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Need for Reassessment

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It needs to be realized that the problem is how to route the silt and not how to route the water

MANY DEPARTMENTS working over the issue of water, irrigation and floods have changed their names in the recent past. Thus, Department of Irrigation has now become Water Resources Department (WRD), Flood Control's new incarnation is Flood Management and Relief and Rehabilitation Department has graduated into Disaster Management Department (DMD) and so on. By changing names it appears that a sea change has occurred in the working of these institutions for the better. But let someone ask what changes have actually occurred, the answer is hard to find. Most of these departments are doing the same thing even now; the flood control people are on an embankment building spree as earlier and the DMDs of the states are still busy in relief operations under a new label. If a change could be brought by just changing one's name, there was no need to do anything else, just change the name. This is true for most of the issues affecting human life but it is truer when floods are expected to be mitigated by calling it a disaster.

Disaster is defined as a great or sudden misfortune. Various governmental and non-governmental organizations try to combat disaster by preparing to face it, mitigate it and rehabilitate the people to pre-disaster situation. All the three steps put together are called disaster management. Floods are said to be a natural disaster by many while a significant section of the society has started calling them manmade disaster because human intervention has aggravated the problem of flooding. The debate is fierce and continuing. The floods in Nagpur, Nasik, Bhopal, Hoshangabad, Barmer, Jaipur, Banda, Bangalore and Jallundhar in the recent memory are a disaster but the Bihar floods of 1998, 2002, 2004, 2007 or even the 2008 floods in the Kosi basin cannot be rated as a disaster. All these floods were known to be in offing and they don't qualify to be rated into the disaster category for the very definition of it. Floods in Eastern Uttar Pradesh, Assam, Orissa or West Bengal are aggravated because of human intervention in recent past and belong to manmade disaster category as massive investment on flood control have gone into these states.

Looking for Natural Floods - We all know that the civilizations grew along rivers. Floods played a definite and positive role in survival of mankind. Flooding of plains is the nature's way of land building process; it adds fertilizing silt to the agricultural land and replenishes the moisture of the soil along with revitalizing the ground water table. Non-occurrence of floods is a greater disaster than floods in the flood plains of the river. Floods in India follow a definite season and the local people living in flood plains, generally, knew the approximate dates when the floods would strike them and were prepared to face the same. However, the extent and duration of flooding has got aggravated because of human intervention, giving it a form which we now call a disaster. This intervention has come mostly in the form of embankment construction along the rivers with the hope that they would stand as solid walls between the people and the rivers. That hope has been belied beyond any shade of doubt over the years.

Embankments – The root cause of flooding as indicated earlier, a massive program to embank the rivers of the Ganga-Brahmaputra basin was taken up following the independence of the country. When a heavily silt laden river is embanked, the sediment gets trapped within the embankments, pushes the bed level successively upwards necessitating the raising of the embankments also. There is a practical limit to which the embankments can be raised and maintained. The river water seeps through these embankments and causes waterlogging in the countryside. The countryside is deprived of the nutritious silt that it could have got if the river was allowed to flow freely. The embankments prevent the tributaries from entering the main river and sluice gates have to be constructed to allow this. These sluice gates cannot be opened during the rainy season because there is a possibility of the main river water entering into the tributary and flooding newer areas hitherto unknown to flooding. The tributaries, on their own, may start flowing parallel to the main river outside, again flooding new areas. It can be suggested then to embank the tributaries also and in that case the rainwater between the embankments of the main river and the tributary may get trapped. The only route for this water to escape is through evaporation or seeping into the ground. Or else, it may have to be pumped into either of the streams. Should any of the embankments breach, then the people residing between the two embankments will meet their watery grave. No embankment can be guaranteed against breaching, not even in the USA or China.

Seeking flood protection through embankments amounts to falling into a trap wherefrom it is very difficult to come out. A section of engineers, however, believe that if water is passed through a narrow area, for example, between embankments, its velocity increases and so does its capacity to erode the banks and dredge the bottom of the river thereby increasing the waterway of the river. More waterways would mean greater capacity of the river to discharge and hence the floods would be reduced. There is however, little evidence to substantiate this claim anywhere in the country.

Status of Floods and Embankments - The Government of India, after adopting the first Flood Control Policy in 1954, proceeded to construct 33928.642 kilometers length of embankments along its rivers, 38809.857 kilometers length of drainage channels dug to drain unwanted floodwaters and protect 2458 towns against floods and raise 4716villages above the maximum observed flood level. (Ministry of WR GOI, State wise Progress of Physical Works under Flood Management Programme till March 2006.)

Any area, which has at any time been subjected to flooding, is taken as flood prone area unless it has been effectively protected. The flood prone area of the country, as per the first Five Year Plan document, was only 25 m ha at the beginning of the plan period. It rose to 33.516 m ha. when Rashtriya Barh Ayog assessed its extent in 1980.(Ministry of WR, GOI website,'Achievements in Flood Control', details of flood protection works updated till 2004) Of late, the Working Group on Flood Control Programme set up by the Planning Commission for the 10th Five Year Plan has estimated the

flood prone areas as 45.64 Mha., out of which an area of 16.457 m. ha. was estimated to be protected by the end of March 2004. Central Water Commission suggests that the state has protected 18.222 million hectares of land against flooding till March 2006 (Ministry of WR, ibid, Table 5.17 Official Website of Central Water Commission, GoI. Table 5.12, Flood Damage / Heavy Rains In India.).)which leaves a balance of 27.418 m ha yet to be provided with any kind of flood protection, implying that the flood control measures adopted so far have not yielded any result. The area yet to be protected is more than what was the total flood prone area of the country in 1950s. Obviously, the investment in the flood control sector in the country is doing more harm than good and the flood spread area is on the rise. This is often discounted by saying that the losses appear to be rising because of the rise in the population, increase in the land and property prices as also to better techniques of assessment of losses and not to the real rise in the threat of floods over the country.

As of now, on an average, 7.63 million hectares of nation's land is flooded every year affecting 32.92 million people. Crop over 3.56 million hectares valued at Rs. 705.87 Crores are lost every year due to floods that destroy 12, 35,000 houses killing 94000 cattle and 1590 persons. Average, annual damages due to floods are estimated at Rs.1782.35 Crores.

It is worth noting that the nationwide flood of 1954 that led to the adoption of the first ever flood policy in the country had spread area of only 7.490 m ha which was exceeded 22 times in the 51 years between 1954 to 2004. This happened despite an investment of Rs. 8113.11 Crores till the end of Ninth Five Year Plan (2002). Plan outlays for the tenth and eleventh plan runs into thousands of crores. Despite this investment, the states like Gujarat, Maharashtra and Rajasthan are figuring regularly on the flood map of India for the past few years and the states like Andhra Pradesh and Tamil Nadu are not lagging behind.

The disaster managers very sincerely feel that it is none of their business to go into the causes of the disaster and whether it could be avoided with judicious use of technology or the people's wisdom. Their mandate is to help people in distress, come what may. This is perfectly justified approach on humanitarian ground. The choice, however, lies in first evaluating the work done so far in the name of flood control and correcting the wrongs done over the years in managing floods as a disaster and pumping in money in the name of relief and rehabilitation year after year, which is never sufficient in relation to the losses incurred. NGOs could have furthered the debate but they too have developed vested interest in disasters and use them as an 'opportunity' to help the victims.

It should be made very clear in the beginning that floods in north Bihar are a way of life and not a disaster just as droughts are in Rajasthan. Unfortunately the floods debate has been diverted into a disaster management program so that the often asked inconvenient questions regarding flood control policies and their implementation are never raised.

The first principle of disaster management is to prevent disasters. But the present practitioners of disaster management in Bihar rarely focus on this issue. Unless attempts are made to do away with the causes that have converted the much-awaited floods into a disaster, any prescription to tame the rivers or their floods is not going to work. This would mean that the embankments, or for that matter any structure that impedes the free flow of water should not be built in the first place and if built, it should not be allowed to breach. Traditionally, floodwaters were allowed to spread over a vast area so that the sediments too spread over it and rejuvenated the fertility of the soil. This also automatically leads to flood moderation. Preventing the flooding of the plains leads to various unmanageable complications stated earlier. It needs to be realized that the problem is how to route the silt and not how to route the water.

The 2007 flood in North Bihar broke many previous records. Continuous rains between 1st July to 2nd August in Bihar plains, Terai area of Nepal and the lower Himalayas brought life to a standstill for a very long time. It rained three to four times more than the average for weeks together and districts like Samastipur, West Champaran and Khagaria was virtually cut off from rest of the world for a considerable period. Elderly people of the area suggest that they had never seen so much of rain in their life nor had they experienced such a prolonged stagnation of rainwater. Surprisingly, with so much of rains and the accompanying losses due to floods, no major river of North Bihar touched the recorded highest

flood prone areas as 45.64 Mha., out of which an area of 16.457 m. ha. was estimated to be protected by the end of March 2004. Central Water Commission suggests that the state has protected 18.222 million hectares of land against flooding till March 2006 (Ministry of WR, ibid, Table 5.17 Official Website of Central Water Commission, GoI. Table 5.12, Flood Damage / Heavy Rains In India.).)which leaves a balance of 27.418 m ha yet to be provided with any kind of flood protection, implying that the flood control measures adopted so far have not yielded any result. The area yet to be protected is more than what was the total flood prone area of the country in 1950s. Obviously, the investment in the flood control sector in the country is doing more harm than good and the flood spread area is on the rise. This is often discounted by saying that the losses appear to be rising because of the rise in the population, increase in the land and property prices as also to better techniques of assessment of losses and not to the real rise in the threat of floods over the country.

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seismic assessment of existing buildings, and criteria for seismic retrofitting.

Government must undertake retrofitting of important facilities. We cannot on one hand insist that every child must go to school and then have them go to schools with unsafe buildings. The tragic scenes from Muzaffarabad, where about 400 children died in collapsed school buildings, could recur in many cities in India. A serious retrofitting policy of the public buildings is needed before we expect private buildings to be retrofitted.

A prioritization system is needed. Since not all facilities can be retrofitted at the same time, to maximize the safety with the amount spent, we must have a rational prioritization system considering seismic hazard at the site, vulnerability of the facility, consequences of damages, etc. This may in fact be a topic of research by itself.

In brief, a lot of preparation and background work is needed before a serious effort at retrofitting can be launched.

An important step to solving the "earthquake problem" is to recognize that it is really not the "earthquake problem" but the "unsafe building problem". Hence, the focus must shift from earthquakes per se, to the buildings industry. We need to discuss and debate how the building industry can be improved in terms of what it delivers. It is also important to recognize that earthquake safety is a rather challenging engineering problem requiring decades of focused work, and cannot be solved in the short term: it is not easy to change the way people have done a task for decades!

A quote from the 1939 publication of the Geological Survey of India on the 1934 Bihar – Nepal earthquake says Leprosy is not a common disease, but the medical profession has done its utmost to eradicate it for the sake of humanity. Great earthquakes are not a daily disease of any part of the earth's crust but it should be our duty to do all that we can to reduce its effects. Unless this matter is looked upon in a broad way, posterity may yet look back upon our short-sightedness with regret.

In the Quetta area an excellent building code has recently been drawn up, and reconstruction has been rigidly enforced in terms of that code. Such enforcement is, perhaps, easier in such a military area, but at least Quetta provides an example of the practicability of a building code and of its usefulness. It is, perhaps, not too much to hope that the rest of Northern India will some day follow Quetta's lead.

This quote is as much valid today as it was sixty five years ago! ❑

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