

Dams, Agriculture and Drought

Alarm bells rung all over India, including in Delhi's power circles earlier this June-July when numerous signs showed that Indian monsoon may be delayed & scanty, and large areas may face drought. The monsoon season rainfall all over India showed a deficit of 30% by July 4, 2011. By Aug 29, the deficit had reduced to 12%, but concern remained about large parts of India



Photo: Nytimes blog

facing some rather serious consequences of irregular rainfall.

This kind of deficits would be difficult to be wiped out by higher rainfall in the remaining one month of monsoon, particularly considering the looming threat of El Nino phenomenon and also the available predictions from IMD and others. So it is certain that parts of India would face drought this year.

Indeed, the Union Ministry of Agriculture, by July 10, had already set up Crisis Management Group to take care of the possible drought situation. In fact, according to the Drought Manual published by the Union Ministry of Agriculture, about 1.204 million sq km (out of total area of 3.29 m sq km) area of India falls under active drought mitigation areas. It's a bit of a mystery how this area went up from the figure of 1.07 m sq km as assessed in early 1970s by the then Irrigation Minister K L Rao. Why should the drought prone area go up after 65 years of water resources development in independent India? It's possibly matter of defining drought proneness, as various definitions are used by different programmes and commissions like the National Irrigation Commission and the National Agriculture Commission.

All definitions, though agree that areas with

rainfall above 1125 mm cannot be called drought prone. 68% of India has rainfall below 1125 mm, comprising of 35% that have rainfall 750 to 1125 mm, 21% having rainfall 400 to 750 mm and 12% having rainfall below 400 mm. Area having rainfall below 750 mm is considered chronically drought prone. Blocks having irrigation for more than 30% of the net cultivated lands are also excluded from drought prone consideration. Ministry of Agriculture estimates that about 16% of India or 0.526 m sq km area faces drought each year on an average.

The biggest sufferers this year, as always, are the rainfed farmers. Out of Net Cultivable Area (NCA) of around 141 Million Hectares (MH) in India about 81 MH is rainfed, according to Ministry of Agriculture, Govt of India. Out of around 60 MH of irrigated NCA, about 37-38 MH is irrigated by groundwater. Another about 5-9 MH is irrigated by what is known as minor surface water schemes, which are essentially rain water harvesting schemes. About 11% of NCA is irrigated by Major and Medium irrigation projects.

On paper, India indeed seems to have rather elaborate drought management institutions and government mechanisms. The Drought Manual brought out in 2009 by the Union Agriculture Ministry describes them at length. It recognises that efficient use of reservoirs and groundwater can help reduce the impact of drought. But there is no effective mechanism in place to ensure that reservoir operations and groundwater use are regulated in anticipation of drought. The latest institute to have been set up in this context is the National Rainfed Area Authority. It was set up by the Union Govt in 2006 with the express purpose of mitigating miseries of drought prone rainfed areas, evidence of its effectiveness is yet to be seen.

The Drought Manual also describes three types of drought, namely meteorological drought, agricultural drought and hydrological drought. Large parts of India has already suffered agricultural drought. Areas like Saurashtra and Kutch (82%

deficit by Aug 22), Punjab (61% deficit), Haryana, Chandigarh and Delhi (56% deficit), rest of Gujarat (47% deficit), Marathwada (41% deficit) and North Interior Karnataka (38% deficit) are mostly likely candidates for meteorological drought. Many of them will also face the third kind.

If irrigation is the chief weapon to reduce drought impact, it needs to be recognised where our irrigation is coming from and how can we sustain that source. Analysis of irrigation data from the Union Agriculture ministry shows that the net area irrigated by Major and Medium irrigation projects reached a peak of 17.79 m ha in 1991-92. In no year in two decades there after, has the area irrigated by M&M projects even crossed that figure. In fact the area has reduced by about 1.5 m ha in 2009-10, the latest year for which data is available. In this period, the government claims to have completed several hundred M&M projects, spent over two lakh crores, but it seems at best it has been a zero sum game. It's like adding irrigation in some new areas, while reducing in others.

In the same period, there has been significant increase in total net irrigated area from all sources. This has been possible due to increase in groundwater irrigation. About two thirds of irrigation today is happening from groundwater. But seeing the depleting levels and quality of groundwater, there is no doubt that our current use of groundwater is not sustainable.

If groundwater is our water lifeline, as it apparent is today, we need to work to sustain that lifeline. This is even more pertinent in the context of drought, when groundwater, if available, can help us out through the deficit period. But that option has been exhausted in large number of areas and is going to happen even more in future, considering the way our governments are neglecting the need to increase recharge, protect groundwater recharge systems and regulating use of groundwater for the interest of access to water and livelihoods for the millions in drought prone areas.



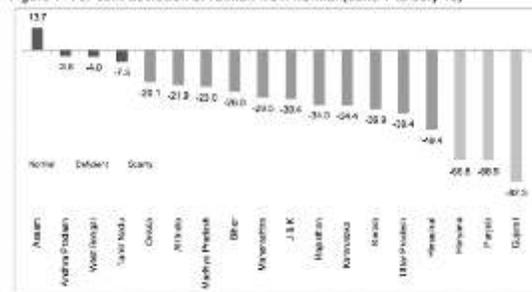
As per the latest assessment of ground water resources as on 2009, out of 5842 assessment units, 1494 units (around 26%) fall under semi-critical, critical or over-exploited category. As per the World Bank Report on "Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India" (2010), if current trends continue, within 20 years 60 percent of all aquifers in India will be in a critical condition. Incidentally, as per the United Nations World Water Development Report-4 published by United Nations Educational, Scientific and Cultural Organization in 2012, India is the topmost groundwater abstracting country in the world as of 2010 with abstraction rate of 251 km³/year.

With such dismal track record stretched over two decades, there is no wisdom in going for more M&M projects for irrigation. However, India already has over 5100 large dams and over 95% of them have been built for irrigation. These reservoirs, if operated prudently, can help significantly in reducing the impact of drought in some areas. However, due to the non transparent, unaccountable, unresponsive way that these projects are operated, that help is also not coming (see the piece on mismanagement of Bhakra dams in this issue of Dams, Rivers & People).

There are projects like the Sardar Sarovar on the Narmada River in Gujarat that was basically proposed and justified in the name of drought prone areas of Kutch, Saurashtra and North Gujarat. However, since most of the required canals have not yet been built in these areas, the water is going for water rich central Gujarat and also for cities and industries all over, for whom the project had no allocation. To symbolise the unjustified use, Sabarmati River flowing through Ahmedabad now flows all round the year, using Narmada water. In case of Vidarbha region in Maharashtra, the region suffers from the highest irrigation investment backlog, white elephants like the Gosikhurd Project and now massive diversion of irrigation water for thermal power plants and other industries is happening, without any participatory process with or consent from the people of Vidarbha.

The reservoir operations needs to sensitive to the weather forecasts, possibility of

Figure 1: Per cent deviation of rainfall from normal (June 1 to July 15)



Source: IMD, 2012

deficits or surpluses. The reservoir operations also need to be reworked to ensure downstream releases all round the year as such downstream river flows play a large number of livelihood supporting roles and also help groundwater recharge. Transparency and accountability in reservoir operations needs to be achieved through clearly defined, legally enforceable norms.

Diversion of water from irrigation to non irrigation uses is not happening in Vidarbha alone. It is happening all over Maharashtra and also other states. I have just mentioned the example of Sardar Sarovar above. Hirakud dam in Orissa is another example, where in fact the farmers have been agitating for years to counter such a move. In cases of Bisalpur dam in Rajasthan and Pawana dam in Maharashtra, in fact there were police firings on farmers when they protested such diversions. What all this means is that these reservoirs are not available for mitigating drought like situations for farmers.

Every farmer would benefit from facilities for better water management. And every farmer has equal right in share of the state resources for this. But the governments have no policy or strategy to use the annual bounty of rainfall for all farmers. There are clear issues of inequities and injustice there. But there are also serious issues of sustainable development here. For every investment that we make to increase outputs from rainfed areas through local water systems, the returns are likely to be more than what we may get from big irrigation projects even if they were to be taken up in best possible manner. This has been proved through hundreds of examples all over India. And the climate change imperatives also indicate that increasing the moisture holding capacity of the soils, increasing the local water systems and taking up water saving cropping methods

like the System of Rice Intensification are indeed the most climate friendly options.

It is high time we do course correction to bring focus of our water and agriculture policies onto Rainfed Farming. It is likely to yield better economic, hydrologic, sustainable, equitable and climate friendly results and foodgrains production as per our future demands. It can also help sustain our groundwater lifeline.

Are we learning any lessons from these experiences? It does not seem we are. For example the 12th plan working group report on M&M projects recommends unprecedented, highest ever investment of Rs 331 000 crores for these projects. The amount is about 75-80% of total water sector budget for the 5 year plan. Even the Prime Ministers' office is working like a big dam lobby these days, as does the Union Water Resources and Agriculture Ministries and Central Water Commission. The recent Supreme Court order asking the government to implement the unimplementable Interlinking of River was just yet another indication for this.

In this rather bleak scenario, we can also count our blessings.

Rainfall: India has "High Average annual rainfall of 1150 mm, no other country has such a high annual average" says the Manual for Drought Management (Nov 2009) Ministry of Agriculture, Govt of India.

Rivers India has one of the most bountiful variety and lengths of rivers. Over 45000 km of perennial rivers existed in India till 1980s.

Aquifers These provide the groundwater. India is the world's biggest groundwater user country, as noted above.

Local water systems and management systems India is also blessed with the Traditional water harvesting technologies and management systems, but these "have been largely abandoned" points out the Manual for Drought Management, as one of the reasons for recurring droughts in India.

How can we leverage these blessings for people's benefits?

Himanshu Thakkar

