

"Unprecedented Development in Kerala and the associated risks to life"

By Dr. Dayana Maliyekkal

"Even a whole society, a nation, or even all simultaneously existing societies taken together, are not the owners of the globe. They are only its possessors, its usufructuaries, and like boni patres familias, they must hand it down to succeeding generations in an improved condition."

Karl Marx's Capital (Volume 3)

Introduction

Kerala is known as God's own country all over the world due to the scenic beauty and the beautiful climate of the state. Its tourism industry attracts a lot of people. The famous Western Ghats which runs through many districts of the state and the three Ramsar sites (the protected wetlands) and many other features are praiseworthy. But in the past few decades the commercial interests of people have given way for much unprecedented (that has never happened or existed before) development¹ and consequent environmental problems and pollution of the pristine purity of all the ecologically fragile² areas. The vanishing paddy fields and wetlands³ for commercial buildings and house sites are some aspects of it.

Flood in 2018

In 2018 the state witnessed a great crisis due to severe flooding. The state experienced an abnormally high rainfall from 1 June 2018 to 19 August 2018. As per the data, Kerala

¹ According to Cambridge law dictionary "Development" means: "the process in which someone or something grows or changes and becomes more advanced: healthy growth and development"
< https://www.soas.ac.uk/cedep-demos/000_P501_USD_K3736-Demo/unit1/page_12.htm> accessed on 08-10-2019

² Ecologically fragile are is an extremely sensitive and highly vulnerable ecological are with high susceptibility to anthropogenic stress, highly altered natural habitats, seriously threatened biodiversity, and very delicately balanced and unstable abiotic and biotic conditions. Available in <<https://www.plantscience4u.com/2018/07/ecologically-fragile-area.html>> accessed on 3-06-2019

³ From 8.8 Hundred thousand hectares in 1970-71, in 2018 the state was left with an estimated 1.67 hundred thousand hectares of paddy land

received 2346.6 mm of rainfall from 1 June 2018 to 19 August 2018 in contrast to an expected 1649.5 mm of rainfall. This rainfall was about 42% above the normal. Further, the rainfall over Kerala during June, July and 1st to 19th of August was 15%, 18% and then 164% respectively, above normal rainfall for the period. Due to heavy rainfall⁴, the first onset of flooding occurred towards the end of July. A severe spell of rainfall was experienced in several places on the 8th and 9th of August 2018⁵. The 1-day rainfall of 398 mm, 305 mm, 255 mm, 254 mm, 211 mm and 214 mm were recorded at various districts on 9 August 2018. This led to further flooding in several places during 8-10, August 2018. The water levels in several dams were almost near their Full Reservoir Level (FRL) due to continuous rainfall from 1st of June, so water needed to be released from the dams. Another severe spell of rainfall started from the 14th of August and continued till the 19th of August, resulting in disastrous flooding in 13 out of 14 districts. So, while the state was already flooded, 35 dams were discharging water, with all their gates opened at the last minute⁶. The flood damage could have been reduced by 20-40 % if the dams and reservoirs released the water slowly in the two-week period when the rains had subsided. The state did not have an advanced warning system in place⁷. They released water from the dams only once the danger levels, i.e. levels at which the dams' structures can be damaged were reached.

Even before government agencies could reach flood victims, survivors started conducting relief operations in Kerala. The floods in Kerala reveal poor planning and nature's fury towards its destruction. During this demanding time all of Kerala was united. The significant aspects of the rescue and relief operations were undoubtedly the calm coordination between the multitudes of civil actors from government officials to fisher folk, highest professionals to school children, all of whom turned up when they were needed the most. Schools, churches, temples, universities, commercial complexes were all converted to temporary relief camps in almost no time.

⁴ "Why Kerala floods killed so many, destroyed so much" Prabhash K Dutta, India Today, NewDelhi

⁵ https://www.undp.org/content/dam/undp/library/Climate%20and%20Disaster%20Resilience/PDNA/PDNA_Kerala_India.pdf accessed on 17-10-2019

⁶ Special Correspondent, Poor Dam Management Blamed for Kerala Floods, (The Hindu, April 4, 2019)

⁷ Sudha Nambudiri, Kerala Floods: IMD says Warnings were given Early, (The Times of India, September 3, 2018)

Much before the Navy and the Coast Guard came to rescue people from Kerala's sinking villages and towns, the locals, sensing the ferociousness of the floodwaters, banded together to save their own. People went from house-to-house, knocking on doors in the dead of night to tell strangers, friends and family that it was not safe to stay at home. Those in low-lying areas were hasty in assessing the danger, grabbed clothes and a few essential items and ran out of their homes. Others, who had the luxury of upper floors, sat nervously for hours before listening to their villagers' appeals. They had the more threatening stories to tell, escaping in a quivering fishing boat or canoe as it danced left and right in the intense currents of the river. Together, the villagers who probably did not even know each other's names, showed extraordinary courage in the face of adversity.

The first reaction within the state government was a gathering of information on people who were missing or stranded that was circulated swiftly through social media networks. Along with names, location-based requirements of essential items were quickly distributed on multiple platforms with social media proving to be the cornerstone of probably the world's largest such citizen-led rescue and relief operation. High education levels and comfort with technology helped in such efforts mushrooming all over the state. Before long, the state government began centralising all efforts through a single website. Vitally, the website enabled effective coordination and communication between the public, rescue volunteers and government authorities at different levels. During the floods, the government of Kerala took all the possible measures to save lives and provide emergency assistance. The government has pressed into service at least 67 helicopters, 24 aircraft, 548 motorboats and thousands of personnel from the defence forces, NDRF, Coast Guard and other central armed police forces⁸. This instance killed nearly 500 people and incurred 31,000 crore worth damages. After that the focus was shifted to recovery and rehabilitation. Before this measure was adopted the state had to deal with the magnitude of wastes produced due to flood. It was so urgent to deal with waste as those wastes generated were dangerous. The central and state ministry announced an ex gratia payment of ₹ 2 lakh per person to the next of kin of the deceased, ₹ 50,000 to those seriously injured. The Prime Minister also extended the help from Centre to rebuild homes, provide assistance to

⁸ R. Krishnakumar, Kerala flood of 2018 in list of world's worst extreme weather events in five years(Frontline, September 27, 2019)

farmers and additional funds under the employment guarantee scheme⁹. An immediate financial aid of 10,000 rupees was given to the affected families for cleaning and provisions were also made for necessary food materials for the next two weeks after the flood. Officials visited homes to assess the damage caused to buildings and other infrastructures. Based on the final report, an amount to redress the damage is awarded as damages. This is still in the finishing stage. At the anniversary of the 2018 flood another catastrophe visited the state.

Flood and land sliding in 2019

In August 2019, great land sliding in many northern areas¹⁰ as well as hilly areas of state took the lives of many, and it affected the rebuilding measures badly. Kerala has been hit by incessant rainfall during this August. It witnessed 24 landslides in 24 hours, spiking the death toll to 22 on August 9, 2019. Nearly 22,165 people have been shifted to relief camps. Heavy rains have been lashing the coastal state since August 7. It has thrown normal life out of gear. Of the 14 districts in Kerala, nine in the north have been put on red alert; three in central on orange alert, while two in south on yellow alert. Across the state, 315 flood relief camps have been opened. A massive landslide at Kavalappara village in Malappuram district has reportedly buried 30 of the 70 houses. Many are feared to be dead and buried under the mud.

This has created an alarming situation in the state and people do feel afraid that Kerala has turned into a place not worth residing in. This is because of the absence of proper implementation of the principle of sustainable development in the environmental policy of state. Resources are exhausted without proper regulation in the state. Absence of regulation doesn't mean absence of legislation. There is plethora of legislation. But there is absence of comprehensive coverage of the land use pattern and basically every regulation is often violated due to the bribery and red tape which exists among the enforcing officials and the political parties ruling the state.

Rebuild Kerala Program announced by Government

⁹ Neetu Chandra Sharma, Sayantan Bera, 'Centre steps up to help flood hit Kerala following Modi's visit' (Live Mint, October 21 2019) < <https://www.livemint.com/Politics/GieEjQ7fNIF0qup0NZSFLN/Centre-steps-up-to-help-flood-hit-Kerala-following-Modis-vi.html> > accessed on 15-10-2019

¹⁰ < <https://www.ndtv.com/kerala-news/kerala-rain-most-recent-kerala-landslides-in-ecologically-sensitive-zones-2085594> > accessed on 10-10-2019

In response to the environmental devastation the Government came up with a plan called “Rebuild Kerala 2018”. Here the government gave priority to supplanting the manmade structures. The preface of the document states that it presents a unique approach to rebuilding the state. This initiative is said to attempt a bold vision for *Nava Keralam* that is more resilient, green, inclusive and vibrant. It is said to encompass the key sectors of economy such as agriculture, animal husbandry, fisheries, forestry, land, livelihoods, roads, bridges, transportation, infrastructure, water supply and water resources management. This also gives importance to crosscutting priorities. Among them, climate change and environment deserve special mentions in this context. But refurbishment of the natural infrastructure lost due to human intervention in the last few decades is also equally pivotal to regain the safety of life in Kerala¹¹. It is high time to probe into the reasons behind such a great environmental catastrophe which put the life of human and nature under great threat in the State.

Destruction of ecology of Kerala through centuries

Broadly speaking, major ecological destruction began in Kerala during the British colonial period. Specifically, it relates to the advent of industrial revolution. As the environmental historian Richard Grove has rightly characterised, colonialism was also a period of ‘green imperialism’. By 1810, the British had established effective control over all three regions of present-day Kerala i.e. Malabar, Kochi and Travancore. Since the beginning of the nineteenth century, there have been infrequent attempts to clear forests and establish commercial plantations of coffee, cinchona and tea. This in turn led to destruction of forests in watershed regions of state. Large-scale forest destruction happened in 1877-88, when the British planter John Daniel Monroe bullied the local ruler to lease him 144,020 acres (215 sq. miles) of virgin forests in the Kannan Devan hills in Idukki region of the kingdom of Travancore. This was over 3 per cent of the total area of Travancore. Tropical forests were cleared for large-scale commercial plantations, first for coffee and subsequently for tea. Thus began the massive destruction of what the Madhav Gadgil Committee called the ‘water towers’ of the Southern-Western Ghats.

¹¹<<https://kerala.gov.in/documents/10180/5f7872f9-48ab-40c8-bf3f-283d8dceacf6>> accessed on 10-10-2019

This plantation craze spread across all three regions of Kerala. It stripped large areas of the high ranges. In the beginning of the twentieth century, rubber arrived in Kerala and spread like a parasite through the low-lying areas of the Western Ghats and the midlands. Rubber, however, also contributed to forest and biodiversity loss across Kerala, occupying 28 per cent of the cropped area (5.5 lakh hectares) in the state today. The uncomplimentary adjective of 'Devil's milk' given to the rubber latex by John Tully, who wrote a global social history of rubber, is appropriate at least in the case of Kerala. This Plantation obsession started during the Colonial rule and continued in an intensified form in later decades.

Another land use change happened in various phases, i.e. 1940's and 1960's; the unregulated internal migration and its impacts on the lifestyle pattern, coastal and midland of the state. This can be called 'migration impact'. The large-scale internal migration from coastal and midland areas to the Western Ghats in Kerala which began with the aim of more luxuries and infrastructure building through land use changes which, in the long term, proved to be malignant against the environment. This contributed to forest destruction and the migrants turned to rich people controlling the government in power. This affected the tribal lands and the life of tribes, too. In every area of migration, especially the Wayanadu and Idukki districts, migration resulted in extensive forest clearance for agriculture and human settlement.

Another factor that led to forest destruction and consequent land use change is the substantial urbanisation in the state. Urban population in 2015 shot up to 47.7 per cent out of the 3.36 crores of population. Kerala is today a suburban state. Urbanisation made major demands on resources for construction and infrastructure projects. The explosion of stone quarries in the state after 1980 has been astonishing. Today, Kerala has over 5,000 quarries, out of which over 2,000 are in the Western Ghats. The real reason behind the land sliding as identified by various scientists is unregulated quarrying of these ecologically fragile areas.

Yet another factor is hydel projects. These contributed to destruction of over 350 sq. km of evergreen forests, in the reservoir area alone. Three major rivers have over a dozen dams each, which have altered the riverine ecosystem in many ways. In 1957, 36 per cent of Kerala's land area constituted forests and by 1990 this was reduced to 12 per cent. The 2016 economic survey of the Kerala Government claimed that Kerala had 19,230 sq. km of

forests, which is 49.5 per cent of the total land area. But the details provided within proves that only 1523 sq. km is classified as 'dense' forests, which is only 3.9 per cent of the state's land area. This is the only real tropical forest which provides multifarious ecological services. The rest are degraded forests (23.9 per cent) or open forests (21.7 percent). In an ecologically fragile state where 75 per cent of the land has an incline of above 20 per cent, the loss of dense forest cover of this magnitude is an invitation to disaster. Therefore, it is pertinent to say that massive forest loss in the catchments of rivers and dams have contributed to excess runoff during the extreme rains in August 2018 in Kerala, adding to the severity of the floods.

Sand extraction, which brought in another land use change, disrupted the riverbeds. This has, in turn, led to reduction in the water retention capacity of the riverbeds. Based on sand audits conducted in 14 major rivers, it is found that sand extraction is up to 85 times in excess of the sand deposition. This has caused rivers to overflow not just to their flood plains, but to the basins as well. The entire 38,863 sq. km of Kerala's land mass is the catchment area or drainage basin of its 44 rivers and their 900 tributaries. Many tributaries have been done to death. Thousands of flood paths consisting of small streams, rivulets, etc., have been levelled for construction. Thus, the sand extraction in the state is done without assessing the capacity of rivers.

Apart from the river network, there exists a network of coastal backwaters, freshwater lakes, wetlands and marshes. Together, they used to cover an area of 1,279 sq. km or 1.28 million hectares. All the major freshwater lakes have shrunk up to one-fourth their original size, in some cases. The story of the 32 brackish coastal backwater systems (which includes 10 estuaries) is no different. Two of the biggest backwaters – Vembanad and Ashtamudi – are protected wetlands under the Ramsar Convention. Six rivers drain into the Vembanad lake. Research studies have shown that Vembanad, which covered an area of 315 sq. km in 1912, has now shrunk to 160 sq. km, thereby losing half of the drainage area of six rivers. This has been a major reason for exacerbating the flooding in southern Kerala. Excessive tourism and urban development have contributed to the destruction of the wetland.

Though not strictly classified as wetland, the once extensive network of 7.6 lakh hectares of paddy fields in Kerala have played the role of flood plains in the state. Paddy lands in Kerala

are low-lying areas into which water drains from the surrounding hills in the midlands. About 80 per cent of the paddy fields have been levelled or converted for construction and commercial cultivation and only 1.9 lakh hectares remain.

Thus, the entire water cycle beginning with the 'water towers' in the Western Ghats to the village level has been disrupted through ecologically unwise human intervention. After 1980, uncontrolled tourism development has also contributed to this disruption in the mountains and coastal areas. Ecologically regulated tourism, rather than just branding mega tourism as eco-tourism, would be critical to preserving Kerala's ecosystem. Adding to this, the global climate change has put the life in Kerala on a high-risk graph.

Are these Environmental crimes?

These are great environmental crimes that go against every grass-roots principle of environmental law. This is due to the greed of people, for exhausting resources according to his purchasing capacity¹², concept of property rights relating to land and the lack of proper policy or legislation which cast specific liability, and absence of stringent implementation mechanism regarding environmental protection in the state. This is really a crime done by the government against the intergenerational equity¹³, intra generational equity¹⁴, doctrine of public trust¹⁵ and sustainable development¹⁶. Along with the destruction of ecology, it gives rise to number of unknown life-threatening diseases¹⁷ as well. On one side,

¹² The Constitution of India, 1950 guarantees the equitable access to resources. Art 39(b)(c) caste duty on the State to make legislations to that effect.

¹³ Dasgupta, S & T Mitra, 'Intergenerational Equity and Efficient Allocation of Exhaustible Resources' [International Economic Review 24, 1983] 133

It signifies the rights and interests of the present and future generation regarding the renewable and non-renewable resources of earth. Many contemporary international instruments deals with the use of the resources available and to make them available for future generation. Peoples have recognized the value and importance of the resources available and what may happened in future if the resources will not be available.

¹⁴ Baker S 'Sustainable development' [London, Routledge 2006]

Intra-generational equity is different from intergenerational equity. It deals with the equality among the same generations as far as the utilization of resources are concern. It includes fair utilization of global resources among the human beings of the present generation. The concept of intra-generational equity provides rights and duties to every person of a single generation to use and take care of the renewable and non-renewable resources moderately among the members of the generation. In a developing country like India the rule of intragenerational equity is applicable to certain extend, as in this kind of developing countries more resources are required for development of the country and to ensure economic stability.

¹⁵ Diwan, P 'Environment Administration, Law and Judicial Attitude' [New Delhi, Deep & Deep Publications, 1992]

¹⁶ Cooper D & J Palmer 'The Environment in Question' [London Routledge 1992]

¹⁷ See the reports on latest NIPAH Virus attacks happened in Kerala in 2018 and 2019. <
<https://economictimes.indiatimes.com/topic/nipah-virus-kerala>> accessed on 23-09-2019

environmental crimes are increasingly affecting the quality of air, water and soil, threatening the survival of species, and causing uncontrollable disasters. On the other, environmental crimes also impose a security and safety threat to a large number of people and have a significant negative impact on development and the rule of law. Despite these issues, environmental crimes often fail to prompt the appropriate governmental response. Often perceived as 'victimless' and incidental crimes, environmental crimes frequently rank low on the law enforcement priority list, and are commonly punished with administrative sanctions, themselves often unclear and low.

Thus, this article tries to explore in detail the gravity of this environmental crime and tries to propose the possible ways to help the policy framers and enforcers. Specifically, this article tries to explore the most basic issue of poorly enforced land use pattern and practices since the formation of state.

Environmental risk drivers identified by the state after the great flood in 2018

According to the Rebuild Kerala plan, the risk drivers identified by the planning commission were as follows¹⁸:

Floods are the most common of natural hazards that affect the people, infrastructure and natural environment in Kerala, and incidence of floods in the State is becoming more frequent and severe. Other than floods, the State is also vulnerable to droughts, landslides, storm surges and Tsunamis¹⁹. Some contributors that exacerbate the disaster risks in the State are:

¹⁸ <<https://kerala.gov.in/documents/10180/5f7872f9-48ab-40c8-bf3f-283d8dceacf>> accessed on 11-10-2019

¹⁹*Ibid* at p. 42 Kerala is highly vulnerable to multiple natural and anthropogenic hazards and a changing climate, given its mountainous topography and geo-hydrological features. Communities regularly face low-severity but high-frequency disasters such as floods, rains, landslides, heat wave, lightning and thunderstorms. More broadly, the State is prone to cyclones, storm surge, coastal erosion, tsunami, drought, soil piping and earthquake. Kerala is also one of the most densely populated Indian states (860 persons per square kilometer)

- **Unsustainable and weak management of natural resources and poor awareness of the changing climatic conditions.** Degrading environment due to extensive exploitation of the natural resources and deforestation, coastal erosion, monsoon storm surges, sea level rise and land subsidence due to tunnel erosion or soil piping (a creeping slow hazard that emerged from analysis of landslides).
- **Lack of awareness and anticipation of disaster risks,** including weak institutional capacity to deal with high-intensity disasters, inadequate early warning systems and protocols respectively, limited Disaster Risk Management (DRM) and slow roll out of community-based DRM activities. Additionally, there is limited consideration of disaster risk within social and economic sectors, partly because of competing demands on limited financial resources and inadequate capacity.
- **Poor maintenance of existing assets,** which accentuates risk and increases the State's vulnerability to natural disasters. Examples are: deteriorating, aging and poorly maintained infrastructure (including irrigation channels); minor major and irrigation dams managed by too many agencies; erosion of river embankments, roads, bridges, and encroachments into water bodies and sand mining from rivers, water channels and canals leading to narrowing carriage capacity of water channels; and poor solid waste management and sanitation disposal/treatment facilities.
- **Inadequate storm water drainage** and filling of traditional water storage reservoirs, which increases the pluvial flood risks. An increase in flood plain occupancy and reclamation of water bodies and wetlands results is also increasing flood damages. Riverine flooding is a recurring event consequent to heavy or continuous rainfall exceeding the absorptive capacity of soil and flow capacity of streams and rivers. This causes a water course to overflow its banks onto flood plains.

which makes it even more vulnerable to damages and losses because of disasters. Floods are the most common of natural hazards that affects the State. As per the State Disaster Management Plan 2016 of Kerala, 5642.68 km² or 14.52% of the total area of the State is prone to floods. In Alappuzha district more than 50 % of area is identified as flood prone.¹⁶ The State lies in seismic zone III which corresponds to Moderate Damage Risk Zone (MSK VII). The State falls under Moderate Damage Risk Zone for Wind and Cyclone (Vb=39 m/s). As per IMD data for the period 1877-2005, the State witnessed six cyclonic storms and five severe cyclonic storms. The State also witnesses high incidence of lightning, especially in the months of April, May, October and November. Lightning strikes cause heavy loss of lives in the State. Landslides are a major hazard along the Western Ghats in Wayanad, Kozhikode, Idukki and Kottayam districts (as seen in the weather led disaster that occurred in 2018). The western flank of the Western Ghats covering the eastern part of Kerala is one of the major landslide prone areas of the country. 1500 sq.km. in the Western Ghats is vulnerable and every year with the onset of monsoon, landslides are reported. The mountain regions experience several landslides during the monsoon season (Kuriakose, 2010) leading to road collapse, silting of river beds and creating heavy damages on public and private assets. The coastline is prone to erosion, monsoon storm surges and sea level rise. Land subsidence due to tunnel erosion or soil piping is a slow hazard that has recently been affecting hilly areas. Kerala experienced 66 drought years between 1881 and 2000. More than 50 % of Kerala's land area is susceptible to moderately-to-severe drought. After the drought years of 2002-2004, 2010, and 2012, Kerala State was officially mapped as mild to moderately arid by the Indian Meteorological Department (IMD). In 2017, the IMD stated that the year brought the worst drought in 115 years. Increasing incidence of drought is mainly due to weather anomalies, change in land use, traditional practices and lifestyle of people. Other natural hazards faced by the states include forest fires, swell waves and tsunamis. In 2019, heat waves were declared as a state specific disaster in the State.

- **High density of urban areas.** This density includes a population of 860 people/km² (2011 Census), narrow roads, dense and intrinsic road network and density of coastal population in vulnerable areas. Rapid urbanization influenced habitations into uncontrolled expansion on both banks of the rivers/water bodies thereby encroaching into water channels/bodies and constricting the floodplains.
- **Absence of risk-informed urban planning.** Non-compliance to design standards and non-incorporation of resilient features in urban infrastructure was reaffirmed by the widespread flooding in urban and semi-urban areas of Kerala. Master plans prepared by the Chief Town Planner (CTP) are still awaiting feedback from the Local Self Government Institutions (LSGIs) to enable appropriate rectification and issue of notification of approval of the master plans for the respective LSGIs. Till date, master plans of only 19 local bodies have been notified and there is little evidence of hazard risk informed planning process in the State. Lack of notification has resulted in unplanned development/expansion in urban areas.
- **Poorly enforced land use pattern and practices:** Current land use regulations are in the State are based on (a) the Paddy and Wetland Act, (b) the River Management Act; and (c) the Kerala Municipal Building Rules (KMBR) and the Kerala Panchayat Building Rules (KPBR). These orders do not ideate into a single land management policy/regulation for enforcement agencies to pursue due to the regulatory and not restricting nature of these orders. A commonality of law for land use is absent, due to which business and habitation zones has overlapped over the years.

Social and property relations of Kerala (changes in land use pattern from 1957 to 2018)

Kerala was a land of villages. The State is located in the south-west part of India formed in November 1, 1956 as part of the linguistic reorganisation of the Indian States by merging the three Malayalam-speaking regions – the princely states of Travancore and Cochin and the Malabar district of the Madras Presidency²⁰. It is bordered by Karnataka to the north and northeast, Tamil Nadu to the east and south, and the Arabian Sea on the west. Thiruvananthapuram is the state capital. According to an earlier survey by ‘The Economic Times’²¹, five out of the ten best cities to live in in India are located in Kerala.

At the time of formation, like other states of India, agriculture was the major source of income for Keralites. They made their living from agriculture or related occupations. This meant that agricultural land was the most important productive resource for Keralites.

²⁰ <<https://www.thehindu.com/features/kids/Joining-hands/article14410304.ece>> accessed on 23-09-2019

²¹ <<https://economictimes.indiatimes.com/magazines/panache/varkala-cochin-indias-most-welcoming-places-jaisalmer-and-jodhpur-follow/articleshow/67633966.cms>> accessed on 23-09-2019

Land, i.e. to mean agricultural land (referencing paddy lands²²), was the most important form of property. The person who had good paddy fields adorned great dignity and respect in the community. The value of those lands was high when compared to other forms of land. But land was not just a 'means of production', nor just a 'form of property'. Nor was agriculture just a form of livelihood. It is also a way of life. Many of the cultural practices, festivals and patterns of the society can be traced to its agrarian backgrounds.

But, like other states in India, it had a rigorous caste system practised by all means. This reflected in the land holdings also²³. Most of the land area in the hands of the lowest caste was alienated to the temple property based on the unquestioned attitude towards Brahmanism (priest hood)²⁴. These properties administered under temple property later on became the property of higher caste, from whom this land was taken by middlemen called Nairs on various land leases²⁵. Again, lower property rights were granted to lowest caste people based on the various contractual agreements which were arbitrary and unethical.

Land systems in Travancore and Cochin were classified into three viz. *Jenmom*, *Sirkar* or *Pandaravaka* and others. Agrarian structure of Malabar until the second half of the eighteenth century was of joint proprietorship. It consisted of five hierarchical groups such as Janmi, the *Kanakkaran*, the *verumpattakkaran*, the *cherujanmakkaran* and agricultural labourers. The Jenmies were the landed aristocracy and the intermediaries who occupied the middle stratum in the social and agrarian structure represented the upper stratum of the tenancy. The lower caste, considered "polluting caste", had no land of their own. Thus,

²²<<https://dictionary.cambridge.org/dictionary/english/paddy-field>> accessed on 23-09-2019. According to the dictionary meaning it is a field planted with rice growing in water.

²³ M N Srinivas 'Caste in Modern India' [Journal of Asian Studies, Vol XVI, p 548]

²⁴<<https://journals.sagepub.com/doi/abs/10.1177/0049085716654814?journalCode=scha>> for caste system and land in Kerala.

As a community, dalits are found to be at the lowest level of land ownership in Kerala. This abysmal status of land ownership is the result of three exclusionary processes. Dalits were historically excluded from land ownership due to the caste system. This is evident from the temple inscriptions that land was owned by non-Namboodris. They were the temple priest and upper caste. They propagated an idea that gift of property to temple would wipe away the sins and this promoted the large scale alienation of property. These then transferred and misappropriated by upper caste. Second, they were consistently excluded from the process of land reforms in a significant way. Lastly, the current trends in land market activities tend to exclude them from land ownership. This article shows how social inequality in land ownership in Kerala, known to be a progressive state, remains high. Dalits lag far behind in land ownership as compared to the upper castes reinforcing the fact that the land-caste nexus still dominates in Kerala.

²⁵ P. Sivanandan, Annual Number: Class and Caste in India [Economic and Political Weekly Vol. 14 No. 7/8 February 1979 475, 480]

the land was concentrated in the hands of few people who had no relation to the land. Various forms of the feudal system²⁶ existed all over India, which required a radical reformation in the agrarian relations and the holdings of land during the independence movement. Formation of the Constitution of India and the consequent changes brought in by the property relations reflected this new approach. Gandhian ideals of property also influenced the framers. They identified that the backwardness of Indian economy and social structure is highly intermingled with the existing land use pattern and brought in the concept of agrarian reforms through the radical changes in existing property relations. Land to the tiller was accepted under the land reforms Act and Kerala was the best example in the implementation of the Land reforms in true sense. This reflected the will power of the Government in the implementation a great change which affected the whole people.

Legislations bearing on Land use since the formation of Kerala state

The historic legislation that brought radical changes in the land use pattern that existed all over Kerala was The Land Reforms Act, 1963 which was, at its inception, named Agrarian Relations Act, 1961²⁷. Later, this Act was reformulated and renamed with greater changes and The Land Reforms Act, 1963 was introduced. The Land Reforms Act, 1963 was the first and best legislation which Kerala legislature enacted and executed by all means and bounds. This brought radical changes in the land use pattern. It redefined the then-existing property relations²⁸. Ownership of land was concentrated in the hands of few. There were parasitic intermediaries too. The lower strata of tenants²⁹ and *kudikidappukars*³⁰ were left bare minimum rights over land. This resulted in utter poverty to the people in society. The changes introduced and brought in through the legislation were worthy in the context of Kerala but the changes were unsustainable. These changes brought the greatest blow to the agricultural sector. Considering the geography of Kerala, unlike other states, the land tracks in the hands of jenmies were small. The implementation of land rights to tenants³¹ and

²⁶ Ryotwari and Mahalwari system etc.

²⁷ Due to certain problems in implementation of certain provisions the Act was suspended. See the decision in *Karimbil Kunhikannan v State of Kerala* AIR 1962 SC 723.

²⁸ G. S. Sharma N. M. Tripathi [Property Relations in Independent India: Constitutional and Legal Implications, 1967]

²⁹ The Kerala Land Reforms Act 1963 s 2(57)

³⁰ *Id* at s2(25)

³¹ *Id* Chapter 2 s 3

introduction of ceiling area³² and the turning of agricultural labourers to land holders and owners, which were envisaged as positive stroke to the economy and agriculture, turned to be a futile attempt. This is proven by the existing situation faced by Kerala³³. The major aim of land reform was land to the tiller³⁴. But the tillers who benefitted out of this legislation did not use this for the purpose for which it was assigned to them³⁵. After the implementation of the rights to the tillers, later Governments and authorities, who were duty-bound to implement the provisions of the Act, failed to review the working of this legislation. Most of these lands were alienated in the wake of commercialisation. Moreover, the flow of foreign (gulf) money brought in the radical changes to the lifestyle of the entire community. There was absence of a proper support system from the Government to the agricultural community, too. Agriculture as a labour lost its prestigious position and the agricultural labour class migrated to other jobs and thus the lands assigned were left fallow for many cultivating seasons. These fallow lands fell into many unsustainable uses. This led to change in the land-use pattern of Kerala.

After the Land Reforms Act, the state had promulgated a historic order named The Kerala Land Utilisation Order, 1967³⁶, making it mandatory to use the land at the disposal of every person³⁷ for cultivation of food crops specified under the order. Another important element was total prohibition of conversion of paddy fields except with the prior permission of the authorities concerned. The government delegated their basic duty of providing essential food supplements to the people of the locality by entrusting the same to the holders of land. This is a good concept because government is the ultimate owner of land, and this resource is distributed among the people for various uses. These uses are restricted for the beneficial uses of society. Land use is not a mere fact left to the will of holder or owner alone. This can be seen as a positive restriction imposed on the land. But this order remained a paper tiger. Authorities³⁸ entrusted with the implementation were keeping a closed eye towards the rampant conversion of the paddy fields for commercial complexes

³² *Id.* at ss 80,81, 82

³³ The Kerala Conservation of Paddy Land and Wetland Act 2008(Preamble)

³⁴ Tiller means a person who toils on land

³⁵ The Kerala Land Assignment Act 1971

³⁶ The Essential Commodities Act 1955

³⁷ This order was promulgated to avoid the scarcity of food crops and to make the supply of essential commodities to the community.

³⁸ Revenue Department and specially collector of the locality was given greater powers of implementation.

and housing schemes. Now the area under paddy cultivation is very low (fallen to two lakh hectors) and the production of the state can sustain only 10-12 % of the consumption needs.

The Land Development Act 1964, and the authorities established under said legislation, did little in achieving the objectives envisaged under the Act. The wasteland development and the development of soil resources are the major aims envisaged under the Act. But even after many years, the implementation is minimal. The Act tried to bring back the common cultivation pattern by establishing *padasekhara samithis*³⁹ and granted aids to the schemes executed through these. But this legislation also brought no new changes apart from establishing certain administrative departments for the developmental plans.

The Land Utilisation order was a futile attempt to regulate the land use and the government realised this pathetic situation only in 2008, when it enacted legislation to conserve the paddy lands and wetland, and to restrict the conversion or reclamation thereof to promote the growth in the agricultural sector and to sustain the ecological system in the state of Kerala. Preamble of the legislation states that indiscriminate and uncontrolled reclamation and massive conversion of paddy land and wetland is taking place in the State. It also states that there is absence of effective legislation in this regard. Thus, the Act has triple objectives, such as promotion of agricultural growth, ensuring the food security, and to sustain the ecological system in the State of Kerala. In the statements and objects of the Act it is admitted that the massive conversion reduced the area available under paddy cultivation from eight hundred thousand hectors to two hundred thousand and the ecological system has lost its quality irrecoverably forever. This results in various consequences to the entire society. Thus, the Act tries to address the wider interest of society and mankind to ensure their basic sustenance needs. Provisions prohibit the conversion or reclamation of paddy land and wetland except with the prior permission under stringent terms and conditions. This created an alarming situation among the builders and developers who were grabbing the paddy land and wetlands and converting them to housing apartments, commercial complexes and brick kilns. Several applications were forwarded to government for conversion of paddy land and wetland. In the preparation of databanks relating to these areas by the local authorities, and the constitution of various

³⁹ The Kerala Land Development Act 1964 s 7A

enforcement authorities, the rules of the Act received criticism from all sectors. Therefore, the conversions and reclamations still take place without any regard to the provisions and authorities keep a closed eye towards this situation. At this juncture, the Government brought a worse amendment to the Act in 2018. This resulted in the Kerala Conservation of Paddy Land and Wetland (Amendment Act, 2018). The concept of unnotified land was brought in to regularise the changes brought in paddy land wetlands which has not fallen under the databank prepared by the local authority. If such changes are certified by authority as irreversible it could lead to regularisation of conversion. The similar provisions are retained for the conversion of wetlands too. Thus, the Act enacted to conserve the left-out small area of cultivation and the kidneys of nature changed to no use by the amendment. All this happens under the guise of the vague term development which only speaks about the development of infrastructure and not a holistic development.

Another enactment which requires special mention in this circumstance is the Coastal Regulation Zone Notification 1991 promulgated under the Environmental Protection Act, 1986. This alarmed all sectors of the society. There were multiple amendments, and still there are various grey areas in the implementation of this notification. But the judiciary, specially the apex court, has reverted positively, going vehemently against the violators of the notification.

The Western Ghats, which are considered common heritage of mankind under the Heritage Convention, also deserves special mention. Various committee reports, such as Madhav Gadgil, pointed towards the need for sustained use of resources and preservation of such an ecologically fragile area, which raised greater criticisms only based on the violation of property rights of the individuals and the restrictions on the use of these areas. This was really beneficial to none except the lobbies behind the quarries. Even now, the quarrying takes place unabatedly in these areas. The three *Ramsar* sites in Kerala are also under threat of destruction, and wise use and conservation are disregarded from various fields. The latest landslides in the northern region of states also are no exception to the rampant violations of land uses and the unabated quarrying which occurs in the hilly areas. This has affected the entire ecology very badly. The government remains answerable for the lost lives during the last two years even though quick actions and redressal measures were undertaken by the present government.

The state had different planning laws⁴⁰. Only in 2016 the Kerala Government enacted the Kerala Town and Country Planning Act, 2016 with the objective of providing for the promotion of planned development and regulation of growth of urban and rural areas. It is said to focus on scientific spatial planning⁴¹. This Act is implemented with retrospective effect. But the scientific spatial planning applicable for the whole state is still to be formed. It is clear that spatial planning requires preferably timely detailed spatial knowledge about soil cover. It requires extensive soil survey and mapping⁴². This cannot be simply an original data collection, but more complex and derived soil information, functions, processes or services. This can result in better policy making. This data should be spatially exhaustive and consistent as well as both globally and locally reliable. It should cater to the needs of various stakeholders involved in land use and also the projected climate change impacts on the whole society. This facilitates better impact assessment and vulnerability assessment leading to sustainable environmental modelling. A unified national soil type map with spatially consistent with predictive capabilities that unifies the expert inputs and databases from all sectors mainly agriculture, forest and wetlands is required. It should meet the socio-environmental and economic challenges of the day to meet complexities. This should also reflect the priorities of that society and nation. Still, this area remains to be addressed by government and concerned authorities as to whether the objectives of the Act are undertaken in true sense.

The environmental crimes in Kerala: a legislative analysis

⁴⁰ The Madras Town Planning Act 1920 in Malabar area, The Travancore Town and Country Planning Act 1120 in Travancore area. Along with this The Kerala Panchyath Act 1994 and the Municipalities Act 1994, The Municipal Corporation Act and the specialised agencies like The Travancore Town Planning Trust, the GCDA, The Calicut Town Planning Trust and the Cochin Town Planning Trust wield the powers relating to town planning. The latest in this area is The Kerala Town Planning Act 2016.

⁴¹ Spatial planning in Ghana: Origins Contemporary Reforms and Practices and New Perspectives (Chap. 2 Ed 1 Springer Cham PP11,27) defines spatial planning as 'a set of governance practices for developing and implementing strategies, plans, policies and projects and for regulating location, timing and form of development'.

⁴² It should include soil topography, soil hydrology and soil physical properties such as depth and texture classes.

The Environment (protection) Act, 1986 defines environment⁴³ as including water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property. This Act lays down the general power of the Central Government in protection and safeguarding the human environment, other living creatures, plants and property. This power is so vast and all-embracing⁴⁴. This Act is a skeleton and the rules enacted to regulate various activities which may prove to be hazardous to the life and property are enacted later according to the needs of the time. Offences against the environment are made punishable under the Act⁴⁵. This applies to the state of Kerala also. This is the most important legislation bearing on the environment and it includes land use.

The constitution of India, 1950, is the law of the land. This is the base law from where every legislation draws its authority, and it contains three lists⁴⁶ upon which the legislative power is divided. Apart from these subjects, national importance can be legislated by the Central Government and the matters of International obligations under different conventions are the duty of the Central Government. Thus, the specific area of concern, i.e. land, falls under entry 18 of list 2. But there are certain areas like common heritage of mankind, wetlands of national and international importance, areas whose damage will have impact on climate change, interstate rivers and coastal areas, and of course forests under every state, which

⁴³ S 2(a)

⁴⁴ *Id.* at s 3. POWER OF CENTRAL GOVERNMENT TO TAKE MEASURES TO PROTECT AND IMPROVE ENVIRONMENT.-

(1) Subject to the provisions of this Act, the Central Government, shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing controlling and abating environmental pollution.

(2) In particular, and without prejudice to the generality of the provisions of sub-section (1), such measures may include measures with respect to all or any of the following matters, namely.....

(3) The Central Government may, if it considers it necessary or expedient so to do for the purpose of this Act, by order, published in the Official Gazette, constitute an authority or authorities by such name or names as may be specified in the order for the purpose of exercising and performing such of the powers and functions (including the power to issue directions under section 5) of the Central Government under this Act and for taking measures with respect to such of the matters referred to in sub-section (2) as may be mentioned in the order and subject to the supervision and control of the Central Government and the provisions of such order, such authority or authorities may exercise the powers or perform the functions or take the measures so mentioned in the order as if such authority or authorities had been empowered by this Act to exercise those powers or perform those functions or take such measures

⁴⁵ *Id.* at ss 15 16 17

⁴⁶ The Constitution of India 1950 [Schedule VII]

List 1 deals with Subjects on which the Central Government exercises legislative power, List 2 deals with States power to enact various law on various subjects and List 3 is the concurrent list up on which both Central and State exercises power of legislation.

are the common land areas which need interference from Central Government. Considering the environmental aspect, the Centre could exert control over the land for the quality maintenance. Therefore, land use regulations are governed by various legislations legislated by Central and state governments. Moreover, the land use patterns in Kerala are becoming more complex day by day due to the population increase. Therefore, the legislations applicable to land use patterns in Kerala, which can attract various environmental crimes, though not in strict sense of environment as it is seen today, are the Kerala Land Reforms Act, 1963 (and amended from time to time) and the Kerala Land Utilisation Order, 1967, the Land Development Act, 1964, the Paddy Land and Wetland Conservation Act, 2008, the wetland (Conservation and Management) Rules, 2010 and its latest Amendment in 2018, the Kerala Town and Country Planning Act, 2016, the Coastal Regulation Zone Notification, 1991, Protection of River Banks and Regulation of Removal of Sand Act, 2001, the Municipality Act, 1994 and the Kerala Panchayat Raj Act, 1994. Most of the legislation enacted prior to the Environmental (Protection) Act, 1986 does not even incorporate the term 'ecology'. But these provisions, if implemented, would indirectly would have protected environment in strict sense. Only the 2008 legislation enacted by the Kerala government incorporates the word as protection of ecology as its one aim.

The Constituent Assembly that framed the Indian Constitution did not consider the question whether the Parliament or state legislatures should regulate the environmental matters relating to the use of land. Instead the distribution was influenced by the distribution of environmental matters within the three lists of Government of India Act, 1935. Thus there exists a tension between centre and state regarding the regional development and natural resources, especially land. There are about two hundred central and state legislations bearing on environmental protection which covers various aspects of land use. But these legislations are inadequate to meet the modern challenges of integrated management. In a landmark decision of Indian Supreme Court in *T.N. Godavaraman Thirumulpad v. Union of India*, the court delinked ecology from land and its ownership and stated that ecology is not the property of any state, but belongs to all, being a gift of nature for the entire nation. Thus the Court has taken away the legal jurisdiction which the state might have claimed on the basis of territorial jurisdiction.

Identifying the loopholes in land use pattern and addressing them

The Kerala Development Report, prepared by the planning commission, states that during the past four decades Kerala witnessed a slowdown of its population growth rates, decline in the primary producing sectors particularly in agriculture, tremendous expansion of its social service activities, importantly trade, commerce, transportation and other services. Through this report, the state has admitted that in the materially productive sectors of agriculture and industry, Kerala's performance has not been remarkable. It is the process of large-scale emigration that began in the early 1970's that kept the Kerala economy in revolutionary changes in consumption patterns, housing conditions, educational levels and health status. This also led to changes in the land use traditionally followed. Various other social factors such as influence of missionaries and the progressive ideals implemented by the changing governments and the absence of implementation of all the above said legislations in the true sense resulted in malady to Kerala society as a whole. Therefore, the question to be addressed is whether the existing Kerala Development Model is conducive either for balanced and sustained development in any sense or for harnessing Kerala's full potential. The answer poses many challenges before the government as a provider and facilitator of various welfare services, guardian of life, protector of nature, ensuring equity and sustainability of resources, their preservation and conservation.

In 2018 extreme precipitation events and flooding caused losses to human lives and infrastructure. It affected millions of people. Even though the immediate causes were large scale rainfall and the poor carrying capacity of reservoirs, the real reasons are the unsustainable land use pattern followed and the consequent destruction and conversion of paddy lands, wetlands, forest areas and hilly tracts. This results in extreme hot temperatures in the state and it invites unforeseen consequences to a large mass of poor people. These types of disasters have become a common feature of the time, especially in the Asian continent⁴⁷, and in many states of India⁴⁸.

⁴⁷<<https://www.downtoearth.org.in/news/climate-change/since-1970-asia-has-faced-a-higher-number-of-disasters-than-any-other-continent-51811>> accessed on 15-10-2019

⁴⁸<<https://www.downtoearth.org.in/category/natural-disasters/news>> accessed o 15-10-2019

The Kerala government should make a comprehensive spatial data collection regarding the future planning. It should address the various stakeholders and their genuine needs. Areas which can be brought under preservation and conservation are to be marked out. Stringent enforcement mechanisms should be implemented at any cost. Every common property area, such as preserved wetlands, Western Ghats, forest, rivers, paddy fields, hilly tracts and coastal areas, is to be brought under the public trust of state, and the custodians of any of the areas falling under these listed sites should be protected as trustees, and special provisions are to be made for their efforts for the society. It should be with greater incentives, giving them greater dignity and living conditions for their family as well. Being a state of educated people, the tertiary sector is given more importance among people. From childhood onwards, each child should be inculcated with high values respecting both the nature and people who are involved in primary sector production.

The environmental crimes are happening from the perspective of individuals, society and from the perspective of humanity also. Because after the Stockholm Declaration 1972, humans have realised that the environment is single and has no political boundaries. Every resource, even though separated by political barriers due to the greed and cultural differences, calls for common policies and approaches from every part. Kerala is not an exception. Every principle enshrined under the international environmental law, such as sustainable development, inter-generational equity and intra-generational equity, public trust, common heritage of mankind etc., is to be adhered to. This should not lag behind, as we are at the verge of destruction. Not only has the lost human lived in the past two years of calamity, the destruction to nature remains un-restorable for the future generations. The development should be readdressed, rather than from the point of view of infrastructural development alone. A comprehensive land use policy pooling the whole resource is the need of the time, with clean-handed officials to implement legislation that is enacted to meet the needs of ecology, is a must in Kerala.