2018 KERALA FLOODS

Report on Governance & Legal Compliance

Authors & Investigators

Professor Amita Singh
Dr. Sunita Reddy
Dr. Manika Kamthan
Ms. Gaurika Chugh

(Research collaboration)

OCTOBER 26, 2018

SPECIAL CENTRE FOR DISASTER RESEARCH
JAWAHARLAL NEHRU UNIVERSITY
ARUNA ASAF ALI MARGGATE, NEW DELHI 110067

2018 KERALA FLOODS

Report on Governance & Legal Compliance

Authors & Investigators

Professor Amita Singh
Dr. Sunita Reddy
Dr. Manika Kamthan
Ms. Gaurika Chugh

(Research collaboration)

OCTOBER 26, 2018

SPECIAL CENTRE FOR DISASTER RESEARCH
JAWAHARLAL NEHRU UNIVERSITY
ARUNA ASAF ALI MARG GATE, NEW DELHI 110067

UPE 2 PROJECT FACULTY RESEARCH TEAM

Prof. Amita Singh (Law & Governance)
Dr. Sunita Reddy (Anthropologist)
Prof. Mondira Dutta (Human Geographer)
Prof. Bupinder Zutshi (Regional Development)
Prof. GVC Naidu (Oceans Communities)

KERALA STUDY TEAM

Prof. Amita Singh
Prof. Sunita Reddy
Dr. Manika Kamthan
Dr. Shishir Yadav
Mr. Devinder Jindolia
Ms. Gaurika Chugh
Mr. Narinder Kumar

REPORT AUTHORS

PART 1: LAW & GOVERNANCE REPORT

Prof. Amita Singh
Dr. Sunita Reddy
Dr. Manika Kamthan
Ms. Gaurika Chugh

PART 2: PRE-FLOODS-COMMUNITY VULNERABILITY REPORT

Prof. Amita Singh
Dr. Sunita Reddy
Dr. Manika Kamthan

Dedication

To Jawaharlal Nehru University for giving us the vision, work environment and institutional insight to do critical thinking which can nourish the roots of nation building for sustainability and inclusive governance.

REPORT

"2018 Kerala Floods: Governance & Legal Compliance"

Executive Summary:

The unprecedented floods which occurred in Kerala during August 2018 wiped out its wealth, ecological treasures and community serenity in a once 'Incredible God's Own Country'. The Special Centre for Disaster Research research team had already been working on the environmental devastation and community resilience in Kerala since 2016 and with manifold indicators coming before the group, such a calamity was not a surprise. However,what was surprising was the lack of preparedness, the intransigence of administrative authorities towards basic legal responsibilities, failure of political leadership and the neglect of local self-governments which is the mainstay of the state which lives, breathes and survives in a lap of nature. Despite having a literacy rate above 95% in almost all Talukas and towns, the government did not make them partners in their on-line or off-line alerts, warnings and post-disaster rescue efforts. Most of them were found working on their own social capital from the neighbourhood. This task for relatively tougher for Kerala which has more than 13% population above 65, single women in the higher age groups, highest palliative care and old age units. The warnings were coming loud and clear since the publication of Madhav Gadgil Report that Kerala is surrounded by severe impending disasters at least in 124 villages on the Western Ghat ranges and floods on the lower coastal inhabitations. The SCDR research team had also witnessed some shocking outcomes of the unbridled expansion of tourism, migration from neighbouring states and yet government's impunity to laws governing the coasts (CRZ Laws), hills and rivers (Fragile Land Area Laws) and above all the major legal framework that binds every other sectorial law to the life and safety of human and nonhuman lives of Kerala ie; The Disaster Management Act 2005, subsequently implemented by the Kerala State Disaster Management Authority under the Chief Minister and the Minister of Electricity and Disaster Management.

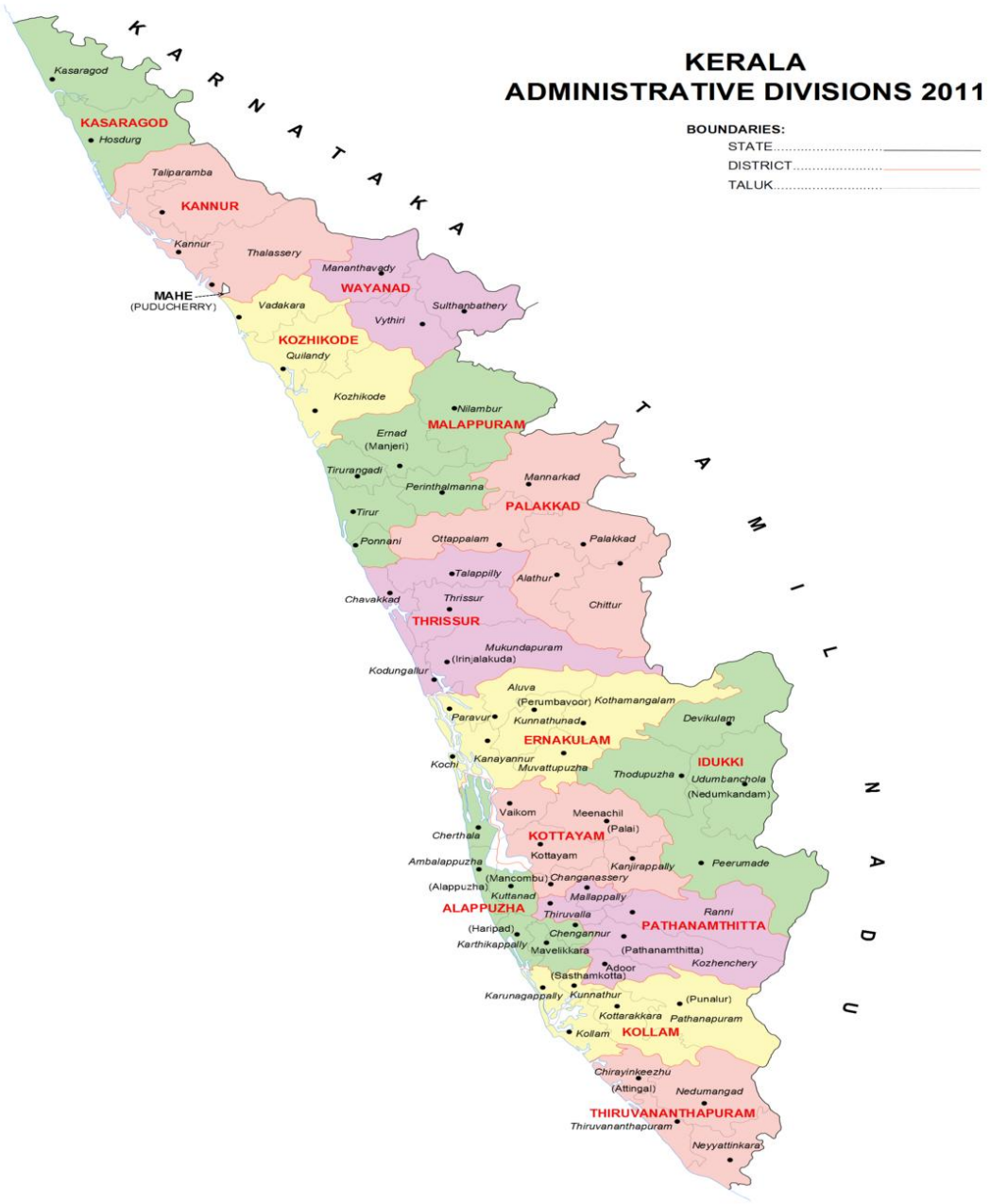
The research team in 2016 was introduced by local villagers to how their life was changing to a major disaster. From Eloor to Munnar and Kochi to Thiruvananthpuram the rising density of population, pollution, untreated effluent discharge in rivers and backwaters, rising cancer, coastal and mangrove sell-off to developers was causing havoc. These people from the villages were brilliantly participatory, spoke scientifically unlike other regions of the country, knew about the failure of governance and the emptiness of the economic model of Kerala's development. A quote from a paper produced out of the September 2016 survey of Kerala's resilience to environmental calamity.

'.....this paper highlights that any wavering on implementing the CRZ law will make areas close to water bodies vulnerable to disasters amounting to huge socio-economic destruction and loss of lives. (Singh 2016,p.70)

With such a socio-environmental scenario and no strong economy to bring resilience to disaster affected communities, the August 2018 floods in Kerala were not a surprise. Ironically and sadly, subsequent state government's responses to many questions related to preparedness, management of dams, information dissemination to Municipal and Panchayat authorities, early warning systems, role and responsibilities of state disaster management authorities and finally state government's immediate relief measures etc. has only reiterated that Kerala was not being governed in compliance to existing laws and the ethical frame which brought respect to human and nonhuman habitations.

The *Western Ghats Ecology Expert Panel Report (WGEEP)* was the first ground breaking study of the ecologically Fragile and sensitive regions of Kerala and consequently warnings were issued against the land use pattern. Kerala has one of the most vibrant, well informed, entrepreneurial and participative 1200 strong local self-governments. The state has 941 Village Panchayats, 152 Block Panchayats, 14 District Panchayats, while the urban areas have 87 Municipalities and 6 Corporations. The participative and highly sensitive people of Kerala's 77 Taluks and 1674 villages strong grassroot inhabitations have already done tremendous work in resource mapping, solid waste disposal, preparation of watershed, maintaining biodiversity registers, preparing master plans and also energy planning. This layer of governance is one of the strongest as one could witness in many public hearings on mega projects on their land such as that leading to their movement against the greed and corrupt EIAs (Environment Impact Assessment). The last public hearing studied was the one on the *Athirappilly Project* in District Thissur. Yet, in the recent floods, the state government and the State Disaster Management Authority goes on record to have ignored and disrespected the existence of its most vibrantly participative grassroot layer of governance before releasing water from the dams. This is one of the most scariest and ferocious attack on human rights of those downstream but more than that also strips to pieces the principle of 'public trust' which enables one to govern legitimately. The question arises, "Why did they do this?"

The present study is brought together after a two year long work in the region starting 2016 . A travel through the fragile zones of the Western Ghats was undertaken in September 2016. The National Highway 66 was made the midrib of the study starting from Kallambalam at the east of Varkala near Thiruvananthapuram , passing through Kollam, Alappuzha,Cherthala, Kochi, Valanchery, Kottakkal, Kozhikode, Thalassery, Udipi, Bhatkal, Margao and finally to Panjim.



Source: Kerala Government website

In 2016, the objective to study Western Ghats was to look into the reality of observations, directions and contestations being made in a number of court cases. Many of these cases were found important and urgent enough to be treated by the National Green Tribunal in Suo moto cases. The coastal degeneration, erosion, loss of livelihood due to ecosystem destruction of mangroves and coastal flora and fauna was the concern. The coasts' sell off to developers and privatization of fragile regions of mountains, mangroves and wild life was driving the state into an abyss of annihilation.

In the first round of survey starting 2016, the research team surveyed 7 of the 14 districts in the central and southern Kerala. The team looked into the findings reached in various judgements of the Kerala High Court and the National Green Tribunal. The districts in north Kerala (Wayanad, Malappuram, Kannur, Kasaragod, Palakkad, Kozhikode) were not covered due to a cautious discounting against many more issues related to developmental

imperatives and growth rates which could have impacted the focus of the study[1].With the sudden unprecedented floods devastating Kerala this year, most previous findings which highlighted Kerala's heightened vulnerability to disasters stand vindicated. It has been a consistently long duration of mis-governance in the state which also visibly impacted upon the management of mega collaborative projects, respect for institutions and life. The Kerala State Disaster Management Authority (KSDMA) has been seen to be non-serious, evasive, opaque and intransigent to communications, alerts and dissemination. Much data collected henceforth for the official policies is from local governments (talukas, municipalities, Panchayats and peoples' organizations in relief operations)

The defiance warning from the Kerala High Court had started coming since the Vembanad Backwater (*Ratheesh and Others v State of Kerala and Others* 2011) adjoining Vettila Thuruthu and connected lagoons and filtration ponds in which the Kerala High Court referred to the area as the critical vulnerable coastal area (CVCA). Earlier in the Goshree Project (*Jacob Vadakkancherry and, etc v The State of Kerala and Ors* 1998) peoples' voices for conservation are laudable. This generated increased attention of courts to- wards land utilisation restrictions for larger public good. The National Fishworkers Forum (NFF) can rightfully be described as the progenitors of this conservation milestone under the well-coordinated platform of Kerala Swathanthra Matsya Thozhilali Federation. Their slogan all through the fishing harbour route from Mangaluru to Thiruvananthapuram has been "protect sea, coast, inland waterbodies and fish resources."

Justice Ramakrishna Pillai's demolition orders on DLF encroachments over Chilavannoor road, Ernakulam Backwaters highlight the administrative quagmire as well as their lethargy. The CZMA, the town planning standing committee made the city corporation issue permits but even where these permits, approvals and occupancy certificates were not given, a basic requirement to obtain electricity connection, all buildings (even the seven and 20-storied apartments) were found lit with electricity and working elevators.

Justice Radhakrishna Pillai in *Antony A V v Corporation of Cochin* (2012), in the High Court of Kerala. Judgment of 8 December 2014, "Indiscriminate invasion of nature to the detri- ment of others is an invasion of right to life. Nature which is the property of the nation can- not be allowed to be scrambled by a minority violating all laws" (para 27).

The failure of governance converted a regular, seasonal and a slightly above-normal seasonal rainfall to a devastating, inexcusable and unpardonable disaster claiming many innocent lives of humans and nonhumans and wounding them for many years to come.

The present study found that the disaster governance was expected follow at least a basic parameter of responsibility as given below;

1. ***State Government and the KSDMA were not prepared on basics of disaster management:***

The government could have been better prepared and communicated regularly with district magistrates, forest officials and Panchayats. This coordination was needed to handle above normal rainfall in terms of issuing alerts, early warning, training Panchayats and local leadership. Should have done basic vulnerable community mapping with the help of schools, hospitals and old age homes. Elevated corridors for evacuation of trapped people and

[1] The districts in northern Kerala (Wayanad, Kannur, Malappuram, Kozhikode, Kasaragod, Palakkad) are relatively lower in their development index, per capita income and growth rates as compared to the districts in southern Kerala (Ernakulam, Thiruvananthpuram, Thrissur, Alappuzha,Idukki,Kottayam). Kollam having picked up since 2014, ranks 2nd now.(*State Planning Board, Economic Review 2016, Department of Economics and Statistics, available at spb.kerala.gov.in and kerenvis.nic.in*)

'machans' for wild life was possible and with the grants available this could have been done. Food Storage spaces, make shift dispensaries in collaboration with Panchayats and people in vulnerable zones should have been partnered with to keep stocks of medicines, drinking water, foodstuff(rice, grains etc). Life support systems and water rescue skills of the vast fisherfolk could have been tapped in advance as they were the key rescuers during the deluge.

2. ***State Government and KSDMA were lax on Preparatory Technology drills required:***

Not a single drill was conducted in vulnerable habitations. The CAG Reports on dysfunctional Early Warning systems and the government's Tsunami Emergency Assistance Programme with Very High Frequency Radio based communication system should have been repaired, revisited and tested especially around the dams.The villages downstream and around waterbodies were issued no warnings. The KSDMA was more active on issuing orange, yellow and red alerts on Facebook posts which could neither be deciphered or approached by people as most of them were not on facebook especially the elderly and the women.The wedge between the city privileged and the rural countryside was deep and disturbing.

3. ***Dam Management exhibits concern for profits from stored reservoir water rather than safety of life downstream:***

Release of water from Idukki, Chrethoni and downstream dams should have been done from August 2nd onwards. The dams were allowed to reach their maximum capacity and then

Methodology

As this work focuses on governance and legal compliance of state institutions, the team has visited many government institutions and relevant offices but primarily it is KSDMA and the Minister for Electricity and Disaster Management as the source of decisional investigations.

The other indicators in investigations are;

- Panchayat capacity to govern and disseminate information
- Damages and losses in the context of bad governance
- Treatment of human and nonhuman lives during disasters
- Technology governance & Early Warning systems
- Funds and distribution in relief and rehabilitation
- Compliance to DMA 2005

Methods employed to collect data:

- **Locational visits and focused group discussions with communities**
- **Interviews with decision makers from Panchayats to KSDMA and administrators in water, electricity generation and dam safety .**
- **Secondary sources ie; official reports, CAG Reports and departmental reports or other related documents.**

Areas Surveyed:

The research team visited and surveyed the four worst affected districts i.e.; Alappuzha, Idukki, Kottayam and Pathanamthitta. These four districts covered 20 Talukas. The team interacted closely with 11 Talukas which were

the worst affected in terms of damages and losses both in property, nonhuman and human life. The team divided into three thematic groups and tried to reach out to villages where no government assistance had reached even till the 11th of September, the day when the survey was concluded. The diagram given below explains details of the areas visited and surveyed:

Areas Visited during floods:

Ernakulum: Investigated only Kochi Airport and the impact of its flooding on business and state exchequer. What would the bounce back mean for the airport services, livelihood and business.

Kottayam: With a population of 19L , area 2208 sq.kms., density 896 per Sqkms.

Palai: Situated at the river Minnuetala along the Kozhapalli Road. Palai city has a population of 22,000 people and area is 16 Km Sq. Population density is on a higher side 1373 per sq.kms. The sea level is 31m/102 ft[2]. The city was flooded and was completely submerged in water on the market side. One could find all city garbage hanging from the trees, roof tops and elevated walls where is was left behind as water receded. One could look for innovative ways to clear such a garbage accumulated with all its embedded threats. The rock bunding on both sides of the river had further clogged water channels and prevented the free flow of the river water in monsoons.

Passed through private farms which were more than 100 acres orso.Some were so rich that they were tarring their own roads through the hill forest areas ie The Mr. Kinetikara farm which led to building Parithodu Road. To name a few other mega farms, Boyce Plantations (Peervada road), Murinzhpuzhon Tea plantations, Valenzamkanam, Malankara Church Coffee Estate and Kutti Kunam (Dog Happy) farms. Many well planned school found in the area such as the Mariagiri School further to Peermada Panchayat. Some richer farms across the tea garden areas were noticed in the Perindubara Panchayat which is a wholly tea garden area. A.V.Thomas Group of companies, Harrison Farms, Churakulum Tea Estate till the NH 183 towards Vendiperiyar.

In **Idukki, Kumilly Panchayat Sarpanch** , no government assistance, helped by Tamil superstar Vijay who sent 14 lorries of food, medicines, clothes to these people. **Kottapama municipalities** revealed the same story of the absence of government in relief efforts.

In **Kodaippara,** the whole village was lost in landslide and floods, they did not have electricity and 45 families were untraceable and declared lost

[2] Sea level height in Delhi 216m, Rameshwaram 10 m., Kolkata Diamond Harbour 8m. and Chennai 6.7m

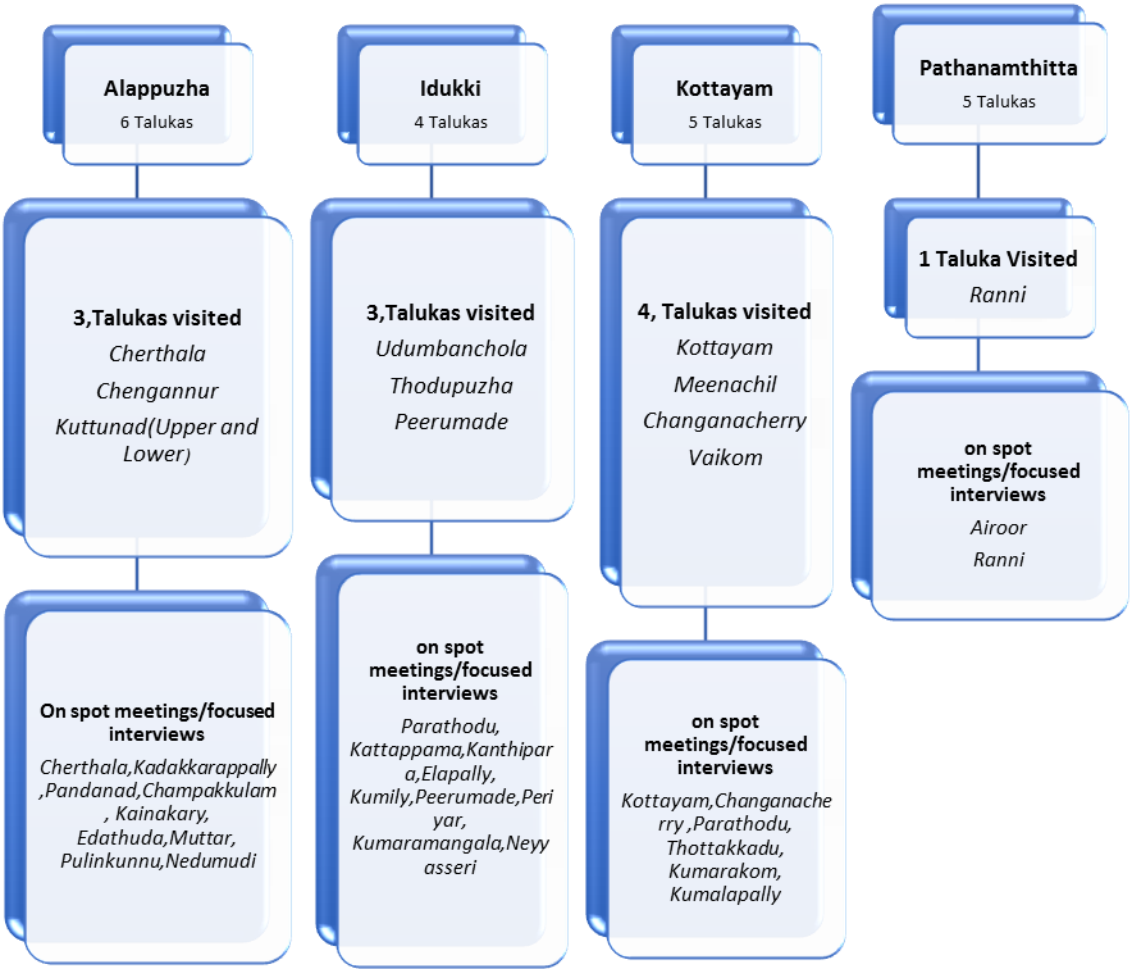


Fig: Districts and Talukas visited and surveyed

Timeline : Two years with four visits in groups of 5 taking rounds in different time of the year.

Criteria for the Selection of the four Talukas and villages:

1. **High damages and losses with a staggering impact on resilience of communities ;**

On 31st August the Chief Minister of Kerala declared that the economic losses may cross USD 3.73 billion[3]. The present study investigated to find that most people who lost their boats, houses and assets were paying EMI to their bank loans and were in need of an urgent attention for revival. Most of these flood affected people estimated to be around 14 lacs were sheltered in 4000 relief camps. The team visited relief camps in Idukki and Alappuzha to authenticate the damages and losses as emerging in government, media and in surveys of private evaluation companies.

On preliminary surveys made in the last week of August 2018 which were published in several newspapers, data sites and speeches of the Chief Minister, a fairly legitimate assessment of damages and losses emerged. These were authenticated by field surveys and household visits in the affected regions and villages.

[3] Saberin, Zeenat., (2018) 'Kerala Officials estimate post-floods rebuilding will cost $ 3.7 billion', 31st Aug. News Asia AlJazeera.com

The floods have only added to an already constrained Kerala's economy. There has been a very high revenue deficit and a very high debt burden amounting to an exorbitant Rs.2.11 Lac Crores in 2017-18 which is around 31% og the Gross State Domestic Product(GSDP).The state has been spending around 80% of its revenues leaving little scope for capital generation and further sustainability of growth and development in the state. Remittances constitute 35% of the state's net domestic product or twice the state revenues[4]. The remittances which have decreased (from $12.6 bn in 2014 - 15 to $10.7 bn in 2016 - 17 6) are likely to increase in the three affected districts of Pathanamthitta, Kottayam and Idukki but will drastically fall in Alappuzha since the number of emigrant Keralites sending remittances in this district have already sharply fallen by 29.3%[5] . Kerala has a low industrial base(26% of state's Gross Value Added) and with loss of labour and assets this may not translate into higher manufacturing. This would also not increase the demand for consumer goods despite a frantic rebuilding and reconstruction related household activity.

The Care Survey Ratings 2018 does not foresee any substantial increase in remittances to support the state reserves for post disaster recovery.

On the employment and livelihood side, Care Survey Ratings have observed a loss of 4000 crores for the month of August 2018 (based on the average wage rate of Rs. 400/ - per day for Kerala as per the data from the annual report for 2017 - 18 of the Ministry of Labour)[6]. Similarly the normalization of life in these four districts through rebuilding and reconstruction of the houses and commercial and welfare infrastructure destroyed is likely to have a sizeable economic and financial costs attached to it. This would get coupled with the loss of Rs. 4,500 crores in road network, Rs.750 crores in power sector and Rs.900 crores in water sector[7]. The shutting down of the CIAL(Cochin International Airport Limited) is estimated to incur a loss of Rs.22-27 crores plus a loss of business revenue of related services puts an additional Rs.8-12 crores to flood losses.

In the end putting the ASSOCHAM estimates the damages worth Rs.20,000 crores and its staggering effect on tourism, hospitality industry and international trade may add another Rs.15000-20,000 crores to losses[8].

2: Changing Land use Pattern of Ecologically Fragile Areas:

All these four districts have been showing a sharp decline of natural areas which is consistently increasing their vulnerability to disasters;

a) Land areas put to non-agriculture use between 2012 to 2017 has drastically increased in Alappuzha, Kottayam, Idukki and Pathanamthitta,
b) Barren and unculturable land which signifies mountains, deserts and areas for water re-chargeshed etc has gradually depleted ie; Alappuzha (23 to 8) , Kottayam (1370 to 1083), Idukki (1807 to 1440) and Pathanamthitta (180 to 169),
c) Permanent pastures have disappeared or gradually disappearing and this is considered as one of the key reasons for increasing man-animal conflict in cities leading to killing of dogs (as in Kochi) since they lost their open spaces and were forced to cluster in small areas bringing their greater visibility. In Alappuzha they have completely disappeared in the last five years,Kottayam and Pathanamthitta had already lost them way back in the beginning of the century. In Idukki the loss has been too severe from 91 to zero in five years.

[4] Economic Review 2016 and Inward Remittances Survey 2016-17.
[5] Kerala Migration Survey, Centre for Development Study, 2014, State Planning Board, Government of Kerala
[6] Source: CARE Ratings estimation based on 2011 census and an annual average growth of 1.2%
[7] TNN (2018) 'Kerala may have suffered loss of around Rs.3,500 Crores', timesofindia.indiatimes.com, 25th August,8:25 IST
[8] Shenoy,Jaideep (2018) 'Kerala floods may have caused damage of Rs.20,000 crores', TNN, timesofindia.indiatimes.com, Aug.19.and Chauhan.Chetan.,(2018) 'Kerala Floods recovery to take years…', Aug.21,11:54 IST.

d) Area under trees and crops has almost halved in all four districts but in Idukki and Pathanamthitta the loss has been too severe from 2242 in 2004-05 to 159 and for Pathamthitta from 104 hac to 97 hac.

The case of Ranni in Pathanamthitta which suffered severe devastation is one of the most ecologically fragile area. It has an average elevation of 131m or 433ft above sea level but the river Pamba which flows through it. A 2/3rd of area is dense forest with a very rich wild life. However, Devarmala is the highest peak at 1,923m in the Western Ghats and the Pamba river basin. It is located in the watershed region of Pamba-Achenkovil rivers. The rivers flow with speed and quantum volume and this makes Pathanamthitta one of the most fragile areas during floods. The damages and losses in this region appeared the highest and in the absence of any plan the recovery may be painful.

3: Population:

The uncontrollable increase of migrant population has led to rising population density, speeding urbanization and also increasing old age population especially single old women or men with children settling abroad. The Ministry of Statistics, Government of Kerala has published a report in 2016 on the elderly in the state putting their population to 12.6% which is the highest in the country. The state currently has more than 565 old-age homes, 224 receive government grant but their mapping/data on inhabitants was neither available nor dispensed at the KSDMA which has no policy for this huge elderly population in need of support during floods. Alappuzha, Kottayam, Idukki has some of the largest number of old age and retirement homes.

Literacy is high above 90%[9] in all the four states which makes their local government and village population highly participatory, communicative, responsible and alert. Almost every village and town in these districts has a retirement home or more appropriately old age home. These districts have mostly shown a negative population growth notwithstanding a marginal increase in the density (Ernakulam shows highest density) but not a threat which can jeopardize flood relief and disaster mitigation measures. *Such a population is a resource for any state to govern more responsibly, and it came as a surprise when every Sarpanch and Zila Pramukh lamented that 'were they informed , damages could have been much less'.*

See table below;

	Area (sq km)	**Density**		**Urbanization**	**Sex ratio**	**Literacy**
		2001	2011			
Kerala	38864	819	860	47.72	1084	94.00
Alappuzha	1415.00	1492	1504	53.96	1100	95.72
Idukki	4356.00	259	255	4.69	1006	91.99
Kottayam	2206.00	885	895	28.63	1039	97.21
Pathanamthitta	2652.00	468	452	10.99	1132	96.55
Wayanad	2130.00	366	384	3.86	1035	89.03

Table: Source Kerala District Website data

[9] Alappuzha 94%,Idukki 91.99%,Kottayam 97.21%, Patahanamthitta 96.55%

This human resource of the four districts improves socio-economic rankings on per capita income and GDP growth rankings of each district Of the 14 states, Alappuzha (rank 3) Idukki(rank 6),Kottayam(rank 5) except for Pathanamthitta which was earlier 3 but fell to 12 between 2012-2013[10].

Manmade Vulnerabilities: *Human Greed & Administrative Apathy*

- ***Pushing Dam Construction in Fragile Eco-Zones:***

When Madhav Gadgil Report was dumped by a mafia mobilization in Kerala[11], a simple truth was left behind unattended. Would the government be able to protect people in Kerala becoming threateningly vulnerable to impending disasters as the report warned about?

The 2016 decision of the Chief Minister of Kerala for implementing the Athirappilly Hydro Electric Project in complete defiance of the sentiments and requirements of local tribal communities, pristine environment, primordial endangered biodiversity as well as blatant disregard for the Hon'ble Supreme court and High court directives, suggests that the government has no such intention.

Athirapally project is highly contested since 1982 when the Kerala State Electricity Board pushed this ill conceived project ' a recipe for disaster'[12] for a mere 120MW installed capacity, which was a drop in the electricity demand of Kerala. P.B. Sahasranaman, a public interest environmental attorney in Kerala, filed suit on behalf of local communities and environmentalists challenging the ill-advised project. On October 17, 2001, the High Court of Kerala sided with the local community and suspended the project, saying: "this court has a duty to ensure that the requirements of the Environmental Protection Act … are strictly complied with, in the interest of the environment and in that process a public hearing cannot be dispensed with." The public hearings on the project exposed serious distortions, mis-representations and inflated promises which the Court was looking into. Yet the Chief Minister rushes to stamp the implementation of this project.[13]

Protected 'Riverine areas', wildlife sanctuaries, conservation zones and the span of hill surface constitute altogether one of the richest forest area of the state. Kerala has 44 rivers (41 west flowing from a more than 2000 m source over the high mountains and hills of the Western Ghats to sea level in a very short journey of less than 150 to 200 kms. The four affected districts given below demonstrate the wide river basins and the area under their drainage. Most of these rivers are rainfed but that has not prevented the construction of huge dams over them as well as on their rivulets. Four rivers ie; Periyar, Bharatapuzha, Pamba, Chaliyar and Chalakudy meander through the hills before they go into the backwaters of the Arabian Sea. There are 42 large dams on these rivers which provide huge reservoirs for electricity generation and irrigation. Nearly all of Kerala's electricity is hydro-electric yet ironically the string of dams stampeding such diverse forest region supplies only 30 percent of the electricity demand of Kerala. The Chairman of the Chalakudy River Protection Forum Shri K.K.Shelly who has been part of the Athirapally dam comments, " Construction of dam at huge costs to produce very little electricity is a waste" (Shilu Chali Shri of Forest Protection Samithi endorses the sentiments)

[10] State Planning Board, Economic Survey 2016, Department of Economics and Statistics, spb.kerala.gov.in
[11] Radhakrishnan,M.G., (2013)'Kerala priests and politicians unite to oppose Gadgil Report on Western Ghats', *India Today*,Oct.16, updated Oct.17,2013,08:16 IST. Accessed Sept. 2018.
[12] Jairam Ramesh
[13] https://www.thehindu.com/news/cities/Kochi/Kadar-tribespeople-seek-legal-recourse/article14377657.ece

Alappuzha Rivers:

Pamba, Achenkoil, Manimala, Meenachil and Muvattupuzha rivers discharge into Vembanad lake. Pathiramanal Island, which is popularly known as the mysterious sand of midnight with lots of coconut palms and luxuriant vegetation and also Kayamkulam Lake is situated in the centre of this Vembanad Lake. Perumbalam and Pallippuram are the other two islands that are situated in this lake. Overall the low lying rim is more vulnerable every monsoon and this year despite two months gone since the monsoon drowned the area, the water has not receded as it should have been.

Idukki Rivers:

With 75% of the geographical area under some of the richest forests, and main Periyar, Pamba, Achenkoil are the main rivers which have several tributaries over which dams have been constructed. Idukki alone has more than 19 dams, each named after the river over which they are constructed. Idukki dam is a double curvature parabolic arch dam(main dam)which at 168.91m(554.2ft) is the highest arch dam in the whole of Asia and has 780 MW of installed capacity for power generation.

Pathanamthitta:

With 50% geographical area under forest and more than 70% area drained by the three biggest rivers of Kerala ie;Pamba,Achankovil,Manimala and a small Kallada river. Pathanamthitta is rich both in biodiversity as well as more than nine human constructed dams mostly in and around Ranni the devastated region during the recent floods.

Kottayam:

A place of rich backwaters drained by Azhuthayar, Kodoor, Manimala, Meenachil and Pannagam rivers

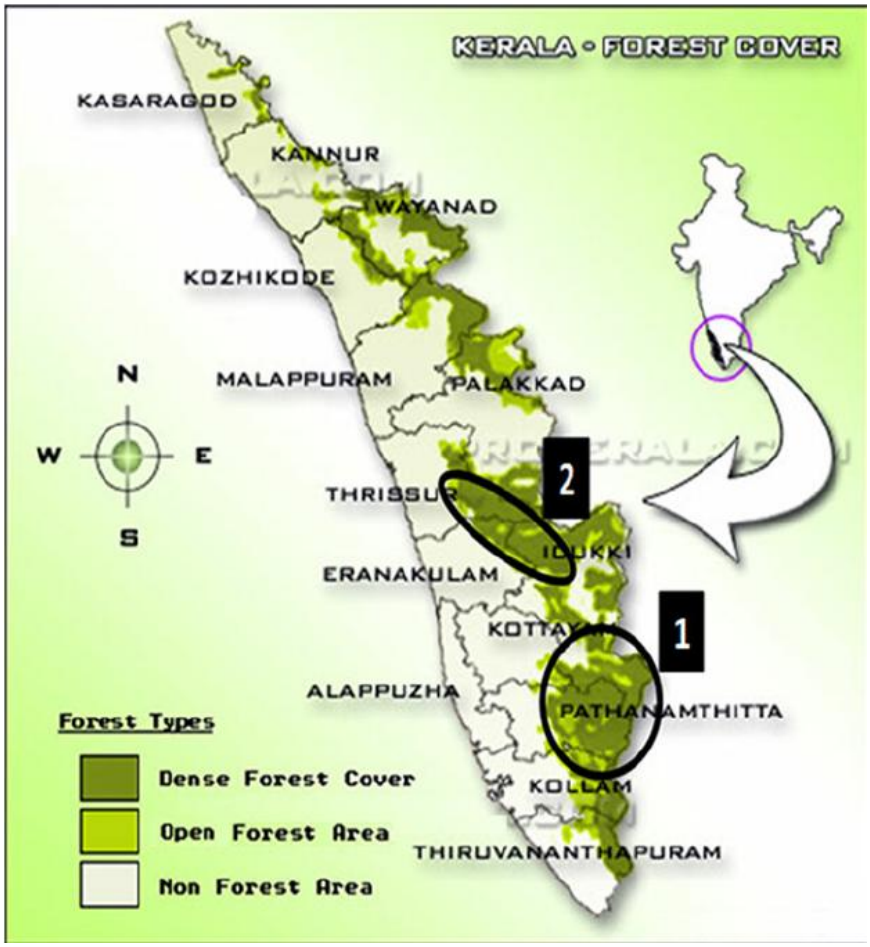


Fig: Dense forest areas are also the most ecologically fragile and vulnerable to disasters.
(Source:researchgate.net)

- **Mangroves Destroyed and Privatized:**

Kerala provides a strange model for mangrove cultivation and conservation. Mangrove areas are privatized, uprooted and coastal rim scraped off for tourism, sport and private mansions. The state has a very wide network of rivers, estuaries and backwaters which has tidal action leading to intense erosion. Mangroves have been vitally important for Kerala's ecology but the state politics and the nature of governance is so driven by local interest groups that this pristine and primordial forest resource has now been reduced from just 25 sq km at present, down from 700 sq km in 1957. Neither the CZMA nor the KSDMA has taken any cognizance of innumerable studies[14] made on Kerala mangroves following Tsunami in 2004 nor did they prevent their destruction by formulating an ecologically responsible conservation policy. In an earlier report of the Kerala Forest Resource Institute, the warning has been loud and clear;

"It is strange that the mangrove afforestation initiative does not make a successful leap in Kerala! The estuaries of the 41 rivers together with the backwaters provide a sizable area (Mohanan, 2004) congenial for mangrove afforestation".(2009,p.36.Report KFRI)

[14] Muraleedharan,PK.,Swarupanandan,K., Anitha V.,(Investigators) (2009) The Conservation of Mangroves in Kerala: Economic and Ecological Linkages, Final Report of the Project ICFRI/487/05 April2005-March 2008.Thrissur: Kerala Forest Research Institute, August.

The FAO in its 1994 Report had indicated a multidisciplinary approach involving state governments, universities, research institutions and local organizations. It highlighted the need to conserve and manage mangroves sustainably (FAO, 1994). Alas, the state destroyed even the remaining patch of 25 sqkm mangroves which was left of the 700 sqkm in 1957. Some of the mangrove patches that still survive are distributed across many coastal districts and are mostly privatized.

"In Kerala, the coastal and estuarine lands that are potentially mangrove sites belong to different categories of public as well as private ownership. Sample studies have shown that 80-90 per cent of the potential lands belong to private ownership (Nayak *et al*., 2000)**,** including that of communities and corporates. Therefore it is quite unlikely that the government has any intention to invest in private holdings, to conserve mangroves. Also, mangrove afforestation to be meaningful, should be acquired at the ecosystem level, and therefore, the land requirement should be quite large and riverine. Despite many reports suggesting a constitution of a statutory body – a *Mangrove Authority* – responsible for streamlining the programme and managing the fund the task is unfulfilled.

Vulnerability Mapping and Preparedness:

In 2004 , 26th December ,11am, when Tsunami hit the coast of Kerala most people had moved away as the news had already travelled to them. Notwithstanding the timely escape 132 people died in Kollam district, 39 in Alappuzha and most of the coastal inhabitations were lost. There was worse which followed the Tsunami in reconstruction, rebuilding, politics of aid and rejection of the coastal poor by the banks for loans and other support services.The state government which was crumbling economically suddenly found its coffers full. The CPM returned on the plea that they could have managed better but nothing changed. When Ockhi struck on 29th November to 6th December, the experience was no different despite its sweeping across the same coast.(see map below)

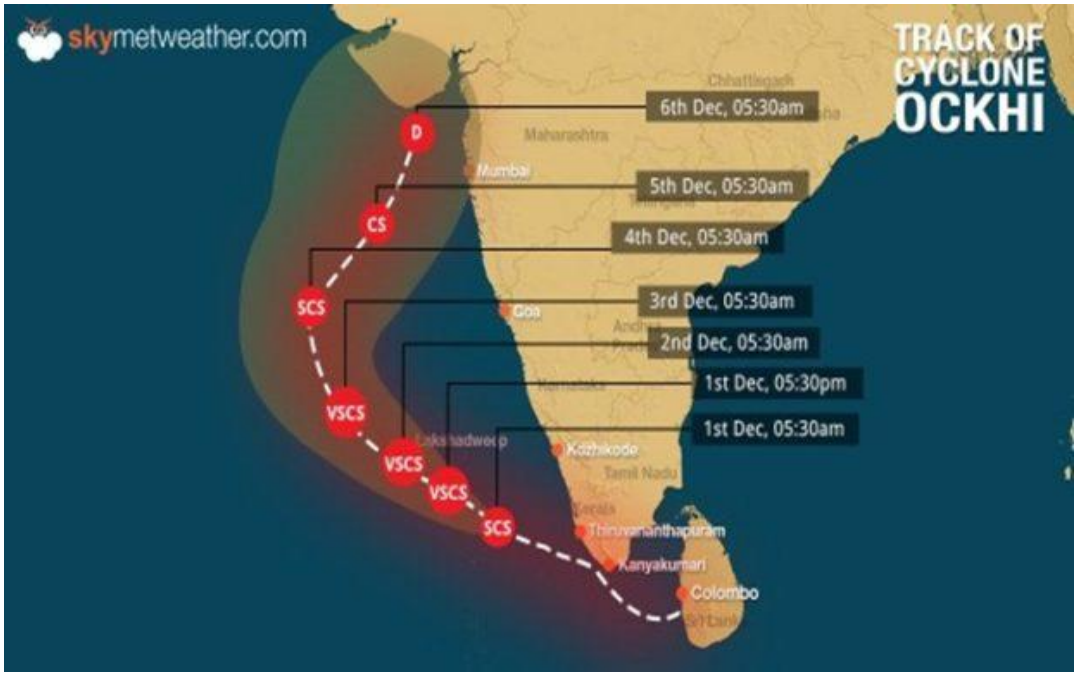


Fig: Showing the Cyclone Ockhi (29th Nov. to 6th Dec.2017) the most devastating tropical cyclone that passed through Kerala. Demonstrates that disasters are not unprecedented in Kerala's ecological system.(Source: Skymetweather.com)

In 2007 the KSDMA was constituted as mandated in the Disaster Management Act 2005. According to Section 23(1) of the Central Disaster Management Plan, every state was mandated to have their own state disaster management plans. KSDMA came up with their one and only plan profile in 2013. The plan was to be updated every year but with zonation maps, landslides assessments and other estimated impact studies on risks made in 2010, the plan is outdated. In 2016 the first Disaster Management Plan is approved by the chief minister but it is yet to be uploaded on the KSDMA website for public viewing. The KSDMA interestingly has a public visibility for its facebook account but the government official website sdma.kerala.gov.in has no information.

So, vulnerability mapping is outdated and the concept of preparedness is expanded to mean everything but village visits and training of vulnerable communities.(as found on the facebook information).There was much for KSDMA to do but the concept of preparedness, technological deciphering and participatory dissemination were all missing.

The most common excuse to the August devastation was that it was unprecedented. The research team found that disasters are not uncommon in Kerala and so the argument that the deluge was unprecedented for matching appropriate preparedness does not stand. Since the Tsunami flooding and cyclones have not been uncommon. The data from the Ministry of Home Affairs highlights that amongst the four southern states, Kerala has the second highest disaster related deaths and also the highest population density of 859 persons per sqkm. Cyclone Ockhi struck the coast in December, the issue of vulnerability was already surfacing in terms of protection to both human and nonhuman lives and their habitats. KSDMA met with severe criticism for lack of preparedness, issuing warnings and in not alerting fishermen from going into the sea.

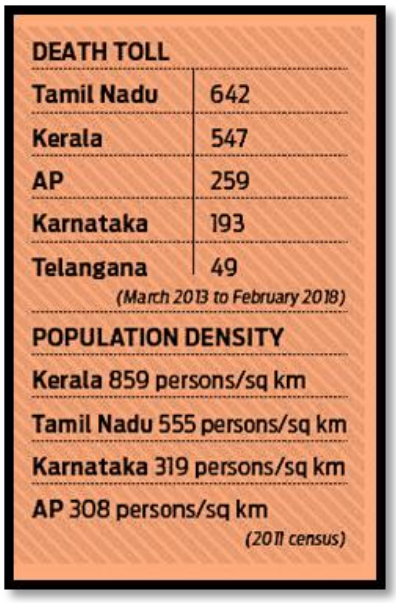


Fig: Based on MHA data 2017.

In Kerala, riverine flooding is a recurring event consequent to heavy or continuous rainfall. This causes water course to overflow its banks onto flood plains. Due to low lying ground the reclamation and settlement in floodplain areas becomes a disaster. In the current floods this situation paired with the sudden release of dam water to create a sizable havoc. In both the situations whether its scientific planning to deal with regular floods or the dam deluge, the administrative oversight of the damage cannot be ignored as simple 'negligence' or due to an 'absence of risk projections'.

The KSDMA had a less visible hazard vulnerability risk assessment cell till December 2014[15] after which it was converted to the State emergency operations centre. Even though SEOC is the only available authority for coordinating management imperatives of a disaster yet it suffers from two basic problems, first; it is not able to decipher warnings issued by IMD and translate them to disaster warnings. Second; its focus is emergencies even though KSDMA's major mandate in Hyogo and Sendai frameworks is 'preparedness' rather than rescue and relief operations.

Kerala had received ample funds for disaster management as given below but the pattern of utilization has remained opaque;

- National Cyclone Risk Mitigation Project Rs. 158.95 crore
- Early Warning Rs.15 crores
- Cyclone Shelters Rs.136 crores
- Implementation Assistance Rs.7.95 crores

(Source: MHA 2015, Annual Report Chapter 10, pp.192-201)

Instead of utilizing its home scientific expertise, KSDMA in May 2018 enters into an agreement with The Weather Company, an IBM Business to prepare data sets for use in Decision Support System (DSS) to enable predictions of major hazards and early warning. However, there is nothing on the ground in terms of preparations against disasters or early warning.

Dam Management :

Kerala is home to 53 large dams with a collective capacity of nearly 7 trillion litres. As most dams are concentrated in ecologically fragile Western Ghats ranges, it is important that its reservoir capacity and outflow is balanced to manage safety of people and all life around at the downstream.

Nothing unprecedented:

"Alappuzha has a flat unbroken sea coast of 82 Km length which is 13.9 % of the total coastal line of the state. An interesting phenomenon of this seacoast during the month of June is the periodic shifting of mud bank popularly known as "Chakara" within a range of 25 Km in Alappuzha-Purakkad coast due to hydrolic pressure when the level of backwater rises during south-west monsoon."

The Periyar and Pamba rivers alone with their many tributaries caused much of the havoc.The Idukki and Idamalayar dams (the two biggest) together have stored 21.3% of the Periyar's annual flow, which was misinterpreted as a total immunity from floods. However, power generation and irrigation imperatives cum greed prevented an early release of water from the dams . Electricity generation companies and the KSEB managing the dams, could not afford less water and the Minister supported them in holding water in reservoirs till it was full and had to be thrown open suddenly to prevent damage to the dam. Some dams were already at their peak capacity. The Idukki arch dam which is the biggest in the state required the water to be released when the Panchayats wanted it to happen by the 2nd of August. IMD had been issuing frantic three hourly warnings for an above normal rainfall and experts shared that the dam gates could have been opened anytime after the level

[15] The KSDMA Secretary refused to meet and answer these questions despite visit to the Secretariat many times by different members of the team. There is no information available even on websites. The study is based upon what could be available as transparent primary information.

reaches 2370ft. The Minister , however, waited till the level reached 2403ft on 15th August , without even fulfilling the basic flow requirements of overflowing Idamalayar and Bhoothathakettu dams downstream. And then all five gates were opened altogether.

The water was released at a time when the fields were already flooded .**Mullaperiyar has inter-state governance issues which were not attended to appropriately transcending maturely the narrow political concerns but other dams were within the control of state government and could have attended to timely.**

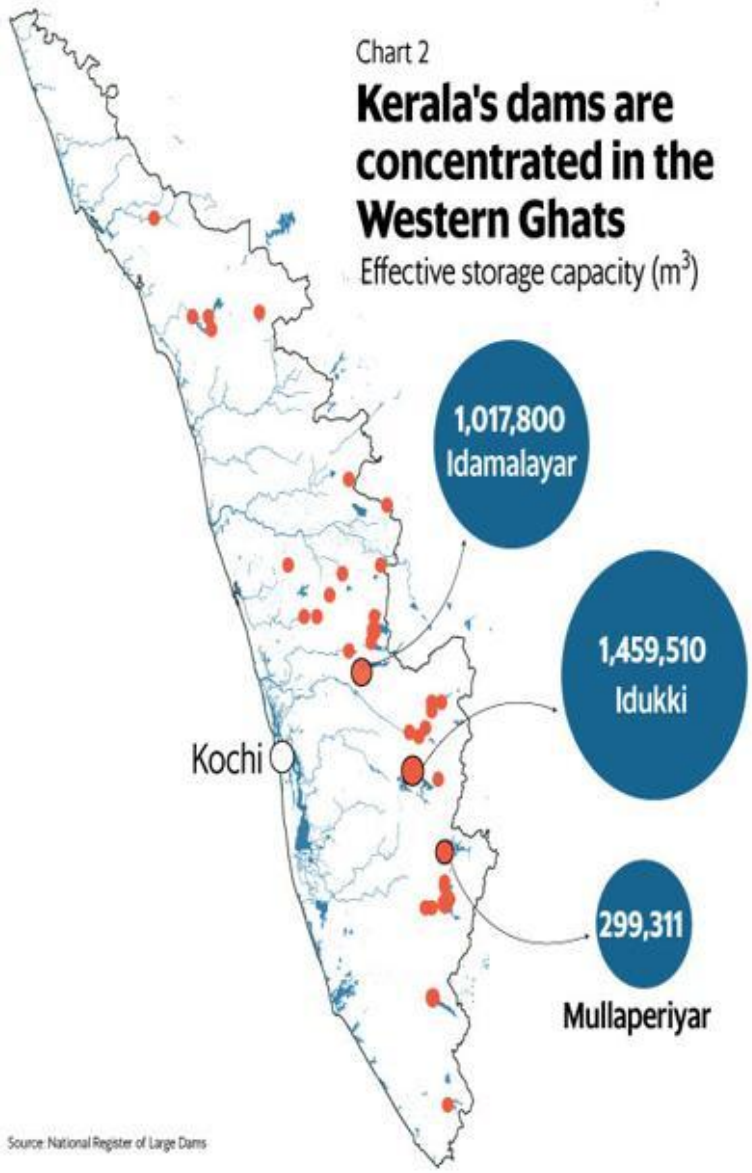
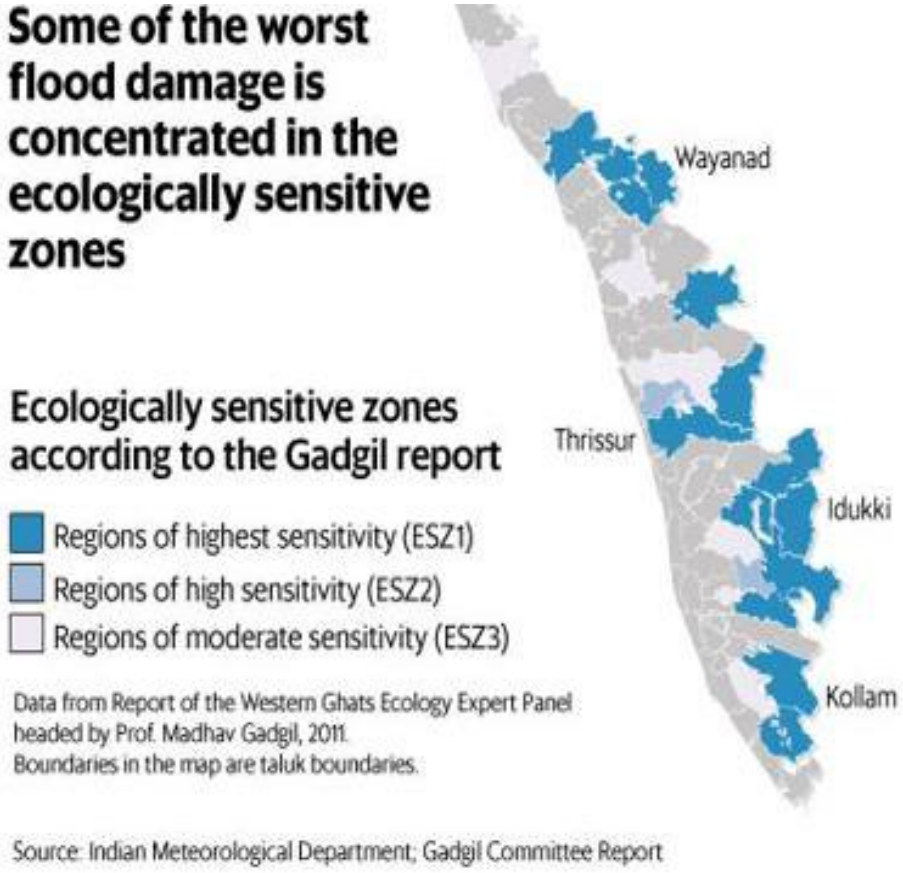


Fig: National Register of Large dams, showing concentration of all dams over the Western Ghats.

The Gadgil report was sceptical about dams, warning against their construction in the Western Ghats. But most of Gadgil's recommendations were rejected as too impractical, highlighting the tension between dams and development. The Ecologist Prof. Madhav Gadgil, in an interview to Bloomberg Quint says,"*You have this huge criminal economic enterprise. Its flourishing in Kerala and that has led to landslides especially in Idukki"*



Map: Source: ***IMD, Gadgil Committee's demarcation of 'no construction' zones***

The Reality of the Electricity Generation Argument:

The team spoke to the KSEB Chief Engineer Shri Bibin Joseph at Thiruvananthpuram on 11th September. He was clear and sharp to point out that the amount of lost ecosystems, forests and environment does not justify the construction of such large dams. He further said that Kerala loses enormous life support system for a miniscule of electricity which is hardly 30% of the demand. He also indicated serious safety concerns as dams were old and as their capacities reduce , the state has to increase its purchase of power from private companies.The interview indicated that Kerala dams were a zero sum game for which the state government has overlooked the safety, sustainability and long term welfare of its people.

Legal Compliance and the Disaster Management Act 2005:

On 23rd December 2005, when *The Disaster Management Act* was enacted by the Parliament through the Ministry of Law and Justice, most central and state officials believed it to be like any other act, which it was not! This was the most extraordinary act which not only demanded a transformation of administrative systems and the structures of administration in the country but also introduced, very silently, as even the legislators were unaware that they were unleashing an unprecedented administrative ethics, a form of deontology or the concept of moral duty within which the administrator may have to take a call beyond duty, beyond administrative training and beyond anthropogenicity. The rational-legal system of Weber's bureaucratic system governed by pragmatic ethics would be laid to rest as new innovative and transdisciplinary systems would emerge in policy sciences and law.

This settles for ever the need for morally correct administrators to be able to head disaster management if management is the concern of the government. Over the years, much destruction has been tolerated and accepted as an 'Act of God' notwithstanding its deeply disturbing socio-psychological, economic and environmental consequences. The judiciary and the media keep reminding of unaccountable disaster governance in vulnerable regions, the undependability and negligence of the state machinery and deep apathy, sloppiness and lack of integrity of administrators in disaster management. The devastating and unprecedented Kerala floods is just one reflection of irresponsible and unethical governance.

The fishermen who were the frontrunners to relief in the Kuttunad district had repeatedly been warning the state government for the depleting fish catch due to an unrestrained industrial, oil and sewage pollution in rivers and water bodies. This combined with large scale dredging and reclamation activities which was devastating livelihood of fisherfolks and generating environmental threats led the National Fisher folk Forum (NFF) in 1989 to demand pollution free coasts under the banner "protect water and protect life". Recently the Kerala Swathanthra Matsya Thozhilali Federation led to a strongly coordinated movement for conservation led human safety. Their slogan all through the fishing harbour route from Mangaluru to Thiruvananthapuram has been "protect sea, coast, inland waterbodies and fish resources."

The 2016 EPW paper from this study had clearly spelt out the utter failure of governance to the extent of complete impunity towards people living in vulnerable zones especially those around coasts and other water bodies. The Kerala State Biodiversity Board had already warned in 2016 about the Kerala Mangroves being reduced to a patch of just 25sq Kms from a 700 sq.Kms in 1957 and that too spread to segregated zones, private tourist resorts and estuaries around 44 rivers which drastically reduces its ecosystem value. With mangroves gone, the state could hardly boast of being protected from floods or any other coastal calamity and it was just a matter of time that the inhabitation around these areas was to be scraped off with a disaster. Yet, the state government continued to sell its coasts again with much heightened impunity and disrespect for the law.

At times, courts have diverted the onus of decision-making to the Coastal Zone Management Act (CZMA) (*P A Fazal Gafoor v State of Kerala Special Leave to Appeal (Civil)* 2003) the case concerning Vembanad Backwater (*Ratheesh and Others v State of Kerala and Others* 2011) adjoining Vettila Thuruthu and con- nected lagoons and filtration ponds in which the Kerala High Court referred to the area as the critical vulnerable coastal area (CVCA).

A quote from the 2016 study exposes the governance deficits, "Justice Ramakrishna Pillai's demolition orders on DLF encroachments over Chilavannoor road, Ernakulam Backwaters highlight the administrative quagmire as well as their lethargy. The builders found ample negotiating space to obtain all clear- ances for construction in the CRZ. The town planning standing committee made the city corporation issue permits but even where these permits, approvals and occupancy certificates were not given, a basic requirement to obtain electricity connection, all buildings (even the seven and 20-storied apartments) were found lit with electricity and working elevators."[16] Kerala government had been privatizing nature and frazile zones. As one passes through Kottayam to further Idukki zone, it is shocking to see the most fragile hills under private occupation of huge rubber and tea estates to larger than 1000 acre farm. It was more surprising to find out their control over basic public services in a state which boasted of 'Marxist-left-classless governance focusing on just distribution'. It was a fully capitalist economy of the old Southern America at least in this region of Kerala which also erupted as most calamitous.

[16] Justice Radhakrishna Pillai in *Antony A V v Corporation of Cochin* (2012), in the High Court of Kerala. Judgment of 8 December 2014, "Indiscriminate invasion of nature to the detriment of others is an invasion of right to life. Nature which is the property of the nation cannot be allowed to be scrambled by a minority violating all laws" (para 27).

"The governance of CRZ has been disfigured due to the presence of multiple administrative authorities and each being "not responsible" or waiting for some other department to take a stand on an issue. There are many decision-makers on CRZ such as the MoEFCC, Kerala Coastal Zone Management Authority (KCZMA), State-Level Environment Impact Assessment Authority (SEIAA), State Expert Appraisal Committee (SEAC), Port Trust (PT), Kerala Fisheries Department (KFD) and the muni- cipal corporation. On 3 November 2011, in exercise of the powers conferred by subsection (3) of Section 3 of the Environment (Protection) Act 1986 (29 of 1986) and in pursuance of the Government of India in the Ministry of Environment and Forests,[12] the central government constituted SEIAA and SEAC in Kerala. On the one hand there are overlapping jurisdictions of central and state governments, while on the other end, hierarchies of state agencies and departments. Additionally, an inappropriate standardisation of jurisdictional boundaries and a loose time frame without clear penal action have dispersed norms of ac- countability within the whole state's administrative framework." (Singh,p.72)

The law of conservation is not weak. What makes it weak is the combination of the failure of state leadership, administrative and judicial corruption and lack of ecological awareness. There are many factors which prevent sensitisation, resonance and rigour in environmental governance. The most important one is the need for public feedback (and the application of *audi alteram partem rule* to expect all parties to be heard appropriately before taking a decision) and a regular supervisory and evaluation committee which can best be arranged through the MoEFCC. In the case of protecting CRZ of Kerala backwaters, Justice A V Ramakrishna Pillai had observed in *Antony A V v Corporation of Cochin* (2012).

This spectre of destruction on God's own land cannot be an 'Act of God' but a prodigious display of apathy, entropy and insensitive bureaucratization of state institutions tangled in disproportionate self-aggrandizing from the coasts, rivers, mangroves, forests and the hills only to deprive, diminish and impoverish smaller self-sustaining ecosystem dependent occupations. Floods were only a warning signal against this bacchic display of anthropocentric structures of governance which accelerated the catastrophe through their sheer mismanagement of dams, neglect of weather forecasts, capacity oversights and ill-prepared state disaster management authorities. For the state government, drowning of people and their dependent voiceless at home were never an issue to be repentant about.

Role & Responsibility towards Preparedness and Legal Compliance:

Disaster Management is governed by the Sendai Framework and the Disaster Management Act 2005. However, every other department comes within the purview of KSDMA for coordinating their disaster preparedness.
Hyogo Framework for Action (2005-2015) transformed disaster management from rescue, relief and rehabilitation to 'preparedness and community resilience building'. Sendai Declaration (2015-2030) carries it forward with an appropriate plan of action for member countries. There is more to do now at the community level, at the level of local self-governments, Panchayats and villages.

A spate of unprecedented disasters this year in the Western Ghats suggest that even if we have laws such as the CRZ 1991, the silence of trees, animals and the clueless population is treated as if 'no one's watching'. The governments overlook with ease the indispensability about the conservation of fragile ecology and ecosystems surrounding all waterbodies such as rivers, creeks, lagoons, estuaries, coral reefs, mangroves, swamps and backwaters. In a lust for greed, money and power lobbies, warning reports prepared by experienced environmental scientists like Madhav Gadgil and K Kasturirangan on the Western Ghats were rejected with impunity[1]

"The committee recommended that the Kerala (Vesting and Management of Ecologically Fragile) Land Act of 2003 be dropped as it had already served its purpose and hence lost its relevance. No more land should be acquired under the EFL Act."

Greedy governments play havoc on their people. The Chief Minister was fearful that the judiciary may rule as recommended by Madhav Gadgil Report and so went overboard to recommend the dropping of an important Act which protected biodiversity and ecology of Kerala, So what is the relevance of laws if they are handled by unethical and the anthropogenic comrades who are now cut off from their own people.

Nature watches which power brokers ignore. These moments when the corrupt feels 'no one's watching' the high magnitude disasters silently get embossed on the destiny of that region.The decision maker may find a temporary escape from a calamity but law should be strong enough to incorporate the silence of nature not as its weakness but a discipline of tolerance and co-existence.

Before an assessment of 'preparedness to Kerala floods', it may be important to visit the law to find its real meaning for an administrator;

Chapter 1, Sec.2 (m) clarifies that "preparedness" means a state of readiness to deal with a threatening situation or disaster and the effects thereof;

- *The KSDMA has to prepare a plan for the whole of the state under Section 23 of the Act. This State Plan has to be prepared with regard to the guidelines laid down by the National Authority which is National Disaster Management Authority (NDMA) and shall also be approved by the State Authority which is the State Disaster Management Authority (SDMA).*

The Plan profile was found on the state government site but it was prepared in 2012 and was based on assessments of 2010. The KSDMA later clarified that this plan was finally approved by the Chief Minister in 2016 but till today it has not been uploaded on the site. In fact the official KSDMA website has no information and behind the cosmetic frame of the home page most links are empty or contain scattered, disjuncted and outdated information. Applying the indicators of the Web Measurement Index (information, relevance, inclusivity)(Singh 2013) the website observes nothing beyond the ritual that it has to exist.

- *The State Plan includes (a) vulnerability mapping, (b) measures to be adopted for prevention and mitigation (c) integration of mitigation measures with the development plans and projects (d) capacity building (clarifying roles and responsibilities of different departments of state government in anticipation of disaster situation.*

The older plan of 2012 had vulnerability mapping and some basic measures to coordinate and implement but none of the information given in it could be relevant for the 2018 floods as the plan was outdated.

Ignored Decentralized & Participatory Measures for Disaster Governance

The research team found that the three meetings held by the state government with Panchayat Pramukhs in Idukki (18th July, 28th July, 10th August) they were neither clear on measures to be adopted for disaster management nor had any plan for coordination with other departments. *As some Panchayat Pramukh's said, 'It was a mess as they did not hear our demand to open flood gates gradually starting 28th July. We were scared that something bad would happen but they did not listen and the minister wound up the meeting hurriedly'(identity not to be disclosed).* The KSDMA officials has never visited them or held workshops with them. Early warnings were not issued and most were caught unawares when water started entering their homes.

- Disaster Management Plan at State/District levels and by Local Authority were not prepared even after 10 years of enactment of the Disaster Management Act, 2005 (DM Act).

  (Paragraph 4.4.6.1, Bullet 1)

- Government/ Kerala State Disaster Management Authority (KSDMA) had not met legal obligations in submission of annual reports on disaster management activities which deprived the Legislature of getting a true and full account of Disaster Management (DM) activities in the State.

  (Paragraph 4.4.6.1, Bullet 2)

- Out of the 24 Village Offices test checked in Alappuzha, Kottayam, Palakkad and Thiruvananthapuram districts, Village Disaster Managements Committees (VDMCs), required to be set up to reduce the risks associated with disasters and dependency on external agencies, were not set up in the test checked village offices.

  (Paragraph 4.4.6.1, Bullet 4)

In Kuttunad the villagers of Edathua, Muttar and Pulinkunma shared that some houses were having marriage ceremonies and their houses were single storied with a slanting rooftop. They had no means to meet the crisis. In Upper Kuttunad many villagers came out to express their anguish that they could not move out as they had old parents on wheel chair inside homes. In Edathua, the team witnessed one of the most heart rending site as every animal (pet or stray) were drowned and washed away, lacs of birds, hens and chicks drowned in water with their cages.The carcass could be seen and stench was strong even after 15 days of the deluge. In the Periyar river downstream Cheruthoni dam in Idukki, some upsetting sights such as floating bodies of dogs could still be seen in an otherwise much transparent water of Periyar river near the dam.

Capacity Building was neither conceptualized nor implemented in the manner it was expected from KSDMA despite a highly participative, vocal and highly literate communities. People were still struggling with bare minimal agenda for survival.

Many Panchayat leaders came out vehemently to speak against lack of preparedness, absence of government officials or planned measures in rescue, relief and medical assistance in Thodupuzha , Elapally and Idukki.In Ranni (Pathanamthitta) and Upper Kuttunad villages people did not receive any help from government but non-government organizations such as Sewa Bharti in Ranni and Nisha Jose led church based NGO's in Kottayam helped to fill the gap.In the Kumily Panchayat and further towards Cherathoni dam and towards Thodupuzha our team moved to locate shelter homes where people shared that government came much later and they were mostly supplied by people and communities. The Tamil superstar Vijay donated Rs. 70 lacs with Rs.3 Lacs to each village office for immediate relief to flood victims. At Vendiperiyar, on way the NH183 we met people who very emotionally narrated the 14 lorries full of food, clothes and medicines sent to them by the Tamil superstar Vijay.

- *The State Plan did not exist nor the situation ever reviewed*

The team did not find any evidence that the State Plan was available for further action and in which regular updation has been going on. It was based on 2010 assessments even though as the statistical land use policy data

mentioned earlier in this report suggests that in two years the difference and changes in the land ecology has startling changes. The Kerala Government's CAG Report 2016 brings out the following facts too loudly;
Under the Act 'capacity building' means, 'identifying resources, acquiring and creating them'. The 'organizational training of personnel and coordination of such training for effective management of disasters'. The research team found the following information, however, since there is no further communication either on the website or the office of KSDMA since Sept. 2016 it is difficult to evaluate the authenticity of training programmes. Neither the police, electricity department , CZMA nor the district town and country planners have experienced any training for their personnel which involves management of disasters and knowledge of equipment, Warnings and alerts, evacuation plans and legal responsibilities.

Fig: Source:https://sdma.kerala.gov.in

Ignored Procedural Transparency & Dam Safety with Impunity:

An effective disaster management is possible if certain amount of procedural propriety is followed by institutions. This includes regular meetings of KSDMA as per the Sec.15(*l*) of DMA 2005[17].

KSDMA is partly dependent upon the cooperation extended to it by the State Government. The State Executive Committee (SEC) is constituted by the State Government to assist KSDMA in the performance of it functions and coordinate action in accordance with the guidelines laid down by the State Authority and ensure compliance of directions of the State Government(Section 20(l).

Meetings with the three key departments (Electricity, Water and Transport) it was found that they were not aware of any SEC communicating with them on disaster management. The meetings with Panchayats and Taluka executive members further revealed their ignorance of the SEC. Almost every Panchayat visited by the research team shared some meetings took place and two meetings were called by the District Magistrate at Idukki and Vandiperiyar situated at Thekkady during August before the floods. The Panchayat Pramukhs were upset on the

[17] 15(*l*)*The State Authority shall meet as and when necessary and at such time and place as the Chairperson of the State Authority may think fit.*

fact that despite the DM repeatedly mentioning the possibility of the release of water from the dams there was no heed paid to their strong insistence that dam gates should be opened and they should start releasing stored water. They are aghast at the arrogance and obduracy of authorities who held on to stored water reaching the maximum limit and then suddenly released it over water saturated ground without warning or informing the panchayats.

Stored water in the dam remained the main concern of the Electricity Minister rather than the safety of people downstream notwithstanding his being a disaster management Minister as well. **KSDMA** did not have flood enundation maps and Digital Elevation Models (DEM) to demarcate flood affected areas.This is a primary exercise to go ahead with 'dam break analysis'. The CAG Report of 2017 mentions that in none of the 61 dams over 44 rivers did Kerala government conduct this study. (pp.65-67). This stands in contrast to Bihar and Maharashtra where 'dam break analysis' studies have been conducted and Emergency Action Plan Manuals have been prepared in 20 out of 24 dams and 110 out of 1693 dams respectively. With 95% and above literacy and one of the most entrepreneurial human resource Kerala has been subjected to a shoddy governance system.

The directives from concerned departments and Facebook data of the Kerala Electricity Minister by the end of July suggested that dams were almost up to full capacity. The IMD already predicted Nowcasts warnings every three hours through SMS to KSDMA, SEOC, District Collectors using Doppler Weather radar Data. On 2nd August 2018 IMD predicted that the rainfall over 'extreme south peninsula' shall be above normal during 9th to 15th August. The same statement was repeated to all officials again and again. From 9th August onwards IMD issued Red Alert or 'For Action'.

Orange Alerts were issued by IMD which meant 'prepare for action'. KSDMA did not disseminate to people what they were supposed to do. Most Panchayats in a focused group discussion with the research team expressed their inability to understand what the meaning of Red, Yellow and Orange Alerts is. They also could not see the Facebook posts of the KSDMA as a majority of them did not have Facebook accounts.

The Dam Safety authority during its Press brief on August 7 defied any plan to open the dams and exactly one week later when the rainfall was at its highest and people were already facing a highly water saturated ground, the authorities opened all the big 38 dams in Kerala all together. The Biggest dam in Kerala, Idukki dam had reached 2370 ft of water above sea level on July 20 itself when the panchayat pramukhs told the district authorities to open the gates. The radial shutters of the Cheruthoni Spillway of Idukki dam is at 2370 ft. beyond which dam gates can be opened any time. **But the authorities including Kerala Govt and KSEB waited till the water reached its maximum capacity, ie 2403 ft to open all the 5 shutters of the dam together.** Idukki dam water flows through river Periyar to reach Arabian Sea in 5 hours of time.

The two other big dams in the river Periyar down the line after Idukki, ie Idamalayar and Bhothathakettu dams. The upper dam mismanagement led these dams also to overflow subsequently. The three dams opened together and water flown down to river Periyar in millions of lakhs litres of water per second. Since Periyar is a long river passing through many towns downstream it flooded towns like Kalady, Aluva and Kochi Airport in no time while it brought intense flash floods in Munnar, Ranni, Idukki causing severe landslides and enormous harm to domestic animals and pristine Kerala wildlife.

This suggests that the KSDMA ignored or did not review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government of the State and issue guidelines as may be

necessary. This lapse is over and above the lack of effective coordination which KSDMA was expected to undertake on a routine before the flood season. Some of the measures which were ignored are;

- Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice.
- Encourage and coordinate non-government organizations and voluntary social welfare institutions working at the grassroot level for disaster management(check below)
- Ensure communication systems are in order.(EWS)

NGO Co-ordination Committees

were not constituted

at State/District levels.

(Paragraph 4.4.6.1, Bullet 6)

Fig: CAG Report 2016, Govt. of Kerala

An early warning system installed with a huge screen at the main crossing of Idukki was non-functional. People around the dilapidated and damaged yet busy market told that the last it functioned was in January 2018 when the Minister visited to inaugurate and cut ribbon for the EWS installation. If this was functional, people could have got a chance to move away with their loved ones.

Early Warning Systems:

The research team witnessed an absolute eyes wide shut attitude of Kerala Dam Safety Authority and KSDMA in neither understanding the ecosystem services logic nor conducting the dam safety demands with an understanding of a holistic and inclusive science. A shockingly anthropogenic and ecologically distasteful statement of the Chairman Kerala Dam Safety Authority, CN Ramachandran Nair to 'The Hindu', *"Don't be swayed by the eco activists or writers, nature should be tamed to reclaim all it had taken away during the catastrophic floods and the interests of the people should prevail over environmental conservation"*[18]

Kerala had been twice warned by the Office of the Comptroller and Auditor General (CAG)[19] that despite its huge investment of 2.34 Crores in the LBEWS the state neglected the installations and repairs of installed EWS due to which 289 out of 351 EWSs were found non-functional. See below;

[18] Praveen,MP., (2018) 'Tame Nature says Dam Safety Chief', The Hindu, 1st Sept.23:14 IST

[19] Two performance Audit Reports reveal the negligent KSDMA. Report of the Comptroller and Auditor General of India on Revenue Sector 2016, Government of Kerala Report No.1 of the Year 2017. Report of the Auditor and Comptroller General of India, Schemes for Flood Control and Flood Forecasting 2017, Union Government, Ministry of Water resources and River Development & Ganga Rejuvination, Report No.10 of Performance Audit. (pp. 65-67)

- In the test checked districts, Early warning systems were either not functioning or not installed.

  (Paragraph 4.4.6.2, Bullet 2)

- State Disaster Response Force was not constituted as category wise staff strength had not been sanctioned by Government.

  (Paragraph 4.4.6.2, Bullet 7)

Fig: CAG Report 2016, Government of Kerala p.79.

The state was also quick to install very high frequency radio based communication for enforcing an effective warning even in times when telephones and other devices of communications stop working.This was undertaken in 379 locations and the installing company Linkwell Electronic Private Ltd. was accountable for its operational maintenance. Interestingly, despite the fact that most of the instruments failed to work the government did not impose any liquidated damages on the firm but on the top of it overseeing the lapse, all balance payments were made to the firm. The CAG report also mentions that EWS failed due to administrative inability to disseminate warnings to communities and also lack of trained personnel to operate the system.

Findings:

1: Madhav Gadgil Report stands vindicated. Kerala's prime resource to sustainable progress passes through its highly rich and pristine ecology. The government has acted against nature, environment and ecosystems so unique to Kerala. One disaster can push Kerala to many years behind.

2: The government has been very ill prepared to encounter a disaster. Dam Safety regulations assisted by flood enundation maps and Early Action Plan (EAP) were ignored. The O&M Manuals of 61 completed dams were not prepared. Such a casual handling of people's lives and an irresponsible release of water led to devastating deluge.

3: There are capitalistic lobbies which govern the left government of Kerala. The fragile zones are under big estate owners who are not only controlling hills and forests but also mangroves which is Kerala's strongest wall against coastal disasters. As hills are concretized and constructed upon , river catchments , backwaters and estuaries providing mangroves and livelihood to a vast fisherfolk community are subsequently eliminated, balded and left to slide away into the ocean.

4: The post disaster affects are fatal. The quantum gush of dam water blasted the aquifers and all stored fresh drinking water flows into the ocean and is lost. With the top soil lost and aquifers blasted out, water table has already started sinking down by almost 4-5 ft in the Allapuzha upper Kuttunad region.Experts who were interviewed indicate an scary future for Kerala with increasing symptoms of drought and lower productivity. The growth rate could fall lower than 2 % as predicted by experts interviewed.

5: There is no policy of a coordinated preparedness with other government departments which can extend to relief work if disaster strikes. Government had been absent from providing relief or even disbursing an amount as low as Rs.10,007:0/- promised by the Chief Minister as an ex-gratia interim grant to affected

households. With a more than 12.5% above 65yrs. population constituted of further vulnerable sections like single women, disabled and children who need special care were not provided for.

6: The most heart rending abuse of human ethics as instructed through Art 48A and Art 51 A of the Indian Constitution and DMA 2005 was the manner in which Kerala government watched the brutal death and drowning in captivity of their animals ie; birds in the cages, leashed pets at homes, stray on the road and the pristine wild life which has fed the tourism industry including religious tourism in the state since the time when Kerala had no industry or technology to earn from.

7: The Early Warning Systems were non-existent and as people shared, they would go off after the ceremonial installation and newspaper publicity and photographs. Floods have a great dependence on early warning to people for timely evacuation. Despite the CAG Reported warning the EWS were neither repaired nor was the private company indicted for completing agreed maintenance.

8: The disaster was man made by another argument too. The land use policy has been handled with greed and negligence. The Fragile Land Act 2003 was dumped as outdated law which has lost its relevance. This threw open construction over the whole of the Western Ghat hills of Kerala triggering more disasters.

9: The post-disaster ecological disaster is likely to push the state into a drought like situation. All aquifers have been blasted out by the speed of the dam water flow. Ground water table has already sunk many feet lower and well and water bodies are starting to go dry already. Top soil is scarred and eroded and it takes millions of years to reachrge this natural wealth to the people linked to this ecosystem. Lower productivity and growth is a dangerous fall out of bad governance.

References:

Antony A V v Corporation of Cochin (2012): WP(C), No 27248 of 2012 (E)

CARE Ratings 2017-18, available at http://www.careratings.com

Economic Review 2016 and Inward Remittances Survey 2016-17.GoI.

Jacob Vadakkancherry and Etc v The State of Kerala and Ors (1998): AIR 1998, Ker 114 F B.

Kerala Migration Survey, Centre for Development Study, 2014, State Planning Board, Government of Kerala

Muraleedharan, PK., Swarupanandan, K.,Anitha V.,(Investigators) (2009) The Conservation of Mangroves in Kerala: Economic and Ecological Linkages, Final Report of the Project ICFRI/487/05 April 2005-March 2008. Thrissur: Kerala Forest Research Institute, August.

Performance Audit Reports (2016) KSDMA. Report of the Comptroller and Auditor General of India on Revenue Sector 2014, Government of Kerala Report No.1 of the Year 2017.

Praveen,MP., (2018) 'Tame Nature says Dam Safety Chief', The Hindu, 1st Sept. 23:14 IST

Radhakrishnan, M.G., (2013)'Kerala priests and politicians unite to oppose Gadgil Report on Western Ghats', *India Today,* Oct. 16, updated Oct.17, 2013, 08:16 IST. Accessed Sept. 2018.

Ratheesh and Others v State of Kerala and Others (2011): WP(C), No 19564/11 decided on 25 July 2013.

Report of the Auditor and Comptroller General of India, Schemes for Flood Control and Flood Forecasting 2017, Union Government, Ministry of Water resources and River Development & Ganga Rejuvination, Report No.10 of Performance Audit.

Saberin, Zeenat., (2018) 'Kerala Officials estimate post-floods rebuilding will cost $ 3.7 billion', 31st Aug. News Asia AlJazeera.com

Shenoy, Jaideep (2018) 'Kerala floods may have caused damage of Rs.20,000 crores', TNN, times of india. indiatimes.com, Aug.19. and Chauhan.Chetan.,(2018) 'Kerala Floods recovery to take years…', Aug. 21,11:54 IST.

Singh, Amita., (2016) Coastal Ballads and Conservation Ironic, Special Article, Economic and Political Weekly Feb. 13th, Vol LI,No.7. pp.70-75

State Planning Board, Economic Review 2016, Department of Economics and Statistics, available at spb.kerala.gov.in and kerenvis.nic.in

State Planning Board, Economic Survey 2016, Department of Economics and Statistics, spb.kerala.gov.in

TNN (2018) 'Kerala may have suffered loss of around Rs.3,500 Crores', times of india.indiatimes.com, 25th August,8:25 IST

*****

IGNORING COMMUNITY AS AN EARLY WARNING SYSTEM: NATURES FURY GIVES BACK AS KERALA FLOODS

Sunita Reddy, Amita Singh, Manika Kamthan, Shishir Kumar Yadav, Devender Jindolia

Listen to the local community; they are the reliable early warning systems. The local people are witness to the changes happening to their ecosystems through their lived experiences. We try to search for solutions around the world, but we will find them if we listen to the community and go by their advice. Indicated loud and clear alarming bells for the ensuing disasters, which were experienced by the local people in their everyday lives. This article is an attempt to bring to the fore the community perspectives of every day lived experiences as felt by and shared with us in 2015, related to hazards, which can lead to disasters, whether it is the effect of pesticides and pollution leading to cancers or indiscreet development, deforestation, destruction of mangroves leading to floods and landslides.

Ignoring these community based early warning systems, levied heavy penalty on the people and the ecology of the Kerala State. The alarm bells were ringing, and we as researchers could hear them loud and clear in Sep. 2015 during our field visit to the Western Ghats, and precisely after three years, we witnessed in the form of floods in Sep 2018. This article is based on the brief field visit to Kerala in 2015, equipped with appropriate methodological tools like rapid appraisals, in-depth interviews, and interactions with key informants, case studies and observations by a team of researcher from JNU. JNU funded this research under the UPE (University with Potential for Excellence) grants. Indigenous peoples with a historical continuity of resource-use practices often possess a broad knowledge base of the behaviour of complex ecological systems in their localities. This

knowledge has accumulated through a long series of observations transmitted from generation to generation. These indigenous peoples who have depended, for long periods of time, on local environments for the provision of a variety of resources, develop a stake in conserving, and in some cases, enhancing, biodiversity (Gadgil M et al., 1993). This paper thus brings out local people's experiences of risks, hazards and the consequences on their health due to changes in their surroundings.

There has been a debate over the current floods in Kerala. Is it the heavy monsoon or bad water and dam management and release of water water from dams, or indiscreet infrastructural development like construction works closer to the shore and river beds or thus important to see the link between the disaster and development. A study focusing on the variability and changes in rainfall extremes in different seasons in Kerala by Pal and Thabba (2009) showed occurrence of off-seasonal natural disasters such as pre-monsoon drought and post-monsoon flooding in India and particularly in the peninsular region, highlight the urgent need to look at the patterns of change in seasonal extremes at the local level. From 1954 through 2003, the trends are determined and also tested for significance; local changes were found different from the large spatial scale averages in Kerala. Winter and autumn extreme rainfall were seen having an increasing tendency with statistically significant differences in some regions indicating more occurrences of winter and autumn floods. This analysis partly explains the current floods in Kerala. However, our field study and travelling across the heartland of Kerala in 2015 throws up various issues.

As we travelled across the length of Kerala, we witnessed the 'God's own country' the beauty was in abundance. Kerala is one state though small, with varied miniature landforms; forests, hills valleys, waterfalls, seacoasts, rivers and river banks, backwaters, sea, sun and sand. With varied livelihoods and vocations having coconut and palm groves, rice and rubber plantation, tea gardens, spice gardens, fisheries, Ayurveda and tourism as their source revenue generation. Another major source of revenue generation is the remittances from the migrated NRI population from Gulf and the Middle East. The travel across the state shows the prosperity in the form of lovely homes builds across the green patches of fertile lands. As we travelled across the state, no other billboards were prominent as prominent, as the jewellery advertisement by the models adorned with heavy gold ornaments in pure silk sarees. This shows the South Indian culture of possessing and wearing gold and silk by the better off sections.

God own country, the once paradise which attracted millions of tourists from across the world every year, saw this season natures fury hitting back once it crossed the limits of perseverance, as if 'all hell broke loose', flooding 21 out of 23 districts of Kerala. Though from the face of it, Kerala is a paradise for the tourists who come for brief visits but dig little deep and one can see how once the prosperous and most developed state comparing with any developed nations in the health indicators is now showing signs of morbidity and becoming hollow within.

The visual images and moving videos of flooding the state, with roads and bridges breaking, water levels rising above the single storied buildings, landslides, gushing rivers bursting the embankments, fields swelled by the water, trees falling, disturbed all of us. The immediate response of people who are not just the first responder but are also the last responders to any disasters, continue to help each other. The quick humanitarian response come from people across the country, the NRIs in the gulf and other nations were overwhelming. The institutions like SDMA, NDRF and other NGOs responded to evacuate, provide, relief and shelters to the flood affected. The local youth and good samaritans without waiting for anyone reacted immediately. The 2018 floods seem to be a sudden disaster, however, deep down catastrophe was palpable to the local people. It was not heard, and the story was not told loud and clear. Even though based on the field visit in 2015, a paper was published in EPW by Singh (2016), but these remained academic exercises, only to be written and read by the scholars, did not reach to the practitioners. There were other scientific studies of flooding in Kerala, which were like warning signals (Murthy and Kurian 2006; Pal and Thabba 2009). Kerala's primary forests dropped substantially between 1940 and 1970— an average loss of publicly managed forests being 5000 ha per year. Satellite imageries show a further drop after that, with a concomitant loss of biodiversity. Modern land management strategy, agroforestry has not received adequate attention in Kerala (Kumar 2005).

The policymakers and bureaucracy take little note on these writings, and warnings leave about taking action based on these reports. There are many conflicting interests and also short-sightedness of the losses of not just economy

but the environment and the social fabric. Even the writings of environmentalist like Gadgil and Guha (2013), report on Western Ghats (Gadgil et al., 2011a; Gadgil et al., 2011 b) who produced enough evidence of ensuing disasters were taken lightly and never acted.

Past few years, the recurrence of disasters hitherto unheard of like urban floods, Mumbai, Kashmir, Chennai and now Kerala, the flash floods of Uttarakhand are becoming common. The visual images circulated, thanks to smartphones, capturing every disaster small or big; buses flown into rivers, landslides and the houses falling like a pack of cards are everyday truth.

Its high time for the policymakers and bureaucrats to take note of these warnings brought out by environmentalist, scholars, disaster experts to integrate these into sustainable development plans to mitigate ensuing disasters in the ecologically fragile ecosystems and regions, be it hills, valleys, forests, sea coasts, river beds across the length and breadth of the country.

Community knowledge Sharing on the hazards and risks
Eloor- Edayar Chemical Disasters

As we went to Eloor and Edayar industrial corridor in Ernakulam district, speaking to few key respondents from the community raised issues of industrial pollution and its impact on the people's lives. We visited the office of the Indian National Trade Union Congress (INTUC), bursting with people and meetings. We met two active INTUC members (names withheld) and asked them about the environmental concerns in the industrial belt of Edayar as there are 354 industrial units in production spread across in 176.131 hectares followed by 174 units in Kalamassery. In Ernakulam district there are 789 industrial units in total covered in the area of 341.861 hectares[20]. They told us,

There are four large-scale companies and rests on them are small scale. The industries deal in chemicals, dyes, paper, fertilisers, and pesticides etc. The first chemical company was established in 1944 in Kerala under the name of "Fertiliser and Chemicals Co. Ltd." It had been suffering severe losses, and the number of workers decreased from 12000 to 3000 in 2015. Edayar has companies which are older than 75 years, but they are unregulated and do not follow the minimum safety guidelines and rules under various State and Central laws of India. Over the years the environmental degradation has now reached its epitome. The land, water and air of Edayar have turned into poison. The people residing in Edayar do not drink their groundwater, and all food items are exported from outside Edayar.

They further shared,
The Binani Chemical Company is closed for a year, and as a result of a legal judgment, Binani Chemical Company provides drinking water to all the families in the Edayar region. This reflects that the Court has also accepted that Edayar's governmental authorities have failed to provide even essential amenities and facilities to its inhabitants. The industries have been discharging untreated waste effluents in the Periyar river, and the air pollution is unchecked in the area. This has resulted in the recurrent cases of cancer, asthma, osteoporosis and other skin diseases. Every second person is suffering from one or the other ailment. There is no real health service planning in the area.

One of the members said *that the cancer patients are given two lakhs from the government, but given the gravity of the disease, this help is quite insufficient and the local people collect donations for treatment. The government hospital has only 20 beds and 2-3 doctors for consultation and treatment. Moreover, no health camps are organised by the government for medical awareness. There is a complete absence of "early detection clinics", as a result of which people usually get to know about their ailment when it is too late.* He said, *only when people fall drop dead then they get to know about their diseases*. Binani Chemical Company used to run a primary health centre, which is now shut down.

[20] dcmsme.gov.in/dips/ernakulam_dips.pdf …GOI, Min of MSME report 'Brief Industrial Profile of Ernakulam District'..nd..

The age specific cancer rates seen in Thiruvananthapuram, and Kollam when applied to the projected Kerala population for 2020, it is evident that there would be 147 new cases diagnosed every day in Kerala with an annual prevalence of 1,61,307 cancer cases in Kerala (Jayalekshmi & Paul 2017). The industrial belt of Eloor in Kerala is one of the World's 'top toxic' hot spots' according to international group Greenpeace[21].

We visited the Periyar River, which had a kind of oil spill in it and was polluted. Still, we found people washing their clothes in it. We talked to a migrant worker from Assam. The local people no more work in the industries, as the companies are not ready to provide the minimum wages to them. The migrant workers from West Bengal, Assam and Bihar, are coming and working on exploitative wage rates in the companies and gets no health support from his employer and works here because back home there is no work. The news reports shows that Periyar river is dying and how south Kerala lifeline has become industrial drain[22]. In the wake of present disaster, it is important to see how Periyar river got affected, whether pollution levels have increased or decreased. Also if communities have come in touch with polluted flood water what were the health hazards.

We went to one of the Ward's (name not disclosed) of Edayar and met the Area development Society's Secretary and Community Development Society's Chairperson. She was very friendly and outspoken. She told us that *the male population is out of work and most of the males have migrated to outside Edayar in search of employment.* She repeated what we were already told in the INTUC Office that the people suffer from various health disorders. However, she said that *they don't receive any help from the government.* She also showed us her leg, which had a fungal infection. The ward number 17 & 18 are worst hit by cancer. When we asked her whether women are suffering more than men from fatal diseases, she promptly replied "yes". There are no government plans either for employment or health of the people. She also pointed out that there are no employment avenues for women because of the nature of trade, which mainly focuses on the chemical related industrial activities.

She boldly disclosed that *there is a nexus, which exists between the Pollution Control Board and the industries. The Pollution Control Board lets the industries function unregulated. The Sarpanch and the government officials are also working for a hand in gloves, and none of them cares about the deteriorating environmental conditions.*

We met Ms Kumari who was the Aaganwadi School teacher in North Edayar. She too was suffering from the fungal infection on her leg similar to the disease suffered by the ward chairperson. She affirmed that women are suffering more than men from cancer. In the school, we also met Kasir who was on holiday. He has migrated to Muscat for work. He disclosed,

People are no more ready to give their daughters in marriage to men of Edayar. The situation is degrading every day, and the government is inactive. He said that there is a cancer patient in each house of Edayar. He pointed out two persons standing near us who had cancer patients in their homes. There was also an old lady who was operated recently and was suffering from cancer. The local people told us that the cows give very less milk because of the polluted fodder they eat. There are no pets in homes, and the biodiversity of the area is also severely hit by the pollution caused by the chemical industries.

It can be inferred that Eloor- Edayar industrial belt of Kerala and is choked with irretrievable chemical pollution. This has produced severe health problems like cancer, skin diseases, asthma, osteoporosis etc. Land, air and water are critically polluted. Fishes of Periyar are not eaten by the natives, vegetables grown on the soil of Adayar are not eaten, and everything is exported from outside Edayar. The hazards in the villages of Edayar and Eloor are now exposed. People are fleeing their homes, and industry owners are bringing migrant workers from outside like West Bengal, Bihar, Assam etc. to work on exploitative wages. Although people of Edayar have stopped working the business continues as usual due to government inaction. A scientific study (Thomas et al., 2017) on a seasonal variation on physicochemical quality of well water at the Eloor industrial area, Kerala was studied with a total of

[21] http://www.rediff.com/money/2003/oct/10toxic.html

[22] https://www.thenewsminute.com/article/periya-dying-how-south-keralas-lifeline-has become-industrial-sewage-drain-65169

100 samples, 25 each during four different seasons, viz. summer, pre-monsoon, monsoon and post-monsoon, collected during the year 2009. Highest nitrate (5.96±1.10 mg/l) and cadmium (0.05±0.005 mg/l) concentrations were recorded during post-monsoon and monsoon respectively The results were compared with WHO guidelines (2006 and IS: 10500, 1991), desirable limits for drinking water and found that pH, total hardness, concentration of iron, lead and cadmium were not within the acceptable range. Showing high concentration of toxics in well water: with the flooding, the levels of toxicity need to be checked for preventing any diseases.

Munnar Meltdown

When we reached Munnar, we saw various posters of Women Tea Estate Workers' protest against the Tea Estate owners. They are demanding a rise in their wages. 5000 women workers of the Kannan Devan Hills Plantation, a large tea estate in Munnar in Kerala, launched a spontaneous agitation demanding increased wages and bonuses (Kamath and Ramanathan 2017). We met the MLA of Munnar and sought his views on environmental degradation and issues related to disasters. Talking about the cutting of the hills on the way to Munnar, he told us that the orders for the road widening were passed in the year 1932. However, with pride, he said it's being implemented only by the present government. He did not answer the questions on pollution very seriously. We met another key respondent, who is an environmental activist and president of Munnar Environment & Wildlife Society. He gave us a brief geographical introduction of Munnar and told us that the first planters came in Annamalai in 1847. Till 1947 there were only four major Tea Estates namely, John Finlay, Tata, RPG and HTML. At that time 300 families were brought as slaves for tea estates from outside Munnar. At present there are 12,500 tea estate workers among them 7000 are women, 3000 are males and remaining are management people. He said that tea workers are like corporate slaves. A tea estate is like a small township which consists of a small health centre, a shopping complex, a ration shop etc. A tea estate consists of four divisions, i.e. upper, middle, upper lower and lower. An owner of 10 hectares of land can employ a minimum six workers. He told us that Tata Tea Company has 60 crores outstanding amount towards the electricity bill payment. Interestingly 53000 hectares land was leased to Tata by Punjarath Maharaja. However, the issues of tea plantation labour, mostly women, who are now badly affected due to the ravaged tea plantation must be without sources of livelihoods. It's important to know their state of conditions and rehabilitate them. It was felt that everything seemed to be politically motivated and it was really difficult to draw a correct picture of the existing situation in 2015 in Munnar. The wages for the tea garden workers in Munnar are not in compliance with the national wages structure. The environmental degradation was not on the priority list of the MLA. The issue of the strike of the tree plantation was handled in a very political manner, and their welfare was ignored in the whole political turmoil. In the wake of major floods where Munnar was cut for completely for many days, it is important to see the effects on the tea plantation labour from a gender perspective. Also, what will be the long-term rehabilitation process for different population after assessing their needs?

He further mentioned about 1924, floods called as "Munnar tragedy". When we asked that why you don't feel that this can occur again, he said that he is 100% sure that Munnar will never face any disasters in the coming years. We also asked him about the Mullaperiyar Dam which is more than 100 years old. He said that it could never fall because of its angular construction which can bear the natural disasters. However, when we emphasized that it does have fault lines, he said that yes in his opinion a new dam should be constructed. Ironically the environmentalist too was oblivious about the ensuing disaster. He took us to the "Automatic Weather Station" licensed by Antrix Corporation Limited, ISRO, Bangalore Division, India. It works as an early warning system for the Munnar division. An ISRO official over a telephonic conversation, who is in charge of the system in Munnar, told that an early warning about any disaster could be issued as early as 20 hours before the disaster. The question is whether this year floods were warned sufficiently on time? Only further probing with the local community can tell.

Alapuzh : Punnamada Lake Pollution

Our next field was Alappuzha district, where we met the president of Bank & finance Account Holders Welfare Association and also the Member of the Human Rights Protection Mission. He shared that there are 1500 houseboats in Punnamada lake, out of which only 750 houseboats are registered. There are 500 small motorboats in the lake. He told us that the lake is polluted due to various reasons. Some of them are chemical fertilisers used in the paddy fields which cover 1,34000 acres of land in the districts of Allapuzha, Kottayam and Pathanamthitta.

In 300 acres of paddy fields, three water pumps of 50 Horse Power is used. Dumping of the waste by the tourist and the staff of the boats. Diesel used in motorboats produces TAR as waste which is absorbed by the underwater soil, resulting in a threat to lives of fishes and other sea creatures etc. Endosulfan is although banned but is available under different names in the market. He added that the water hyacinth is not removed by the municipality, which is now becoming a kind of a nuisance. He also informed us about a legal case which is pending in the Supreme Court regarding the registration of houseboats and limiting the number of boats which can be used in the Punnamada lake. The fishermen and boat workers from all the castes are working there and no specific caste dominates. He also informed us that cancer is quite recurrent in this area and there are no "early detection clinics" or awareness camps organized by the government. The closest hospital is the T.D.Medical College. People reported that they are suffering from various other diseases like respiratory problems asthma, skin allergies, seasonal diseases, heart problems, hypertension as reported in the study (Asalami et al., 2015).. Post floods 2018, a large number of communicable diseases and leptospirosis looms large. 50 persons died within a fortnight of floods in Kerala[23].

Then we met an owner of the houseboat in Punnamada lake, who outrightly rejected that houseboats are causing any pollution. He cited two legal cases whereby the courts directed that only the treated water from the houseboats should be released into the lake. He said that each houseboat has a Bio Tank without which, it is not allowed to function by the Pollution Board. The cost of installing a Bio Tank is one lakh rupees. They are also establishing two sewage treatment plants, which is costing 63 lakhs. They are under the Tourism Department, and their capacity is 1,80,000 litres each. The pollution board permits only 33% BOD in the treated water. He claimed that they want to keep their lake very clean and will protect the lake.

He accused that the pollution in the lake is mainly because of the chemicals used in the paddy fields. 64% of the 120 km backwaters from Kollam to Kochi are paddy fields. The pollution is causing cancer and him as a member of the Human Rights Protection Mission and organizes regular health camps. There is a Cancer Research Centre in Kuttanad. He emphasized that they cooperate and work in complete harmony with the paddy field workers. They have specific timings for the operation of houseboats which is 12:00 P.M. to 5:30 P.M. every day.

We then headed to Kollam where we went to Jonakapuram, which was fishing community area who are living on the coast. Muslims and Christians live in equal numbers there. Men do the fishing and women sell fishes. The number of children in most of the families is two. We met another fisherman, he told that the fish catch has reduced manifold. Many fishes have become extinct like Killivare (3-4 colour fish), Panikadiyan (1000 teeth & 5-6 kg fish). They now go to 60 km deep into the sea to catch fish. Moreover, they cannot catch small fish under the new law. If they do catch small fishes and try to sell them, they are caught by the police of the area.

Our visit to the fishing community and interaction with them, brought out issues like, the fish catch is decreasing because of the use of trawlers. The trawlers do the fishing from the deep sea, whereas the small fishermen catch fish only from the top layer in the sea. Sometimes they also buy fish from outside. Trawling is banned in monsoon but the small boats are allowed. One trip for catching fish costs 10,000. If they go ten days for fishing it is only one day they can catch fish. They depend on their indigenous knowledge for catching fishes. There is a complete absence of insurance for boats etc. They are given early warning of natural disasters by the collector/village officers/police and coast guards who also shift them to some other places when there is high alert. The government also organizes disaster awareness programmes for the preparedness of disasters. These positive developments seem to post tsunami disaster mitigation efforts to prevent future disasters by the local administration. An early morning walk on the beach for 2 consecutive days, we observed hundreds on jellyfishes dead on the shore. Something wrong with the sea shore water and all the dead jellyfishes were lying on the sand.

After Tsunami government has built 60 two-storied houses where most of the outsiders are living. There are 200 more new homes the possession for which is not given. They get an early warning from TV/Radio. The announcements are also made on the harbours as and when a need arises.

[23] https://timesofindia.indiatimes.com/city/kochi/flood-battered-kerala-reports-50-deaths-in-a-fortnight-due-to-communicable-diseases/articleshow/65639295.cms accessed on 26 Sep. 2018.

We went to meet a Scientific Officer, Kerala Coastal Zone Management Authority (KCZMA). He mainly briefed us about the limitations of the CRZ regulations and the changes demanded by their authority from the State of Kerala. The demands are as under:

> Our main demand has been to revise the guideline of allowing settlements after leaving 100 meters from the coast. We want to allow settlements within 50 meters of the coast. We strongly believe that it is impossible to remove the fishermen community from where they have been dwelling for ages. It is highly essential to living by the ecosystem for earning their livelihood, construction of new houses may be permitted leaving 50m from High Tide Level (HTL) of sea and 10m from HTL of backwater or landward existing authorised structures or approved road in CRZ.
>
> He questioned the CRZ guidelines because the density of the coastal areas is so high already that the biggest question remains that after removing them where will they be rehabilitated again? He explained through several illustrations of barrier beaches and barrier islands such as Allapad Panchayat, Arattupuzha Panchayat, Acheguthengu Panchayat, Karukulam Panchayat, which have a very high density of population. He also made a case for permitting construction in the rightfully received land as family right/share in the No Development Zones of Coastal Regulation Zone III. The space for constructing dwelling units in the CRZ area is limited. Hence, family members are not in a position to construct dwelling units. Moreover, in the case of a local/fishermen community who buy a piece of land within the CRZ area is unable to build a house as per the present provisions. The right to the same need to be made in CRZ II and CRZ III area.
>
> KCZMA is also demanding that given the stress of population on the banks of the tidally affected water bodies (majority of the area having density of population >2000/sq.km) No Development Zone (NDZ) of CRZ III along the banks of inland water bodies may be reduced to 50m from High Tide Line (landward) from the present stipulation of 100m. It is important to analyse how these CRZ regulation can prevent disaster or would increase the vulnerability'.

- Permission may be granted for 3-4 floor housing buildings under Government projects like Rajiv Slum Development Project in CRZ III area after leaving 100m from HTL of sea. How will the coastal area sustain so many people in multistories buildings.
- Exemption for individual houses in CRZ area under Government sponsored schemes if a comprehensive plan is prepared. Then every other person would like to built a home on the shore.
- The construction of building for livelihood activities like the peeling of prawns, fish-based small scale non-polluting cottage industries/small shops and flour mills may be permitted in CRZ area other than CRZ I, and CRZ IV, further add to the infrastructure building building on the coast.
- In the fish landing centres approved by Government of Kerala wherein all foreshore facilities required for fishing and fishery allied Grama Panchayat may permit activities such as traditional fish processing yards, boat building or repair yards, net mending yards, ice plants, ice storage, auction hall, jetties in the CRZ area. This can be sustainable as it is related to livelihoods of the poor and the marginalized.
- Areas coming under Municipalities and Municipal Corporations (urban areas) existing as on the date of notification (2011) may be considered as falling under CRZ II, without waiting for the completion of the Coastal Zone Management Plan (CZMP) for the entire state. Again will lead to further vulnerability.
- Permit residential complex in CRZ III area between 200-500m from HTL subject to the conditions specified in the Annexure III of the notification for resorts. Tourism projects need to be carefully thought through.
- Allow district committees to permit construction of dwelling units up to plinth area $100m^2$ in CRZ area as per the provisions

He told us about 'one paddy, one fish scheme' promoted by the State government where the first crop shall be paddy and the second be fishes. This keeps the fertility of the soil intact. He affirmed what was being told to us at various sites of our field work that the majority of fishermen in the region belong to the scheduled castes community. He also touched upon the suo moto case of the pollution in the Vembanad lake whereby the Supreme Court in 2013 emphasised upon the necessity of effective implementation of CRZ Notifications also requires serious attention at the hands of KCZMA. The necessity of restoring land encroached into the backwaters as well as removing the illegal construction effected in violation of the CRZ Notifications of 1991 and 2011 needs urgent action. The local bodies are freely issuing licenses without following the provisions of CRZ Notification, in spite of the fact that Directions of Panchayats[24] has directed to all the Panchayats to strictly follow the provisions of CRZ Notifications.

He reported that the mangroves in the urban areas are under severe threat of encroachment and destruction. There is an urgent need to conserve these ecosystems by adopting suitable measures. One such proposal is to have an embankment along the border of the mangroves. Following the embankment a parallel walkway of 1-2m of width followed by an 8m road with proper drainage system and a tree line as a green belt. Since these areas are buffer zones of mangroves, a dispensation is required to have the above conservation measures in the CRZ I (Buffer zone). However, he also disclosed that the State Government has been allotting the coastal land to various tourism projects which is illegal. The ashram of Maa Anandmayi is one such site.

An ecologist and an activist based in Trivandrum, heading an organisation, which works on environmental issues. They have collaborated with the Forest Research Institute for training people to become tree guards. She told us that the activist's groups have lost to Adani group, which is building a port at Willingdon in Trivandrum. She disclosed that the Church had been the middleman between the people and the government here. A visit to Willingdon where the port is coming up, we could see many small boats parked. These will be displaced once the port further on the long stretch of Kerala wide roads to carry big containers to the port will further damage the ecoystem. It is mindless to see why one need another ort when there exists one in Cochin. The fragile ecosystem of Kerala cannot take this burden any more.

The area of mangrove is decreasing in the coastal region, and the main reason is human intervention. She also said that for the conservation of the mangrove requires a ban on any kind of human concrete construction around mangrove. She added that even the pathways made near mangrove could harm them and destroy their ecological existence. She told us that there are no civil society initiatives, campaigns or movements for the conservation of the mangroves. She also told us that her NGO had taken the legal measures through the National Green Tribunal against the construction near to the coastal region. She emphasised the role of Church officials in influencing the community opinion on construction, migration and rehabilitation process in that area. Church acting like a middleman between government and the people, but the church hadn't had any strong negotiations on the livelihood issues. Livelihood has not been addressed judiciously in the process of ascertaining the compensation to the local communities.

She explained that how the construction of structure, roads, pathways and encroachment of land in the coastal area are affecting the ecological equilibrium. She added that mountains are blasted to get stone by the construction company. Mountain quarrying is also going on in the region. Adani and others industrial groups are doing this near the coastal region. If it is not stoped, it will become a complete disaster in bio-diversity of the region. 15 -20 villages will be affected by this process of construction, and we are not having any rehabilitation programme for these people till now. She was surprised that despite having on record a massive landslide, 18 years ago in the region, neither the government nor the private construction companies are taking any required precautionary measures. She also told us that 20000 trees are going to be cut down in the process of road widening along the highway leading to the Port which is under construction.

> When we asked her about the pollution status in coastal areas of Alappuzha district, she replied promptly that this region might be called as *Toxic Cocktail in context of the environmental impact made by the use of fertiliser and commercial boats.*

[24] vide its letter No. C5-S634/95 dated 9.3.1995, No. C3-21688/96 dated 17.7.1996

She also referred to many independent studies conducted on the health of plantation workers, which shows that there is a definite rise in cancer cases in these regions. Women are more vulnerable in these regions, but nowadays‘ Kudumba-Shree' is playing a major role in addressing the livelihood issues of fisherwomen in this region.

When we discussed the overall scenario and role of government, she accepted that the environmental situation is degraded and the rapid growth of unplanned developments are leading to more hazardous conditions in the region. She said that government must take the initiative to address these major challenges because it is not a matter of belief and disbelief; it is a matter of Constitutional right. It should be addressed by the government.

Interaction with the head, Disaster Management Centre, Institute of land and disaster management, supported the claim of fishermen community that because of use of big trawlers the fish catch for small fishermen has decreased tremendously in the past three years. DMA official told us that the fishes have migrated so deep into the sea that they cannot be caught. She informed us that the Disaster Management Centre's focal area is training and capacity building. She herself said that it has remained the biggest limitation of the Centre also. They don't deal in the prevention and mitigation of disasters which makes them very limited in approach. She rejected the claim of the environmentalist, in Munnar that the angular constructions of the dams prevent them from falling. She informed us that any slope which is more than 16 degrees is a vulnerable slope. She agreed that most of the dams are made on fault lines and it is the most burning issue in Kerala at present. *She emphasised on getting information from local people to understand the gravity of the issue rather than completely relying on the information given by government officials.* She also suggested using RTI for getting correct information from the government offices.It can be assessed that effective preventive measures are not taken into consideration as per DM Act 2005. Till date only it is response centric.

The rapid urbanisation of Kerala has increased the disaster risk manifold. The urbanisation rate in Kerala is 15% as compared to 5% in the whole of India. Urban areas are becoming “heat islands”. She showed very little or no faith in the role of government in DRR. She was the member of SDMA but was of the opinion that the disaster plans prepared by them are of very little practical use. She was of the opinion that the plans should be the compilation of the community plans. Ward people should be actively included in the DRR activities. There are structural and non-structural measures of DRR. In the government plans the structural measures like building dams, training and capacity building, having NDRF figure more because they have the scope of money making for the officials. The non-structural measures which are cheap yet long-lasting and effective are usually ignored like creating bio shields, having larger green belts, insurance system, promoting and conserving mangroves forests. She said that the conservation of mangroves has never been considered in any of the plans. There is a grave need for sensitization of policy makers for making disaster plans. The government authorities maintain a kind of secrecy about the coastal areas. On the health front, she said that there is complete ignorance by the government authorities. There is zero epidemiological surveillance in spite of concentration of cancer and asthmatic patients in different parts of Kerala. She rated the Kerala Disaster Preparedness to 40%. She strongly believed that the resistance comes from the community and until and unless they are not involved in DRR, effective disaster management cannot occur.

Thus, it can be analyzed that there exists a wide gap between government and community response. We were not able to get any official data from the government offices because of their tendency to jealously guarding it. The grass root workers kept on hinting the nexus between the government and the private companies and the welfare of the people is nowhere in the priority of the government. Most of the projects are without Environmental Impact Assesment, and no one can stop them from degrading the environment. Apart from the early warning system, not much is done for DRR. Coastal Zone Management Authorities seem to be very staunch in their approach. Although they don’t want to remove fishermen from where they are, they don’t have an answer to the question that how will they be protected in case of a natural disaster? There exists a wide gap between the law and its implementation.

The current floods thus can be seen as the consequences of all the above issues raised in the article. Across the field interacting with the local community members gave significant indications based on their lived experiences

the warning signals, felt and also strongly expressed about the impending disasters. It was not very long and just took three years to show the backlash of nature in the form of massive floods. Thus the traditional ecological knowledge of biodiversity, resilience and sustainability is in the hands of indigenous people and the local communities who have been residing for generations (Berkes et al., 1994). It's important to listen to them and plan any kind of development suitable to their ecosystem, rather than going by the commercial ventures of outsiders who are least bothered of the local ecology and only interested in money making, ultimately local communities who are at the receiving end.

References:

Aslami A.N., A. Jobby, Vincy Nelson, Sony Simon (2015) 'Prevalence of hypertension in a fishermen colony of district Kollam, Kerala: A cross-sectional study' Research Journal of Pharmaceutical, Biological and Chemical Sciences 6(4):1029-1035

Berkes, F., Folke, C., & Gadgil, M. (1994). Traditional ecological knowledge, biodiversity, resilience and sustainability. In *Biodiversity conservation* (pp. 269-287). Springer, Dordrecht.

Gadgil, M., & Guha, R. (2013). *Ecology and equity: The use and abuse of nature in contemporary India*. Routledge.

Gadgil, M., Berkes, F., & Folke, C. (1993). Indigenous knowledge for biodiversity conservation. *Ambio*, 151-156.

Gadgil, M., Daniels, R. R., Ganeshaiah, K. N., Prasad, S. N., Murthy, M. S. R., Jha, C. S., ... & Subramanian, K. A. (2011b). Mapping ecologically sensitive, significant and salient areas of Western Ghats: proposed protocols and methodology. *Current Science*, *100*(2), 175-182.

Gadgil, M., Krishnan, B. J., Ganeshaiah, K. N., Vijayan, V. S., Borges, R., Sukumar, R., ... & Gautam, S. P. (2011a). Report of the Western Ghats ecology expert panel. *Submitted to the Ministry of Environment and Forests, Government of India.*

Kamath, R., & Ramanathan, S. (2017). Women tea plantation workers' strike in Munnar, Kerala: lessons for trade unions in contemporary India. *Critical Asian Studies*, *49*(2), 244-256.

Kumar Mohan (2005), 'Land use in Kerala: Changing scenarios and shifting paradigms' Journal of Tropical Agriculture 421(1):1-12.

Murty, T. S., & Kurian, N. P. (2006). A possible explanation for the flooding several times in 2005 on the coast of Kerala and Tamil Nadu. *JOURNAL OF THE GEOLOGICAL SOCIETY OF INDIA*, *67*(4), 535-536.

Pal, I., & Al-Tabbaa, A. (2009). Trends in seasonal precipitation extremes–An indicator of 'climate change'in Kerala, India. *Journal of Hydrology*, *367*(1-2), 62-69.

Thomas, D. R., Sunil, B., & Latha, C. (2017). Physico-chemical analysis of well water at the Eloor industrial area-seasonal study. *Current World Environment*, *6*(2).

****

People interacted with by the Research Team between Sept. 2015-Sept.2018

1. Keshav Mohan (Director) Institute Land and Disaster Management (ILDM)
2. Dr Shekhar Lukose Kariakose (Head (Scientist) HVRA Cell (KSDMA)
3. Dr Thara K G (Head) Disaster Management Centre, ILDM
4. K A Saira Banu Deputy Director, Fisheries Department
5. Ignatius Manroe Deputy Director, Fisheries Department
6. Smitha Deputy Director, Fisheries Department
7. G. Kamalavardhan Rao IAS, Secretary, Revenue Deptt.

8. K.N. Satheesh, IAS, DC, Thruvananthpuram Distt.
9. Interviewed Kumily Panchayat President Ms. Sheeba Suresh; Vice President Mr. Suncy Mathew, Joint Secretary Mr. Anil
10. Sevagram Grama Kendram Ward no.12 Painav. Interviewed Ms. Prabha Tangachan, Panchayat Member
11. Changanassery Municipal Corporation – Interviewed Municipal Commissioner Mr. Lalichan Kunniparambil
12. Visited Archdiocese of Changanassery – H.E. Rev Dr. Mar Thomas Tharavil
13. Interviewed Mr. Chiranjeet, Relief worker from NGO Goonj
14. Dr. Johnson Vaalayil Edicula, Edathua village, upper Kuttunad
15. Chairman, Kerala Toddy Workers Welfare Fund Board
16. Interviewed Regional Director V.Kunhambu, Central Ground Water Board, Trivandrum Kerala
17. Shri PG Thomas Institute of Land and Disaster Management (Director)
18. Dr. Amalraj, Assistant Professor IL&DM
19. Interviewed Shri Bibin Joseph, Chief Engineer DRIP and Dam Safety, Kerala State Electricity Board (KSEB) –
20. Interviewed Shri PG Kurian, Principal Secretary, Revenue and Disaster Management, Kerala.
21. P.G.Aniruddan INTUC
22. Ms. Shameena Shaukat Secretary Area Development
23. Ms. Lalitha Kumari teacher at Anganwadi N.Adayar
24. Mohd. Nasir, Adayar NRI Keralite, migrated to Muscat
25. Pramod Borah Assam Migrant Worker Eloor
26. Dr. V.S.Basheer Principal Scientist, Fish and Genetic Resources, Kochi
27. Mohan Kumar, Munnar, CPM member.
28. D P Srikumar (District Geologist) Deputy Director, Mines and Geology Department
29. Gopkumar, District Geologist
30. Dr. Suresh Scientist, kerala State Remote Sensing and Environment Monitoring

Contact

Mr. Langthianmung Vualzong

Special Centre for Disaster Research
Jawaharlal Nehru University
Aruna Asaf Ali Marg Gate
New Delhi 110067
Tel: +91-11-26741964, Mob: 9599853905, Mob. 9013270651, Mob: 9654484198

Citation:

Singh, Amita., Reddy, Sunita., Kamthan, Manika., Chugh, Gaurika.,(2018) '2018 Kerala Floods: A Report on Governance and Legal Compliance', New Delhi: UPE2, *SCDR-NIDM Research Publications.*

****

Contact
Mr. Langthianmung Vualzong
Special Centre for Disaster Research
Jawaharlal Nehru University
Aruna Asaf Ali Marg Gate
New Delhi 110067
Tel: +91-11-26741964, Mob: 9599853905, Mob.9013270651, Mob: 9654484198

Citation:

Singh, Amita., Reddy, Sunita., Kamthan, Manika., Chugh, Gaurika., (2018)
'2018 Kerala Floods: A Report on Governance and Legal Compliance',
New Delhi: UPE2, *SCDR-NIDM Research Publications.*