Building a Climate Resilient Kerala

Findings and Recommendations of the First Climate Resilient Kerala Consultations

Figure 1: Mr. Jayakumar C, Founder, Thanal, Mr. Sanjay Vashist, Director, CANSA, Mr. M. Sivakumar, IAS, Principal Secretary to Chief Minister, Govt. of Kerala, Dr. Ajay Kumar Verma, Retd, Scientist, National Centre for Earth Science Studies, Mr. Lars Bernd, Chief, UNICEF DRR at the inaugural session of the workshop

26-27 September 2016
Thiruvananthapuram, Kerala

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1. Climate Uncertainties and Impacts[1]:

i) **Sea level rise:** Climate change induced sea level rise will result in widespread salinity affecting the availability and quality of groundwater for drinking and agriculture purposes in Kerala. Sea level rise will also result in coastal erosion leading to loss of land and livelihoods, sinking coastal towns and cities.

ii) **Erratic monsoon:** Climate change has affected the monsoon patterns as evidenced by changing spatial and temporal data recorded in Kerala. Rainfall intensity is lower which provides inadequate recharge for ground water and rivers like before. It's also observed that increase in raindrop size has resulted in increased erosion and infrastructure (like roads) getting damaged faster. Wetlands are adversely affected in such changing patterns.

iii) **Extreme temperatures:** Maximum and minimum recorded temperatures have shifted from usual trends and has also decreased the agricultural productivity. Studies link every 1 degree rise in temperature to 6% reduction in paddy production.

iv) **Droughts:** Water scarcity will affect food security, 72% water in the state is used for agriculture, 40% of this is from ground water. Already this year Wayanad district has recorded decrease in rainfall, 76% people in Wayanad depend on agriculture.

v) **Hotspots:** Few of the rivers in Kerala could dry up entirely during summers in the next 15 years. The carrying capacity of Vembanad Lake has declined by 78%, due to increased sedimentation and shrinkage in depth and area, with predictions that the lake will disappear in next 50 years. Micro level changes in climate of high-altitude regions like Munnar has also been observed.

vi) **Vulnerabilities:** Women and children make up 70% of victims who are affected by any climate disaster. Children are especially vulnerable in many ways - for instance, crop failures result in lack of food, which affects nutrition intake of children (less milk and vegetables consumed). This in turn affects cognitive abilities, IQ, physical traits (stunted growth) etc. Increased incidence of vector-borne diseases primarily affects children. Loss of learning days also affects education on a long term especially in times of disasters like droughts. Diphtheria cases are back in the State and recorded in high numbers, although link to climate change is yet to be established[2].

Figure 2: Audience at the workshop

[1] Source: Presentation on 'Climate Change and Kerala – Impacts and projections', Dr. Ajayakumar Varma (Retired Scientist, National Centre for Earth Science Studies), 26 September 2016

[2] Source: Talk on 'CCA and DRR in terms of child-centric interventions', Mr. Job Zachariah (Chief, Field office for Tamil Nadu and Kerala, UNICEF), 26 September 2016

2. Identified Gaps in Climate Change/DRR Planning and the State Action Plan on Climate Change

i) **Knowledge gaps:** Up-to-date, localized and reliable data on climate trends and its impacts along with in-depth studies seems to be unavailable in most sectors (for example, river flow data used in a recent government led study was prepared by PWD in 1974). There is an identified need for channeling in prioritizing research needs, study design and planning, implementation and capacity building. Convergence among various independent agencies needs to be facilitated. Centralized repository of data, best practices, guidance notes, implementation tools is yet to be formed. Existing frameworks by and large neglect the inherent knowledge from women, children and traditional systems, and fail to include and exclude essential life skills and resilience building information to grassroots, especially during disasters. There is a clear need to 'engineer' better localized solutions and understand appropriate technology in the current climate context.

Figure 3: Mr. Mullakara Ratnakaran, Hon'able Member of Legislative Assembly, Kerala addressing the gathering

ii) **Governance Gap:** Role of Local Self Governments (LSG) remains understated in strategic climate resilient planning. Lack of readily available expertise and knowledge tools at LSG level brings down their decision-making capabilities, despite the crucial role they play during implementation of projects. LSGs remain largely uninformed of global climate negotiations and innovations, failing to catch up with the fast-changing trends in CCA and DRR. Limited legislative powers also make it difficult to empower LSGs as the stewards of their local ecology, often making it too late to prevent damage like contamination of water sources (rivers / ground water / ponds / oceans and lakes), illegal tree felling, quarrying etc.

iii) **Financial Gap:** Funding is being inadequately mobilized for climate action projects and instead gets underutilized in low-priority or low-impact areas. Climate funding also often seems to be channeled into projects unsuitable to local context (for example, centralized waste to energy projects and plastic incinerators have been allotted budget provisions in the current SAPCC[3] document). Improvement of supply chain management and recovery social sector in the state is needed.

iv) **Legal Gap:** Existing laws needs to be revised including updated data to realize the need and urgency for ecological conservation. For instance, the existing building regulations were formulated in 1999[4] and the recent ones are still derived from these outdated provisions. This code often ends up as an impediment to environment conservation. Similarly, judicial

[3] Kerala State Action Plan on Climate Change, June 2014
[4] Kerala Municipal Building Rules 1999

provisions regarding 'Unreserved Forests' were historically formulated to cater to the interest of the Princes of Kerala in a pre-industrial/capitalist setup. In current system, these laws now damage the valuable ecosystems that end up being used as any other revenue land in the State for construction, mining etc.[5]In the case of extremely eco-sensitive zones like the Western Ghats, it is not even identified as a single entity under law and unless a clear definition as well as legal status is given to it, its conservation will be challenging.

v) **Policy Gap**: Trivialization of climate mitigation efforts at various levels of government bodies gets reflected in the policy making process. Departments are fragmented in terms of holistic policy and planning procedures which causes serious drawbacks at implementation level. Also, on a larger perspective of a climate resilient planning framework, State efforts are found to be inadequate in terms of participatory and inclusive consultations as well as informed and in-depth analysis to back such documents.

3. General Recommendations

i) **Research, Awareness, Capacity building, and Training** - Investment should be made in addressing the knowledge gap and action-based research must be commissioned to feed back into policymaking. Knowledge gathering / knowledge transfer efforts needs to more organized and given more importance. Steps to build capacity and creating resource persons are crucial for ensuring informed decision making. Mediums like art, literature and culture, and behavior change campaigns needs to be explored to mainstream climate change discussions among the citizens of Kerala.

ii) **Decentralization and Local Action is Key in Design and Implementation of SAPCC**– There is a need for district, block level and LSG level empowerment, so that implementation can be done locally with increased citizen engagement. Key participants in the making of SAPCC must be the LSGs as they are more aware of the practical issues during implementation on ground. In all such stages of policy design and planning, the State must ensure including women and children, civil society , experts, the 'Malayali diaspora', local knowledge institutions and media. Instead of creating specialized departments for climate change, every department must be provided with a 'checklist' of project requisites in terms of CCA and DRR at its planning and implementation level.

iii) **'Glocal' Strategies for Climate Resilience -** All future development planning and activities must consider an integrated approach based on the Sustainable Development Goals, Sendai Framework of Disaster Risk Reduction and the principles of United Nations Framework for Climate Change, for ensuring a climate resilient Kerala. More importantly prioritize intervention areas and action plans with State's planning based on above guiding frameworks.

4. Sectoral Recommendations

i) Women and Child Centric Adaptation and DRR Planning:

[5] Source: Talk on 'Threats and opportunities for forest conservation' by Adv. Harish Vasudevan (Public Interest Litigator and Conservation Activist), 27 September 2016

Scenario

- Needs of children needs to be central for any adaptation and disaster risk reduction planning. Assessment and regular updating of disaggregated data on vulnerability of children is needed
- Education system needs to focus on overall health and preparedness of a person.
- Women and men utilize resources and differently. Women and children should be part of the solution.
- Policies and programmes like 'Harithasree' lease land for farming and helps Kudumbasree women to earn livelihoods. Build on such existing best practices in the State. Analysis for creating such models is needed and provisions for the same are missing from both SAPCC and DRR documents of the State.

Scope

- Adopt "0 D + 0 D" for school safety - Zero Disease + Zero Days lost in school. All schools should be resilient to adapt to disasters (climate linked or man-made hazards).
- Climate change should be included in curriculum including what will happen if unchecked for next 10-20 years, they should be made aware of what they are going to face**.** These should be incorporated in higher levels of education as well.
- Child perspective in collecting of data and research for planning. Example: A child may want to have a pond in an area to stay, whereas an adult would want to fill it for making playground.
- Women's perspective should be taken in making SAPCC. Their needs are also different. Climate change related disaster effects on a woman is far reaching. These often have economic benefits too. Like a local natural medicine could help cure a disease if used properly. Decision making on strategic action plans should include women. Gender sensitive, child friendly, just climate actions taken up on priority

ii) Disaster Risk Reduction:

Scenario

- Climate change adaptations (CCA) and disaster risk reduction (DRR) strategies to be closely integrated in planning
- Endorsed State Disaster Management Plan focused on vulnerability, monitoring and relief assistance
- List of places most vulnerable needs to be made. Disaster management department has already made this assessment. Prioritization can be done with this data.

Figure 4: Ms. Beena Vijayan, President of Meenagadi Grama Panchayat addressing the workshop

Scope

- Risk assessment- Intensive and extensive risk analysis need to be done. For example, small scale disasters affect only small households but these localized incidents are not accounted for properly in studies.
- No social protection system works here because these incidents go under the radar of news; media reporting is often inaccurate and exaggerated.
- How climate change risks affect differently abled people and elderly needs to be studied and included.
- Current Risk assessment standards are not up to standard; indicators (both socio-economic and ecological) should be carefully thought out and contextualized to ground realities.
- DRR and SAPCC should be more closely integrated.

iii) Climate Finance and Adaptation Funds and Local Self Governments:

Scenario

- In Kerala, because of effective decentralization, LSGs are already allocated good amount of funds for their projects. Ensuring effective implementation and sustained efforts for adaptation plans backpacked on existing programs may alleviate the need to find additional funding especially from global agencies.
- Enterprising initiatives and innovations at LSG levels, like the upcoming Carbon Neutral Meenangadi project, are the State's flagship programs in building climate resilience.

Scope

- NREGA funds can be effectively used for executing climate adaptation strategies in agriculture, waste management and livelihoods. Mobilize them for action projects at local level which will need refining and prioritizing.
- Government has national funding schemes for development activities. Part of such funds can be channeled for conservation activities as well. State Government should also prepare project Concept Notes (PCNs) in consultation with NABARD in this regard (to tap into National Adaptation Funds and similar schemes).
- There should be some mechanism, where institutions/businesses which use local resources heavily, can provide compensatory payment to the LSG for the resources it is using. Building a business model around the action plan helps create solutions that are sustainable, participatory and responsible, like Local Adaptation Funding models seen in Bhutan and Nepal.

iv) Food Security:

Scenario

- Recent increase in production of organic vegetables in Kerala has got implications for climate change adaptation – it means less transportation from neighboring states, less fossil fuel consumption, reduced

Figure 5: Dr. Thomas Isaac, Hon'able Finance Minister of Kerala addressing the participants of the workshop

carbon emission, decreased use of chemicals fertilizers.

- Kerala State's Organic farming policy, strategy and action plan as a visionary policy.
- Farmers, experts and government officials still function based on learning from the 'green revolution' era be it policies, techniques and technologies. Considerations for local varieties of many crops that perform better than hybrids and are more climate resilient are not recorded properly. Farmers still operate on false perceptions, like increased irrigation leads to better yield, which cause wastage of resources. Studies are not periodically conducted and hence reports don't come out to support or verify such information.

Scope

- Agroecology can play a major role in climate change adaptation. An agroecology policy is not the same as organic policy. Policy around Agroecology can ensure equitable gender, rights (including land holding for women) and livelihoods and also accommodates knowledge of women in agriculture.
- Benefits- due to the cultivation of multiple crops, and also supporting other species (for example: fish cultivation along with paddy) at the same time, there is increased profit and productivity.
- Localized food production and climate change can ensure that diversity in food is restored.
- Energy subsidy policy for Agroecology and efficient energy policy has direct impact on water use management.
- A change in policy associated with plantations, will enable converting existing plantations to mixed crop areas and gradually convert to forest area.
- Funding such projects will be lucrative because this will be a major step in climate protection of the State.

v) Forest Protection and Afforestation:

Scenario

- Failed participatory forest management programs, as seen in Idukki. Today there is a trust deficit and non-cooperation from indigenous people to government.

Laws and policies take much time to come into effect and by that time, the destruction will have occurred. Example, tourists are destroying the grass lands by driving over them. Forest department is building amenities and constructing access roads in grass lands. This is a new land use pattern. No laws are in place for stopping this because it is a recent trend.

Figure 6: Advocate Harish Vasudevan is highlighting the importance of conservation of Western Ghats

- Around 13.46% of forest land is

used for plantations in Kerala. The State lacks a formal land use policy.

Scope

- Indigenous communities and forest dwellers can be technologically equipped with cameras, and GPS instruments to aid in identifying illegal mining and quarrying activities, monitoring wildlife and tracking poaching, and data collection of forest resources. Budget provisions need to be adequately made to include this.
- There should be a mechanism to quickly intervene in new challenges posed to environment.
- Increasing forest coverage and conserving biodiversity of the state. This will minimize the impact of climate change. Because different species will have different resilient qualities that will collectively enable the ecosystem as a whole to adapt to change.
- Land acquisition for protection and conservation. Example: Mangroves (important in the context of Kerala' environment) has reduced from 700 sq km to below 20 sq km. They are under private land which has also lead to increased man animal conflicts in such areas due to habitat destruction.
- Nature-based solutions like promoting jackfruit trees and other local fruiting varieties in the forest borders for elephant conflicts need to be implemented. Research on similar methods should be commissioned for immediate implementation.

vi) Integrated Resource and Waste Management:

Scenario

- Decentralised waste management as implemented in some of the programs under the Suchitwa Mission (Green protocol for National Games) which has saved transport cost and reduces landfill emissions.
- Proper waste management will increase composting. This In turn promotes kitchen gardening and small scale farming for a single house. Chemical fertilizer use comes down.

Figure 7: Dr. K Vasuki, IAS, Executive Director, Suchitwa Mission is speaking on waste management in Thiruvananthapuram

Scope

- Material recovery facility- new materials need not be bought in, which in turn reduces load on natural resources and transport related pollution globally.
- Promote resource recovery activities through incentives. Ideas like thrift stores (as seen in Kannur) promote reuse of materials and products. Such practices reduces load on natural resources and transport related pollution globally.
- Government should incentivize repair and reuse practices by citizens.
- Put in place extended producer responsibility laws. Government should enforce a buy back policy for certain complex waste streams and hazardous substances. Example , Batteries, tube lights, certain kind of e-waste etc

- Government should incubate green business models to support green initiatives and enterprises.
- Steps for toxic free living have to be adopted. Because Kerala is a consumer society and toxins in various products are harming the micro ecosystem in many places. Grey water from homes is not treated at all. All of the toxins in products directly affect the ecosystem and ground water.

5. Further Intervention Areas Identified:

i) Water Security:

Scenario

- Rivers: Micro watershed based land and water conservation.
- Integrated water shed management program with local participation.
- Erosion of Coastal Region and accretion is partly because sand does not reach the ocean from rivers. Also, the nutrient flow from rivers to ocean is affected. This in turn affects to fish population and the fishermen community.

Scope

- Decentralized purification system (natural methods); ensure protection of drinking water sources locally by preserving local water bodies.
- Healthy flowing rivers are crucial for survival. Ensure periodic maintenance/cleanups of such systems.
- Identify dams which have to be decommissioned. Make a long term plan and build capacity in those areas which are depending on these dams for various purposes.
- Geo-texturing using coir can be used for handling soil erosion and for protecting embankments of slow rivers, lakes and ponds which is a sustainable working model.

ii) Climate Friendly Transportation:

Scenario

- There are already around 10 million vehicles in the State and 1 million new vehicles get added every year at the rate of which more roads and widening will be demanded for traffic.

Figure 8: Delegates at the exhibition

Scope

- Interventions in transportation sector for reducing climate change needs to be explored. Running Buses on a BRT (Bus Rapid Transit) basis to increase resource utilization in transport sector.
- Technology innovations for increasing efficiency and utilization of transport are required.
- Practices like carpooling etc. should be adopted for increasing efficiency.

iii) Climate Friendly Construction:

Scenario

- Red bricks are still widely used and demand for unsustainable products like APC (Aluminum Polymer Composites panels are prevalent in current rampant constructions.

Scope

- All buildings designs should be eco friendly**,** or at least, all government buildings should be constructed this way. Building code can be modified with guidelines**.** Examples of Government initiative in this regard are the Kisan Bhavan at Anayara, Trivandrum and at Chadayamangalam Soil Research Center**.**
- When constructing new buildings, it should be mandatory to utilize a portion of the land for environment protection and even farming. Government should support this with incentives or tax cuts to buildings. Environment Impact Assessment must become mandatory for all commercial projects in State.

Consultation Partners

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