

Kerala Flood- Opportunity for Sustainable Water Management

Sindhu Krishnadas T

Abstract

Water, an important natural resource, has not been a problem for Kerala; the state has traditionally had sufficient rainfall. However, increasing deforestation has resulted in decreasing precipitation; if this trend continues, water may cease to be abundant. The floods were not entirely a man-made disaster. Proper water management system is very important for Kerala to manage flood situations.

Keywords : *Flood, Water Management, Sustainable Development*

Introduction

The “Kerala model of development” has won wide international attention for its achievements with regard to social development and, to a certain extent, environmental sustainability. The “old” Kerala model, preoccupied with redistributive policies, failed however, to induce economic development. As a result, attention is now being given to a “new” Kerala model. The new policy explicitly seeks reconciliation of social, productive and environmental objectives at the local level, and tries to develop synergies between civil society, local governmental bodies and the state government. The new Kerala model thus holds important lessons for participatory, community - based sustainable development in India and elsewhere.

In Kerala, for years, the social development outpaced the rate of economic growth of the state. In fact, if we use the Human Development Index parameters, Kerala scores over other states in the country. It has a score of greater than 0.7 (in a scale of 0-1), which is comparable to some developed nations. In the early nineties, Kerala achieved nearly 100 per cent literacy, the first Indian state to do so. It has also been a ‘lab’ for coalition governments and perhaps for democracy itself in an unstated form.

But the state is now in troubled with incessant rains and flooding that destroyed homes and livelihoods, with more than 400 people losing their lives. But as the waters recede and the hope to rebuild the state rises, the quagmire of politics, policies and procedures threaten

to slow down the recovery process.

Environmental Hazards and Disaster Management

Environmental hazards such as earthquakes, floods, volcanic eruptions etc., are those extreme events caused by natural process of man’s activities which exceeds the tolerable magnitude within or beyond certain time limits and make adjustments difficult and thus result in loss of property and lives. WHO defined disaster as “any occurrence that causes damage, economic distraction, loss of human life, and deterioration in health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area”. Disaster can be natural or man-made phenomenon. Any distortion in the balanced equation between earth’s resources, stock and ecology arising out of climate changes, movement of the earth occurring inside and other natural process may lead to natural disaster like cyclone, floods, draughts, earthquakes, volcanoes, landslides, heat waves and cold waves etc. Hazards arising out of developmental activities are coined as technological disasters like emission of deadly industrial pollutants, soil erosion and nuclear disaster etc. India is one of the most disaster-prone countries with all sorts of hazards being visited in some parts of the country or the other every year. Over the last two decades, natural disasters have claimed over three million lives and adversely affected 800 million people worldwide with 90 percent of the victims being from developing countries.

Water, an important natural resource, has not been a problem for Kerala; the state has traditionally had sufficient rainfall. However, increasing deforestation has resulted in decreasing precipitation; if this trend continues, water may cease to be abundant. The floods

were not entirely a man-made disaster. Perhaps it was possible to slowly release the water from the dams, even before the monsoon had started, to create capacity for the fresh rain water, and thereby prevent a large gush in a short span of time. The problem stems from the late action of the authorities responsible for water management, only when they were forced to do so. Generally speaking, the administrative system in the country has weakened the management of technology in every sector - in power, water, agriculture, health or transportation.

Kerala Flood – Causes

The Indian state of Kerala receives some of India's highest rainfall during the monsoon season. However, during 2018 the state experienced its highest level of monsoon rainfall in decades. According to the India Meteorological Department (IMD), there was 2346.3 mm of rainfall, instead of the average 1649.55 mm. Kerala received over two and a half times more rainfall over the average for August. Between August 1 and 19, the state received 758.6 mm of rainfall, compared to the average of 287.6 mm, or 164% more. This was 42% more than during the entire monsoon season.

The unprecedented rainfall was caused by a spell of low pressure over the region. There was a perfect confluence of the southwest monsoon wind system and the two low-pressure systems that formed over the Bay of Bengal and Odisha. The low-pressure regions pull in the moist south-west monsoon winds, increasing their speed, as they then hit the Western Ghats, travel skywards, and form rain-bearing clouds. Further downpours, on already saturated land, led to more surface run-off causing landslides and widespread flooding. Kerala has 41 rivers flowing into the Arabian Sea, and 80 of its dams were opened after being overwhelmed. Water treatment plants were submerged and motors were damaged.

Effects

In some areas, flood water was between 3-4.5m deep. Floods in the southern Indian state of Kerala killed more than 410 people since June 2018 in what local officials referred to as the 'worst flooding in 100 years'. Many of those who died had been crushed under debris caused by landslides. More than 1 million people were left homeless in the 3,200 emergency relief camps set up in the area. Parts of Kerala's commercial capital, Cochin, were underwater, snarling up roads and leaving railways across the state impassable. The state's airport, which is used by domestic and overseas tourists, was closed causing major disruption. Local plantations were inundated by water, endangering the local rubber, tea, coffee and spice industries. Schools in all 14 districts of Kerala were closed and some districts

had banned tourists because of safety concerns.

Maintaining sanitation and preventing disease in relief camps housing more than 800,000 people was a significant challenge. Authorities also had to restore regular supplies of clean drinking water and electricity to the state's 33 million residents. Officials have estimated more than 83,000km of roads will need to be repaired and that the total recovery cost will be between \$2.2bn and \$2.7bn.

Flood Management

The first priority after flood is to provide food, first aid and portable shelter to people. Rehabilitation is the re-establishment of basic community services and the restoration of basic living conditions. Emotional counselling process should take place to enable survivors to resume normal life.

People face many water-borne diseases during floods. Water-borne diseases are those in which infectious agents remain alive in drinking water i.e., typhoid, paratyphoid and gastro-enteritis etc. Malaria, skin ulcers, scabies and amoebic dysentery are general diseases during floods. It is the duty of local health department to control diseases by providing free medical help to the suffering people. Early warning system plays a vital role in minimising any kind of disaster. There has been meteorological observation and appropriate citizen responses to these warnings have been very effective in reducing the impact of disaster. The unprecedented flood of August 2018 has put Kerala on the spot. Integrated water resources management will have to be a key pillar in managing the recurrent floods and droughts.

Sustainable Water Management Policy

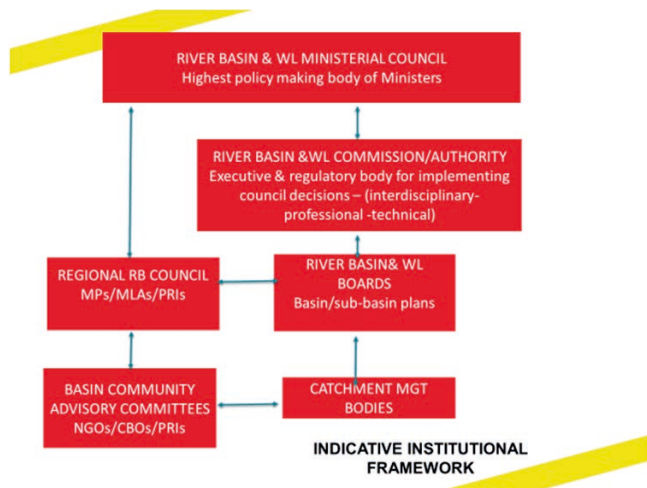
Most Indians cherish Kerala as 'God's own country' with high social indicators and mature decentralisation. But not many are aware of its degrading natural systems like river basins and ecosystems. Though the State is rain rich, it is water poor. The projections of both the International Water Management Institute (IWMI) and the World Resource Institute (WRI) predict bleak water prospects for Kerala. With an average annual rainfall of above 3000 mm, it faces severe drinking water problems in quantity as well as quality for most parts of the year. Apart from high precipitation, Kerala is rich in surface resources like rivers (44 in all) and canals, wells, tanks, ponds, etc. But, sub-surface topographic and geomorphic settings of the State allow the utilisation of only a small portion of the surface resources. The aquifers are not only limited by recharge capacities but also in quality, constraining the optimal development of available resources. Any plans for rebuilding Kerala will have to include integrated water resources management (IWRM) as a key pillar

for building climate resilience and managing recurrent floods and droughts.

Hitherto, the policy approach to water resources has been sectoral, infrastructure and supply driven, which has not been effective in addressing even the strident problem of drinking water scarcity. For instance, despite a cumulative investment of over Rs. 18000 crores by KWA (Kerala Water Authority) only less than 40 percent of the households have access to piped water and the remaining 60 percent depend on open well based **self-supply**. Both sources have quality issues. While faecal contamination is widespread in the case of open wells, effluent contamination is common in surface water sources (rivers and lakes). Most of its water resources are reduced to a cocktail of pollutants. Absence of river basin and groundwater management practices are the main reasons for this. Water is both an economic good and a common property resource. The State needs to make a U-turn, back to source sustainability, both in quantity and quality.

Institutional Imperatives

It is hard to find IWRM in practice across the world. Putting it into practice requires an evolving and contextualised approach supported by a high degree of political commitment. IWRM requires a well-thought-out institutional architecture that is decentralised, empowered, accountable and functional. Often IWRM implementation is marred by ‘top-down’ institutional approaches, whereas ‘bottom-up’ institutions would be more effective. Kerala has the advantage of effective ‘gram swaraj’ (successful decentralisation scheme in Kerala). Decentralised local government institutions need to take the lead with support from middle and top-level institutional arrangements. At the top-level, convergence of all water resources related institutions (departments) is critical. The State shall see the big picture, as most of our interventions have far reaching ‘unintended consequences’ that are at times counterproductive.



Indicative Institutional Framework

Kerala’s rivers are too small for creating feasible basin authorities for each river. It is suggested that all the 44 rivers may be grouped as sub-systems of a single Apex River Basin and Wetlands Authority with River Basin Boards and Catchment Management Agencies (CMAs) with key roles for basin communities and local governments. Creating institutions will never serve any purpose, unless the institutions are empowered and made accountable. The Authority, to be effective, shall be vested by overarching and cross cutting powers for basin planning and answerable only to the River Basin Apex Ministerial Council.

Financing Challenges

Financing challenges are quite high, given the magnitude of the problem at hand. More than financing, the political will to take a different course is critical. Once the State develops a scientific perspective plan for water resource management, it is a question of prioritisation and phasing, adopting a building block approach. Kerala is in a much better position in terms of devolution to local self-governments (LSGs). For instance, the Government of Kerala has a mandatory commitment of **Rs. 700 billion to LSGs in the next five-year period**. An additional Rs. 20 billion per year will be available under the NREGS (National Rural Employment Guarantee Scheme). These are substantial resources with a lot of flexibility in spending. While these funds would provide a strong basis for planning IWRM interventions, other financing options need to be explored. These include cost recovery, private-public partnership (PPP), sovereign bonds (river basin) etc. At the same time, as water is a human right, social aspects like equity and inclusion need to be addressed through cross subsidisation, telescopic tariffing, differential pricing and a host of innovative financing instruments coupled with social regulation. Public finance is not the only financing instrument for rebuilding. Appropriately, empowered citizens, households and private sector, as seen during the flood management, can crowdfund future Kerala, once the clear and visionary road map is laid out with abundant role clarity and accountability.

Conclusions

From a rebuilding point of view, the first lesson is to nurture a cadre of high calibre professionals and scientists in institutions to manage infrastructure facilities. These professionals should competitively progress to head these institutions rather than being subordinated by generalists from the public administration. With satellite imagery and other data available, we could simulate the impact of possible disasters at varying degrees of causative factors. Perhaps, the disaster risk analysis system developed

for Bosnia and Herzegovina could be a model that we can look at.

However, the problem on hand is not merely an environmental issue. Kerala needs a holistic and comprehensive economic development and spatial plan. A hurried discussion that aims for a “paradigm shift” is difficult in our kind of argumentative environment. Identifying a few cornerstone projects as part of a larger vision should be implemented in phases. Connecting them like dots against a time frame would eventually yield a better outcome.

By now, Kerala should have had the expertise to manage all its water bodies, for both mobility and economic development, akin to the Dutch system. Ironically, most parts of Kerala had inland waterways providing the backbone for trade and commerce. However, the generic national level infrastructure development models insidiously killed these regional characteristics. It has remained a surprise why the state, with its strategic location on an international sea route could not focus on entrepot trading to modernise its economy.

The government should take a step back and think about economic activities that it wants to foster and the kind of habitat and housing it wants to promote. Spatial planning and regulations must be introduced. A purely knowledge-based economy is the way to go and the state should try to become a world-class hub in education, healthcare, tourism, ICT and other knowledge-based businesses. However, none of the above would be possible without an overall enabling environment and comprehensive support systems. A multi-mode integrated (water-land-rail-air) mobility network could be a fundamental step for a modern state. The educational system must be upgraded and made world-class, both in academics and social infrastructure.

A ‘promotion and regulatory framework’ for a reliable, efficient and robust healthcare industry (public and private) to meet the global tertiary healthcare needs

is also vital. Vector control, clean drinking water programmes and efficient waste management should be top priorities. Finally, public-private-partnerships, along with innovative investment crowd funding, should be the ‘mantra’ for resource mobilisation. The unprecedented flood of 2018 could be a great opportunity to do things differently and build a better future for all in Kerala.

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