

Kerala's Deluge and Reconstruction : need for sustainable and inclusive development

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Introduction

- This paper examines the nature, causes, estimate loss and the recovery strategy needed to address the deluge
- The catastrophic flood experienced in Kerala is considered as the worst flood in the history of a century. This is the worst deluge witnessed in Kerala since 1924.
- The deluge has created unprecedented damage to eight districts in Kerala and resulted in the loss of 483 human lives.
- The magnitude of flood was too large forcing 14.51 lakh people from 3.91 lakh families to move away from their houses to relief camps provided by the state government.
- Thousands of houses, shops, commercial buildings, public buildings were either completely destroyed or partially destroyed due to the devastating flood.
- The Cochin International Airport, which was constructed in low lying paddy land, was completely flooded and forced to close down the entire operations for 14 days.

Nature of Deluge

- The disaster is categorised as L3-level disaster, under national disaster management guidelines.
- According to it, the disaster corresponds to a nearly catastrophic situation or a very large-scale disaster that overwhelms the state and district authorities.
- The state government notified that all the villages of seven districts are severely affected with excessive rainfall, flooding, landslides and consequent disaster which cost damage to property and disruption to normal life.

- They are Alappuzha, Kottayam, Pathanamthitta, Ernakulam, Thrissur, Wayanad and Idukki (Table 1).
- Besides the above, majority of the villages in Palakkad district is also declared as flood affected
- Severe flood damage occurred in districts having hilly regions and forest areas due to heavy rains and landslides such as Idukki, Pathanamthitta, Wayanad and Palakkad.

Table 1
Number of Villages notified as flood/landslides affected till
August 29, 2018

Sl. No.	Number of Districts	No. of Taluks Affected	No. of villages Affected	Total No. of Villages	% of Villages Affected
1	Alappuzha	6	93	93	100.00
2	Kottayam	5	100	100	100.00
3	Pathanamthitta	6	70	70	100.00
4	Ernakulam	7	127	127	100.00
5	Thrissur	7	255	255	100.00
6	Wayanad	3	49	49	100.00
7	Idukki	4	67	67	100.00
8	Kollam	6	37	105	35.24
9	Malappuram	8	53	138	38.41
10	Palakkad	6	86	157	54.78
11	Kannur	4	24	132	18.18
12	Kozhikode	1	20	118	16.95
Total		63	981	1411	69.53

Source: Government of Kerala (2018), Kerala Gazette dt August 29, 2018

Causes of deluge

- Incessant rain received during the period of south-west monsoon, unscientific and poor management of dams and unsustainable development approach pursued are the major causes.
- Large excess rain (60% or more from normal), excess rain (20% to 59% more from normal) received during the first 12 weeks (between 1 June to 23 August, 2018) of south west monsoon is the most important cause of the deluge.
- The rainfall indicated that large excess rains from the normal received in four districts namely Idukki, Malappuram, Palakkad and Wayanad during the second and third week of June, 2018.
- The other districts which received excessive rainfall are Ernakulam and Kottayam.

Opening of Dams

- A major cause for the deluge is the unscientific and poor management of the dams during the period of heavy rain.
- Kerala has 53 major reservoirs.
- Of the dams, 14 are located in Idukki, 9 are in Palakkad, 8 are in Thrissur, 4 are in Pathanamthitta and 2 are in Wayanad district.
- Due to heavy rain, water level of most of the dams reached near the maximum storage level by the end of July 2018.
- Due to this, shutters of 18 dams located in different districts of Kerala were opened on 31st July 2018.
- Subsequently all the major dams were opened at the peak of the flood on 9th and 10th August 2018.

- All the five shutters of the Idukki reservoir, Asia's highest arch dam (Cheruthoni dam) was opened on 10th August 2018, resulting in an unprecedented overflow of Periyar, the longest river in Kerala having a length of 244 km, flowing through Idukki and Ernakulam districts and flooded almost all places in two sides of the river and its distributaries.
- Similarly the opening of all shutters of the two dams of Sabarigiri hydro-electric project in Pampa river located in Ranni taluk of Pathanamthitta district has practically flooded major parts of two districts viz. Pathanamthitta and Alappuzha.

Destruction of Ecology and Environment

- Another major cause of the deluge is unsustainable development approach pursued in Kerala during the last six decades.
- Construction of a large number of dams for generation of hydro-electric power and irrigation, destroyed river ecology
- Constructing houses, roads and other structures in the banks of the rivers and its branches are common
- Wide spread conversion of low lying paddy land for construction
- Conversion of wet lands, paddy lands, ponds, streams for construction in urban areas

- Encroachment on forest land for farming and construction, ecological destruction due to undesirable construction in hilly terrains
- Opening up of a large number of stone quarries without considering ecological consequences
- Widespread sand mining from rivers, streams, lakes etc.
- All the political parties in Kerala opposed the recommendations of Gadgil Committee and Kasturirangan Committee for ecological protection of Western Ghats.
- The development slogan has been ‘destroy ecology, environment and natural resources for rapid development’.
- The lesson learned from the catastrophic flood is that Kerala cannot survive unless the state give up the unsustainable development approach.

Displacement of People

- The number of relief camps increased from 513 to 1026 within 1 day.
- In Pathanamthitta, the rise in water level was so swift that many found themselves without any option but to wait for rescuers in roof tops and first floor of the houses.
- The stranded people were rescued after two to three days, when the fishermen arrived with their boats.
- Similar is the situation that prevailed in Chengannur Municipality and low lying upper Kuttanad in Alappuzha district.

- Ranni, Kozhencheri, Aranmula and Thiruvalla in Pathanamthitta district were isolated, as its river breached its banks.
- The navy airlifted stranded citizens in Aluva, Perumbavoor, Thrissur and Pathanamthitta after the social media was flooded with distressed messages.
- It is reported that of the total population of two lakhs in Kuttanad region, 90 percent of were forced to abandon their houses and move to relief camps
- It is estimated that the number of people moved to relief camps was 10.58 lakh on August 19, 2018.

Table 2
Number of Persons in Flood Relief Camps on August 19, 2018

Sl. No	District	Number of camps	Number of Persons in camps	Percent
1	Alappuzha	601	2,77,706	26.23
2	Ernakulam	733	2,61,634	24.71
3	Thrissur	721	2,04,181	19.29
4	Kottayam	411	98,175	9.27
5	Pathanamthitta	528	69,505	6.57
6	Idukki	211	33,636	3.18
7	Malappuram	155	32,743	3.09
8	Wayanad	202	28,861	2.73
9	Kozhikode	150	23,060	2.18
10	Kollam	89	16,811	1.59
11	Other four districts	129	12,328	1.16
	Total	3930	10,58,640	100

Source : Malayala Manorama daily, dated August 20, 2018

Estimated loss and damage (UN report 2018)

According to UN report, the loss and damage due to the deluge is as follows

➤ Damage due to flood	₹10,561 cr
➤ Loss due to flood	₹16,159 cr
➤ Total damage & loss	₹26,718 cr
➤ Recovery needs	₹30,715 cr
➤ The share of total damage & loss of social sector	27%
➤ Production sector	27%
➤ Infrastructure sector	5%
➤ Cross-cutting sectors	41%

(environment, employment, livelihood, disaster risk, local governments etc)

Damage on housing, land & agriculture and allied activities

- Total damage & loss ₹26,718 cr
- Share of damage on housing land etc. 24% of total
- Share of agriculture & allied 27% of total
- Employment & livelihood 39% of total
- Others 10% of total

Table 3
Estimate on Loss and Damage

	Number
Number of people affected	55 lakh
Number of villages affected	981
Number of people died	483
Number of families lost their house and land	946
Number of houses fully damaged	17316
Number of houses partially damaged	216917
Number of people in relief camps	14.51 lakh

Table 4
Total Damage, Loss and Recovery Needs (₹ crore)

Sector	Damage	Loss	Total damage & loss	% share	Recovery needs	% share
Social	5743	1448	7191	26.9	6337	20.6
Production	2975	4180	7154	26.8	4498	14.6
Infrastructure	890	471	1361	5.1	15659	51.0
Cross-cutting*	953	10060	11012	41.2	4221	13.7
Total	10561	16159	26718	100	30715	100

* Environment, employment, livelihood, disaster risk reduction, local government etc

Source: United Nations (2018) :Kerala, Post Disaster Needs Assessment, Floods and Landslides - August 2018

Table 5**Total damage, loss and recovery needs : housing, agriculture and employment (₹ crore)**

Sl. No.	Sector	Damage	Loss	Total	Share (%)	Total Recovery Needs	Share (%)
1	Housing land & settlements	5027	1383	6410	23.99	5443	17.72
2	Agriculture, fisheries and livestock	2975	4180	7154	26.78	4498	14.64
3	Employment & livelihoods	881	9477	10358	38.77	3896	12.68
Sub Total (1+2+3)		8883	15040	23922	89.54	13837	45.05
Grand total		10561	16159	26718	100	30715	100

Source: United Nations (2018) :Kerala, Post Disaster Needs Assessment, Floods and Landslides - August 2018

Table 6
Total number of buildings damaged and recovery cost

Sl. No	Item	Number	Share (%)	Recovery cost (₹ lakh)	Share (%)
1	Total loss of land and buildings	947	0.4	14735	2.9
2	Totally damaged buildings+ (damage >75%)	16369	7.0	156488	31.2
3	Partially damaged building with concrete roof	139210	59.4	232898	46.4
4	Partially damaged building with non-concrete roof	77707	33.2	97503	19.4
Total		234233	100	501624	100

Source: United Nations (2018) :Kerala, Post Disaster Needs Assessment, Floods and Landslides - August 2018

Table 7
Estimated income loss during flood 2018, Kerala

1	Total loss at 2017-18 prices Estimate I – Lower (₹ crore)	17462
2	Kerala's GSDP in 2017-18 (617034X1.10) (₹ crore)	678737
3	Percentage loss in GSDP due to immediate impact of floods	2.60
4	Add 33% loss in primary sector (₹ crore)	26850
5	Additional loss as % of GSDP	3.96
6	Total loss at 2017-18 prices (Estimate II - Higher) (%)	6.56
7	Amount of loss (₹ crore)	44525

Source: United Nations (2018) :Kerala, Post Disaster Needs Assessment, Floods and Landslides - August 2018

Acute scarcity of funds to finance rebuild Kerala

- The expected funds from various sources is only ₹ 13675 crore
- Not even sufficient to meet half of the recovery needs
- The state has been facing acute fiscal crisis and is forced to impose severe restrictions on treasury payments
- Fiscal situation of state has been worsening during the last three years
- The growth rate of revenue receipts is at lowest level
- Central government is not allowing to increase revenue and fiscal deficit levels in the context of flood
- Not allowing to raise more loans than the limit prescribed

- Efforts to receive assistance from foreign countries non-resident Keralites etc were not encouraged
- But the GST council has given permission to impose one percent cess on GST items
- Lack of finance will adversely affect the rebuild Kerala programmes
- Result in enormous delays in distribution relief and assistance to flood affected people
- Rebuild of Kerala will take a longer period than expected

Financing of Rebuild Kerala

Expected funds	₹ crore
Government of India	4796
Additional excise duty on IMFL	750
Chief ministers relief fund	3229
Salary challenge	600
Cess on GST	600
World Bank and ADB loan	3700
Total expected	13675
Total recovery needs (UN estimates)	30715
Gap in funds	(-)17040
Gap in funds (%)	55.5

The strategy to address rebuild Kerala

- Kerala will have to redefine development strategy and policies in all fronts based on the lessons from the deluge.
- The state should adopt a sustainable development approach and strict measures are to be taken to preserve ecology, environment and natural resources.
- Scientific principles should be used to assess climate change, forecasting rain, flood induced by dams, drought, earthquake, etc and prompt action to face it.
- Introduce scientific management of dams and appropriate steps to decommission, structurally weak and old dams.
- Improve state finances by cutting non-plan revenue expenditure and additional resources mobilisation method.
- Mobilise funds from all sections of people within Kerala and non-resident Keralites.

- In rehabilitation top priority should be given for those flood victims, whose houses were fully destroyed, partially destroyed, lost entire household items, livelihood assets, livestock and poultry, stock in shops, small scale industrial units etc.
- For reconstruction of infrastructure top priority should be given to roads and other modes of transport, electricity, water supply, communications, damaged public offices, hospitals, educational institutions, banks etc.
- Use centrally sponsored schemes for rehabilitation and reconstruction activities.
- The banks may be asked to give liberal credit to the flood victims to recover their loss of property and livelihood.

Operational strategy : Needs change

- Top priority should be given to compensate the damage and loss to the people to regain their pre-flood situation both in terms restoring their assets and livelihoods
- Urgent steps should be taken to collect data and estimate all items of loss and damage of people
- The estimate of loss and damage shall be made available at the level of local governments (wards, grama panchayats, municipalities, municipal corporations).
- Such assessment shall be made in a transparent and participatory way with the active participation of local governments
- Survey method of collection data for giving assistance to individuals and household is not a correct method

- The application mode of inviting applications from the affected people, using a prescribed application form is a faster way to collect information on damage and loss.
- This will also help quick processing of applications and distribution of compensation after due verification
- Currently the function to estimate loss and granting assistance is entrusted to district collector through village officials
- Function to assess the loss and distribution of compensation (houses, household items etc) should be given to local governments.

THANK YOU

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