ लगा कर वाटरशेड मैनेजमेंट किया जाए तो नदी में गाद जमा होने की प्रक्रिया बढ़ सकती है, जिससे अंततः बाढ़ का खतरा घटेगा।
2. अब सहायक नदियों के द्वार पर तथा नदी बेसिन इलाके में छोटे जलाशय और चेक डैम बनाने को बाढ़ रोकने का प्रभावी उपाय माना जा रहा है इससे सहायक नदियों से आने वाले पानी को नियंत्रित किया जा सकता है, जिससे मुख्य नदी में बाढ़ आने का खतरा घटेगा। चेक डैम छोटे आकार के होते हैं इसलिए इनसे पर्यावरण को नुकसान नहीं पहुंचता, साथ ही इन पर लागत भी कम आती हैं
3. सुझाए जा रहे कुछ अन्य उपाय इस प्रकार हैं— अतिरिक्त पानी को नहरों से दूसरी जगहों तक पहुंचाना, नदी के अपस्ट्रीम में जलाशय बनाना, नदी बेसिन इलाके में पानी जमा कर रखने के उपाय करना, कृत्रिम रूप से जमीन से नीचे के पानी को निकालना ताकि बाढ़ से आने वाले पानी को जमीन सोख ले, वगैरह।

ये दूरगामी वैकल्पिक उपाय हैं। इन पर सहमति बनाने और इन्हें अमली जामा पहनाने में अभी वक्त लगेगा।

बाढ़ पर बाढ़ मुक्ति अभियान के संयोजन और विशेषज्ञ दिनेश कुमार मिश्र की यह राय—बिहार में बाढ़ की समस्या के संदर्भ में बाढ़ मुक्ति अभियान के संयोजक दिनेश कुमार मिश्र की यह टिप्पणी गौरतलब है — “ बिहार की बाढ़ की समस्या के मूल में पानी की निकासी और बाढ़ के पानी के साथ आने वाली गाद है। तटबंध समस्या को बढ़ाते हैं, उसका समाधान नहीं करते। चर्चाओं के माध्यम से अगर यह बात लोक मान्य हो जाती है तो इसे एक न एक दिन राज्य मान्य होना ही पड़ेगा।” जाहिर है, इस राय से सहमत लोग चाहते हैं कि तटबंधों की अनुपयोगिता को राजनीति का मुद्दा बनाया जाए।

दिनेश कुमार मिश्र के मुताबिक तकनीकी उपायों की अपनी सीमाएं हैं, इसलिए जरूरत स्थानीय लोगों से पारंपरिक ज्ञान अर्जित कर उसे आधुनिक विज्ञान से संवारने की है। शायद इसी से कोई टिकाऊ समाधान निकल सकता है। उत्तर बिहार के संदर्भ में हमारी राजनीतिक और भौगोलिक परिस्थिति ऐसी है कि हम न तो पानी और गाद को आने से रोक सकते हैं और ना ही नदी के बारे में कोई स्वतंत्र निर्णय ले सकते हैं। अगर आपको सिर्फ नदी का एक टुकड़ा

ही उपलब्ध हो तो आधी इंजीनियरिंग वहीं खत्म हो जाती है। बची आधी इंजीनियरिंग की भी अपनी सीमाएं हैं।

बाढ़ से निपटने के लिए हम क्या-क्या कर सकते हैं, यह दिवा स्वप्न देखने और दिखाने से पहले हमें यह तय करना होगा कि कौन-कौन सी चीजें ऐसी हैं, जो हम नहीं कर सकते। इन चीजों पर एक नजर डालें: 1 – यह सारी बहस इसलिए चल रही है कि तटबंधों पर जो हमने विश्वास किया, वह गलत था। 2 – बराहक्षेत्र बांध का निर्माण हमारे हाथ में नहीं हैं 3 – कोशी नदी की उगाढ़ी संभव नहीं है, क्योंकि एक तो गाद / रेत की मात्रा वहां बहुत अधिक है और उसे कहां फेंका जाएगा, यह किसी को मालूम नहीं है। इस प्रस्ताव को इंजीनियर लोग भी सिरे से खारिज करते हैं। 4 – गांवों को ऊंचा करने का काम 1950 और 1960 के दशक में मुख्यतः उत्तर प्रदेश और कुछ अन्य राज्यों में किया गया और भारी जन प्रतिरोध के बीच उसे अव्यावहारिक मान कर छोड़ दिया गया। 5 – नदी को मुक्त छोड़ कर गांवों को घेरने की योजना भी भीषण समस्याओं से ग्रस्त है: बिहार में ही निर्मली, महादेव मठ और बैरगनियां की समस्याएं किसी से छिपी नहीं है। 6 – नदियों को आपस में जोड़ने की योजना कम से कम बिहार में पूरी तरह नेपाल पर आश्रित है और वहां भी लंबा इंतजार करना होगा। जब तक नेपाल और इस योजना के लिए कर्ज या अनुदान देने वाली संस्थाएं इसके परिणामों को लेकर पूरी तरह आश्वस्त नहीं होगी, तब तक यह काम नहीं होगा। 7 – इन सारे तकनीकी उपायों के बाद एक कानूनी रास्ता बचता है, जिसके मुताबिक बाढ़ वाले इलाकों में रिहाइश के नियम और निषेधों को कड़ाई से लागू किया जाए। इसे तकनीकी भाषा में फ्लड प्लेन जोनिंग कहते हैं। बिहार में दो तिहाई जमीन पर बाढ़ की आशंका बनी रहती है और वहां इस तरह के कानून का पालन संभव नहीं है, क्योंकि तब वहां ऐसा बहुत कम क्षेत्र बचेगा, जहां कोई बड़ा निर्माण कार्य किया जा सके। यह मान कर कि फ्लड प्लेन जोनिंग कानून मान लेने से बिहार में विकास के सारे काम बाधित हो जाएंगे, खुद बिहार सरकार ने इसे खारिज किया हुआ है। क्योंकि नदी की पूरी लंबाई हमारे पास उपलब्ध नहीं है। उसका अच्छा-खासा हिस्सा नेपाल में पड़ता है और वहां कुछ करने के लिए नेपाल की रजामंदी चाहिए। वह मिल भी सकती है और नहीं भी मिल सकती है या बहुत देर से मिल सकती है। भलाई इसी में है कि हम वार्ताएं जरूर चलाएं, लेकिन उन्हीं के भरोसे बैठे ना रहें।

इस तरह हम देखते हैं कि बाढ़ से निपटने वाली सारी योजनाओं के रास्ते या तो बंद हैं या वे किसी अंधी गली में जाकर खत्म हो जाते हैं। तब बचता है एकमात्र रास्ता कि स्थानीय स्तर पर ही बाढ़ से निपटा जाए।

अध्याय-6. कैसे होगी जनता की राजनीति

बहरहाल, अगस्त 2008 में आई बाढ़ खतरे की ऐसी घंटी है, जिसकी अनदेखी बड़े विनाश का जोखिम उठाते हुए ही की जा सकती है। हमारे राजनेता यह जोखिम उठाने को भी तैयार दिखते हैं, क्योंकि आखिरकार जान-माल का नुकसान उनका नहीं बल्कि आम जनता का होगा। इसलिए यह आम जनता के जागने का वक्त है। यह सामाजिक संगठनों के जागने का वक्त है। अगर वे मिलजुल कर बाढ़ और इससे जुड़ी भुखमरी को राजनीतिक मुद्दा बना सकें, इसे चुनाव हारने और जीतने का सवाल बना सकें तो शायद तस्वीर कुछ बदल सकती है। यानी बाढ़ पर राजनीति का वक्त आ गया है, नेताओं के बीच राजनीति का नहीं, बल्कि नेताओं के खिलाफ जनता की राजनीति का।

लेकिन अहम सवाल यह है कि यह राजनीति कौन करेगा और इसके मुद्दे क्या होंगे? कुसहा तटबंध टूटने के बाद कोशी में जब बाढ़ आई और उससे भारी विनाश हुआ तो इसने बहुत से जन संगठनों, सामाजिक कार्यकर्ताओं और आम लोगों की संवेदना को झकझोरा। कई स्वयंसेवी समूह और जन संगठन राहत कार्यों के लिए प्रभावित इलाकों में पीड़ित लोगों के बीच गए। उन्होंने इस विनाश के कारणों को समझने की कोशिश की। साथ ही उस इलाके के लोग जिस भंवर में फंस गए हैं, उससे उन्हें निकालने के उपायों पर भी चर्चा की। उनकी चर्चा से कई महत्वपूर्ण सुझाव सामने आए हैं। इन पर और चर्चा की जरूरत है और अगर इन पर व्यापक सहमति बन सके, तो वह विविध रूप से कोशी बाढ़ से प्रभावित इलाकों में जनता की राजनीति के मुद्दे तय हो सकते हैं।

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Climate Change, Landscape, Floods and Food Prosperity

**Rajni Bakshi
Arun Kumar Panibaba
and
Vijay Kumar & Satyendra Ranjan**

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Preface

The book contains three articles related to topical issues on food, climate and floods.

In the first article entitled 'Food Futures', eminent journalist and author Rajni Bakshi deeply analyses the landmark report released by the International Assessment of Agricultural Science and Technology for Development (IAASTD). The report was an outcome of the research findings and studies by 400 scientific and social science experts from all over the world. The report, commonly known as 'the Assessment' is considered to be a representative and holistic document of the best possible existing thinking in agriculture and development. The Assessment firmly affirms that the future food security of those who eat well at present might soon be in peril. Why?

Take the case of declining global stocks of wheat — 11 percent, lowest level since 1980. Several reasons have been cited for this, the principal being the effects of global warming that has caused a drop in crop yields. The Assessment also cited another major reason for this — poor agricultural practices, both industrial and traditional which have depleted one-quarter of the world's soil and the damage is still continuing.

The Assessment concludes that the prevailing industrial agriculture cannot meet the food needs of the world population which is expected to be 9 billion in a few decades from now. It concludes with a warning that mankind cannot go on depleting natural capital, and still hope to ensure that it can feed everyone on the earth. *Vasudhaiva Kutumbakam*, 'Earth is a Family' is not just a common philosophical saying but basis for action — immediate action as far as food needs are concerned.

The second article, titled 'Alternate Perspective on Climate Change Debates in South Asia', authored by well known political activist and journalist Arun Kumar Panibaba, attempts to describe the landscape, climate, ecology, culture of South Asia and define the basics of landscaping through vernacular narratives.

The author dwells in detail how colonialism has vandalized and devastated the Himalayas in order to develop the railways in India and their own shipping industry and naval requirements. There was a consistent demand from the British Naval Admiralty for teak wood grown in Himalayas to build their fleet!

In an exhaustive section, the author deals with the landscape, climate and biodiversity of South Asia. The climate and global warming effects have gravely affected the Himalayan glaciers, once the richest reservoir of fresh water. The devastation has resulted in increasing incidence of massive avalanches and landslides and floods. He expresses a grave concern that if 'progress' is symbolized by speed in the form of railways, automobiles, airways etc, then mankind will be forced to sacrifice the Himalayas.

He concludes his well researched study with an agenda for restoration of Indian agriculture, resurrection of science and history and insists that without deep reverence for the landscape any attempt on resurrection becomes spurious.

The third article in the book is a monograph on floods and Kosi river in Bihar entitled "Flood Scourge in Bihar: Is there any Solution?" Vijay Kumar, a noted activist and academician and Satendra Ranjan, a leading journalist, have given a detailed account of the various rivers of North Bihar and its flooding natures during monsoon. Koshi is one such river that has become a source of misery for the people of that region as it changes its course whenever floods occur. The authors admit that the floods are a natural phenomenon which could not be stopped by using modern technology and human beings should learn to live with floods. It is also attributed that floods are one of the many causes of individual poverty and hunger. However the corruption in the state government and poor policy adopted in disaster management by

the governmental agencies is the bigger cause of human suffering in Bihar.

This monograph in its next chapters focuses on Koshi River, its geography, history, behaviour of floods and dreadful devastation due to recent breach in the eastern embankment at Kushaha resulting in floods of August 2008. The causes of breach, the loss of lives – human and cattle – and property, negligence in relief works, government accountability, punishing the guilty etc have been detailed. A debate over the usefulness of Koshi Dams and embankments has been raised. An account of the failure of the successive governments and the apathy of the political parties as well as administration in controlling the floods, rehabilitation of displaced, providing relief etc have been presented. Issues of governance, flood management, and Indo-Nepal relations, ongoing people's movements, suggested preventive measures and demands from the state machinery have been the focal points. The authors conclude with a suggestion that a mass movement through large scale mobilization involving all the people's organizations is required to pressurize the government for immediate action.