



Government of Kerala



KERALA FORESTS & WILDLIFE DEPARTMENT

Ecorestoration Policy 2021

(GO (MS) 29/2021/F&WLD dated 17-12-2021)





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(Translation from Malayalam)



Kerala Forests & Wildlife Department



1

Introduction



- 1.1 Kerala, a green isle on the southern tip of the Western Ghats is blessed with nature's bounty seen in its forests, sea and rivers. Our forests, rivers, backwaters, wetlands and human habitats are home to rich biodiversity. Conservation of our natural environment, especially forests, is essential to ensure the ecological stability of Kerala, which has high population density and higher standards of living. The forests play a crucial role not only in ensuring water security of the State, which is fast moving from water-rich to water-scarce situation, but also in regulating floods due to heavy rains.
- 1.2 The Western Ghats, one of the eight 'hottest of the hotspots' of biodiversity in the world, has been included in UNESCO's list of World Heritage Sites. Copious rains, abundant sunlight, high humidity and exceptional geography play a crucial role in shaping Kerala's exceptional and rich biodiversity. In a State which is witnessing rapid developmental activities, maintaining environmental health is essential for water security, ecological stability and sustainable development.
- 1.3 The National Forest Policy mandates that 33 percent of the geographical area should be under forest cover. As of now, about 30 percent of the State's total geographical area is under forest cover. This includes different kinds of forests like tropical evergreen forests, tropical moist deciduous forests, dry deciduous forests, shola forests, grasslands, mangroves and plantations.
- 1.4 Historically, Kerala society's high level of environmental awareness and affinity towards nature have helped in protecting forests and natural resources.



- 1.5 Like elsewhere in the world, with the onset of modernity, in Kerala too, the pressure on nature has been increasing day by day. With unscientific developmental activities leading to increasing pressure on natural resources, climate change induced events such as drought, heavy rains and flood have become a regular phenomenon in Kerala. Soil erosion in catchment areas, river-bank erosion etc. result in alarmingly low storage capacity of reservoirs causing floods. This leads to widespread destruction of life, agriculture, property and biological wealth.
- 1.6 Forests and trees are the prime repository of carbon. The rich and resplendent biodiversity, high water availability and geographical peculiarities of the forests of the Western Ghats play a significant role in increasing carbon storage and hence ameliorate global warming. Good management and restoration of forests augment carbon sequestration. In fact, each Panchayat/ Municipality/ Corporation in Kerala need to become 'carbon-neutral'.



- 1.7 The ecological health of existing forests has deteriorated due to various reasons. As part of facilitating rapid industrialization, between 1950s and 1980s, the State's rich natural forests were cleared for exotic monoculture plantations like Eucalyptus, Acacia, Mangium, Wattle etc. As of now, there are around 27,000 Ha of exotic monoculture plantations and 90,000 Ha of Teak plantations in the forests of Kerala. To ensure the ecological and hydrological security of the State, it is imperative that ecorestoration programmes are taken up with the participation of forest-dependent communities which is the need of the hour.

- 1.8 In addition to this, the proliferation of invasive species that are not suitable for our environment has also led to depletion of natural forests. The depleted habitats are also forcing wild animals to stray out to human habitations and farmlands for food and forage, thus reportedly compounding human wildlife conflict. Studies have shown that invasive flora and fauna have caused serious damages to natural habitats and ecosystems. Eradicating such invasive species that harm the environment is of high priority.



- 1.9 Collection of Non-Timber Forest Produce (NTFP) is the primary livelihood and source of income for the tribal communities living in and around the forests of Kerala. Depletion of forests adversely affect the life and livelihood of tribal communities who solely depend on forests for their sustenance. Historical role of tribal communities in forest protection should be further strengthened. They should also be provided with basic amenities, which are eco-friendly. Involving tribal communities as equal partners in forest conservation should be done with proper planning and accorded due importance.
- 1.10 Not only the forests but the land-use pattern in non-forest areas too have a major role in ensuring the environmental, ecological and hydrological security of Kerala. In the beginning of the 20th century, Kerala had around 700 sq km of mangroves. This has now been reduced to an area of just 24 sq km. Mangroves are necessary for the stability of seashores, for prevention of coastal erosion and breeding of fish.

- 1.11 Climate induced cyclones and coastal erosion have become a recurrent threat to Kerala coast. Coastal protection is extremely crucial for the peaceful life and livelihood of millions of people who live along the coast. Establishing 'Bio-shield' to ensure coastal protection gains significance in this context and steps will be taken to implement the same in association with the State Departments of Water Resources, Local Self Government and Forests, apart from local bodies.
- 1.12 Similarly, wetlands, river banks and sacred groves in non-forest areas are rich zones of biodiversity and play crucial role in ecological processes. Unscientific developmental activities have adversely affected these areas. By protecting and restoring them, improved ecological services can be ensured.
- 1.13 Kerala is a State which has been effectively carrying out wildlife conservation activities in the forests including Protected Areas. Along with this, conservation in diverse habitats outside the forests should also be carried out more effectively. Participation of other government institutions, private establishments, students, local self government institutions and civil society will add value to this activity. Moreover, creating environmental awareness among the public, especially students is also essential.
- 1.14 Co-ordination of various land-use activities is essential to achieve the ecological stability of the State which consists of varied geographical entities. This mega-initiative will be possible only through the collective efforts of people from all walks of life and different Government Departments.



2

The Approach



For the sustainable development of Kerala that is spread over an area of 38,863 sq km, the Government envisages ecorestoration programmes in the State. As part of this, the Government plans to implement the following projects on a priority basis.

- 2.1 The forest areas which have lost its splendour and biodiversity will be taken up for ecorestoration and the activities will be carried out through civil society. Apart from ensuring ecological and hydrological security, this will provide employment opportunities for the local forest-dependent people.
- 2.2 Exotic monoculture plantations of Eucalyptus, Acacia and Wattle, which are not suitable to the environment and habitats and have become irrelevant will be eradicated in a phased manner to facilitate restoration of these areas to natural forests. This gains significance in the backdrop of frequent natural disasters and increasing incidents of human-wildlife conflict. This mammoth programme, to be implemented in an area of about 27,000 Ha will be completed over two decades.



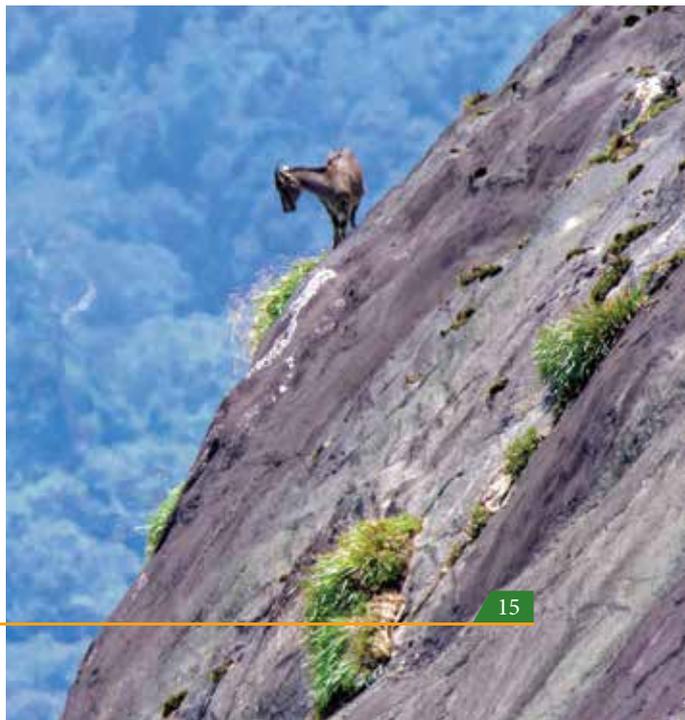
- 2.3 Focusing on soil and moisture conservation, those Teak plantations owned by the Government, which are either failed or showing poor growth, because of unfavourable climate/poor soil fertility, and those located in wildlife corridors, in disaster-prone areas or along river-banks will be restored as natural forests. This will be implemented, after assessing the status of existing habitats and concerns of the forest-dependent communities.
- 2.4 Steps will be taken to remove those species which are posing threat to biodiversity. These include plants like Lantana, Mikania and Senna apart from exotic fauna like African snail and African mushi, which are not suitable for our habitats. Along with this, efforts will be taken to conserve our native species.
- 2.5 One of the main causative factors for the degradation of forests and loss of biodiversity is forest fire. With improved fire-fighting techniques and participation of local forest-dependent communities, forest fire will be kept under control.

- 2.6 Steps will be taken, on a priority basis, to equip Forest Department with modern facilities so that early warnings on probable disasters in deep interior forest areas are received and mitigation measures taken in time.
- 2.7 To ensure the upliftment of forest-dependent tribals and to create suitable livelihood opportunities for them, steps will be taken to provide modern education, basic infrastructure and also their participation will be ensured in forest conservation and afforestation activities. Taking into account the ecological services provided by the forests and to reduce human-wildlife conflict, and as a measure to reduce natural calamities, based on their willingness and as per laws and rules in vogue, they shall be relocated to other places.
- 2.8 Sustainable collection, value addition and marketing of NTFPs will be carried out with the help of tribal communities. The possibilities of Participatory Forest Management and



the Forest Rights Act, 2006 will be explored for this. This could create more employment opportunities for the forest-dependent tribal communities.

- 2.9 The flora and fauna which are on the verge of extinction due to over-exploitation and degradation of habitats will be identified and steps will be taken to ensure their regeneration and conservation. This could help retain the rich biodiversity and ensure better ecological services in future.
- 2.10 Considering the ecological services that forests provide, and to ensure wildlife protection and to reduce human-wildlife conflict, steps will be taken with the consent of the land owners, to take over the private properties/estates which are located either adjacent to forest areas or are surrounded by forests, after providing eligible compensation and these areas will be restored as natural forests. This will ensure connectivity between fragmented forest patches, movement of wildlife and will help in reducing human-wildlife conflict.





- 2.11 To ensure better habitat and food security for wild animals, suitable indigenous plants (eg: wild mango, wild gooseberry and wild jackfruit) will be planted. Along with this, in water-scarce areas, availability of water shall be ensured by constructing check dams and ponds in forest areas.
- 2.12 Steps will be taken to acquire and restore mangroves of ecological importance with the consent of owners after providing eligible compensation. Along with this, with the support of the local bodies, consent of owners and people's participation, steps will be taken to protect special habitats outside the forests like sacred groves, wetlands and riverine forests.
- 2.13 Suitable steps will be taken with the participation of local residents and local bodies for the protection of rivers, ocean, coastal areas and conservation of biodiversity in marine and

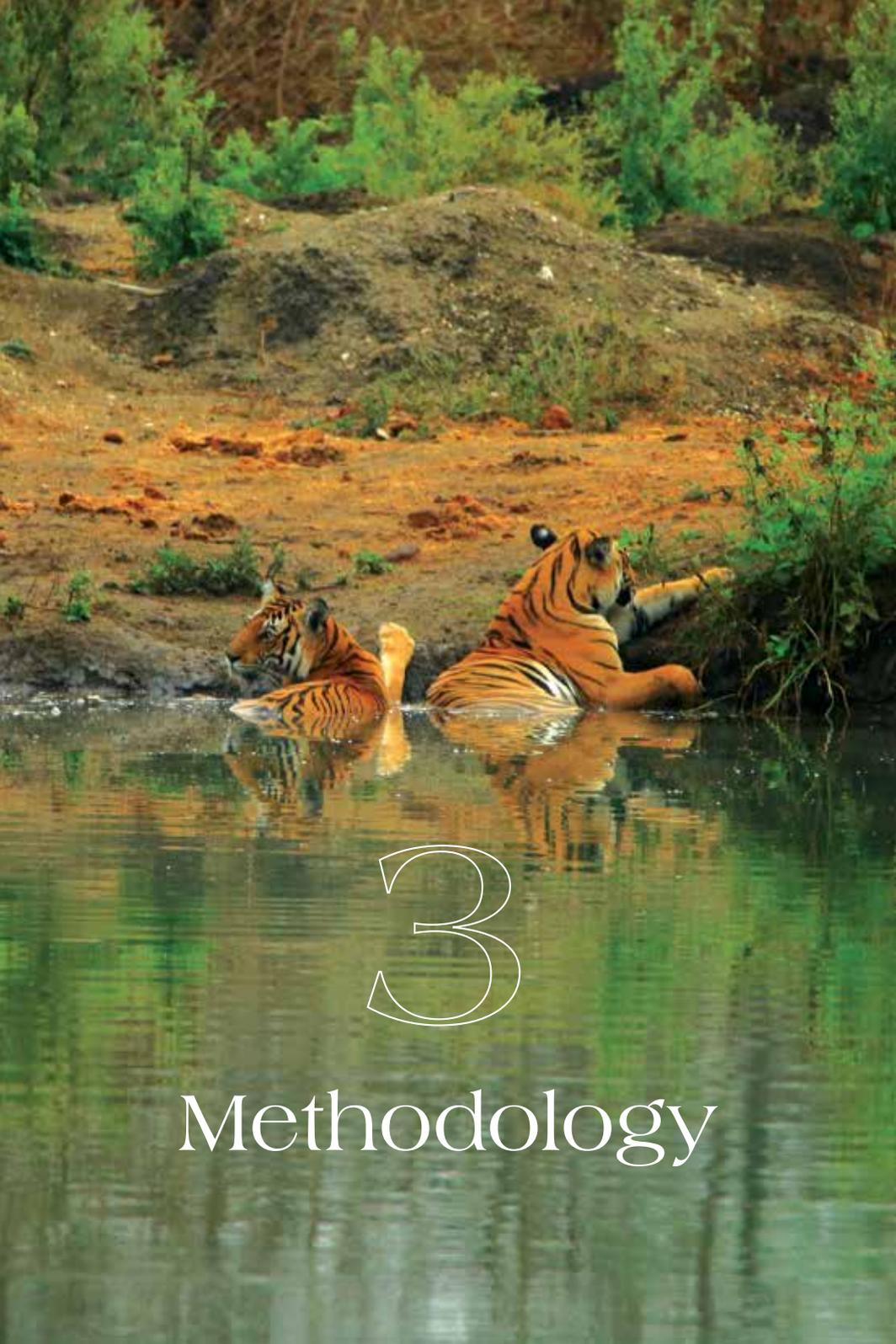


riverine ecosystems. This will help improve the livelihoods of coastal people and will also improve agricultural production along river banks.

- 2.14 Planting trees in private land will be promoted so as to increase the tree cover outside forest areas which in turn would increase the carbon sequestration and reduce dependency on forests. Good quality seedlings will be produced and distributed for this purpose in consultation with the Departments concerned and steps will be taken for bringing out necessary legislation for cutting and utilising the trees planted by farmers and lease-holders.
- 2.15 For those species which are grown for wood and other purposes like Teak, Rosewood, Sandalwood etc., scientific management techniques will be ensured so as to improve productivity. Modern scientific technology will be utilized for this.



2.16 Modern scientific measures that are contemporary and effective will be adopted for afforestation and plantation management activities. A conducive environment for the flawless implementation of this shall also be created.



3

Methodology



Successful implementation of the above-mentioned comprehensive ecological approach is highly essential for building a “Navakeralam” (New Kerala). The above-said activities which are foundational to the ecological security of the State can be achieved through the action plan given below.

- 3.1 To protect the forests, using modern scientific methods, forest boundary demarcation will be completed and cairns constructed. The forest boundaries will be digitized and steps will be taken to incorporate the details in revenue records. This will help prevent encroachment of forest land, reduce and resolve boundary-related disputes along forest boundaries.
- 3.2 To improve and restore the health of existing forests and to ensure soil and water conservation, the Government-owned forests which include degraded forests, Acacia/Wattle/Eucalyptus plantations, existing failed Teak plantations (after collection of usable teak, if any, subject to Working Plan prescriptions), those with poor growth, those situated in animal corridors, natural disaster-prone areas and along



the river-banks will be converted to natural forests in a phased manner.

- 3.3 Raw materials from clear-felled commercial plantations will be given to small-scale forest-based industries in Kerala for a fair price and 50 percent of this revenue will be used for eco-restoration activities while the remaining 50 percent will be used for improved management of the Teak plantations which are retained and for the upliftment of forest-dependent communities, in addition to modernizing forest management activities. This will be operated through a Revolving Fund.
- 3.4 Plants like Lantana, Mikania and Senna which are not suitable for our environment and are adversely affecting the habitats, will be removed on a war-footing, and soil and water conservation measures shall be taken up so as to aid the growth of native indigenous plant species.
- 3.5 Participatory approach of forest management will be followed for implementing the above activities. Such measures will

improve the employment opportunities of forest-dependent communities. In addition, these activities will result in improved ecosystem services to the public at large. The State Government shall promote and guide all such efforts, which are led by the forest-dependent communities.

- 3.6 Uncontrolled forest-fire causes degradation of forests, thereby leading to loss of biodiversity, water scarcity and soil erosion. Forest fire prevention measures will be taken up through participatory forest management initiatives and by exploring the possibilities of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).
- 3.7 Basic infrastructure including more Forest Stations, vehicles, arms and ammunition shall be made available to improve forest protection activities.
- 3.8 Through interventions like scientific collection, value addition and better marketing of NTFPs, livelihood and employment opportunities for the tribal communities and thereby forest protection will be ensured. An action plan will be implemented by exploring the possibility of synchronizing the principles of Participatory Forest Management and the Forest Rights Act, 2006 for ensuring the sustainable availability of NTFPs.



- 3.9 Sacred groves are islets of biodiversity. The State has thousands of sacred groves, of which, the majority are under private ownership. Projects to protect such sacred groves will be encouraged with the participation of public. Such small forest patches will aid in increased ecosystem services and create better environmental awareness among the public.
- 3.10 There is a need to protect the remaining mangroves in the State, especially those owned by private individuals and other Departments. Co-operation and coordination of the Local Self Government Department and the general public is highly essential for this. To protect the ecologically important mangroves, steps will be taken to acquire private-owned mangroves based on their consent, after paying eligible compensation. This will help in increasing the forest area, in addition to the conservation of the fast-declining mangrove habitats.
- 3.11 For the Panchayats of Kerala to become “Carbon-Neutral”, planting of trees is an inevitable step. The services of Local Self Government Department, Kudumbasree, Vana Samrakshana Samithies, Eco Development Committees and Self-Help Groups will be utilized for this purpose. This will create many more employment opportunities.





3.12 For ecorestoration, planting of local indigenous species based on specificity of each location shall be promoted. In places with red soil and laterite stones, Irul (*Xylia xylocarpa*), Karimaruth (*Terminalia tomentosa*), Mango tree (*Mangifera indica*), Jackfruit tree (*Artocarpus hirsutus*), Njaaval (*Syzygium cumini*), Kanjiram (*Strychnos nux-vomica*), Athi (*Ficus racemosa*), Banyan tree (*Ficus bengalensis*) and/or other suitable species will be promoted. In sea shores, trees like Poovarashu (*Thespesia populnea*), Vaaka (*Albizia lebbek*), Coconut tree (*Cocos nucifera*), Veliparuthi (*Pergularia daemia*), Noni (*Morinda citrifolia*), Kudampuli (*Garcinia cambogia*) and/or other suitable species will be promoted. Planting of bamboos, reeds, Nanku (*Mesua ferrea*), Venkotta (*Lophopetalum wightianum*), Vetti (*Aporosa lindleyana*), Punna (*Calophyllum ionophyllum*), Kara (*Elaeocarpus serratus*), Ambazham (*Spondias pinnata*), Venthekku (*Lagerstroemia microcarpa*), Kilimaram (*Commiphora caudata*), Athi (*Ficus racemosa*), Poovam (*Schleichera oleosa*), Aattuvanchi (*Homonoia riparia*) and/or other suitable species will be promoted along the riverbanks. Trees like Ashoka (*Saraca indica*), Aryaveppu (*Azadirachta indica*), Kudampuli (*Garcinia cambogia*), Pathimukham (*Caesalpinia sappan*), Mandaram (*Bauhinia acuminata*), Kanikkonna (*Cassia fistula*), Bamboo, Guava (*Psidium guajava*), Ayani (*Artocarpus hirsutus*),



Charalpazham (*Flacourtia montana*), Ebony tree (*Diospyros ebonum*), Kudappana (*Corypha umbraculifera*), Kilinank and/or other suitable species will be planted in the plains. When it comes to low-lying marshy lands, Manimaruth (*Lagerstroemia speciosa*), Neermaruth (*Terminalia arjuna*), Ungu (*Pongamia pinnata*), Cholavenga (*Bischofia javanica*), Njaval (*Syzygium cumini*), Pambarakumbil (*Trewia nudiflora*), Kadamb (*Anthocephalus cadamba*) and/or other suitable species will be planted. Similarly in higher altitudes trees like Mazhukanjiram (*Anogeissus latifolia*), Rosewood (*Dalbergia latifolia*), Kulamav (*Persea macrantha*), Vaali (*Diospyros* sp.), Marotti (*Hydnocarpus pentandrus*), Vayana (*Cinnamomum malabattrum*), Cholappoovam (*Dimocarpus longan*), Ooshippazham (*Berberis tinctoria*), Valiyavellapine (*Vateria indica*), Chenkurinji (*Gluta travancorica*), Ennappine (*Prioria pinnata*), Kunthirikkam (*Canarium strictum*), Nirambali (*Nageia wallichiana*), Kondappana (*Corypha umbraculifera*) and/or other suitable species will be given priority. Steps will be taken to plant more such plants which are suitable to each region.

- 3.13 Effective interventions will be taken up for the protection of coastal region from erosion. As part of this, with the support of local people, “Theeravanam” (coastal forests) will be



established by planting those plants which are suitable for coastal zones. These activities can be carried out with the participation of local self government institutions through MGNREGS.

- 3.14 To prevent soil erosion along the river banks and the catchment area of reservoirs, suitable species apart from bamboos and reeds will be planted with the support of local people. The saplings for this purpose will be raised and distributed through the MGNREGS and the Social Forestry wing of the State Forest Department.
- 3.15 Projects for setting up small forest patches in schools and cities and planting trees in private properties will be promoted, and this will be expanded in association with the State Education and Local Self-Government Departments.
- 3.16 Long-term research projects will be taken up to assess ecosystem services. Modern training facilities shall be ensured for human resource development. Suitable action plans will be implemented to create environmental awareness.



4

Summary

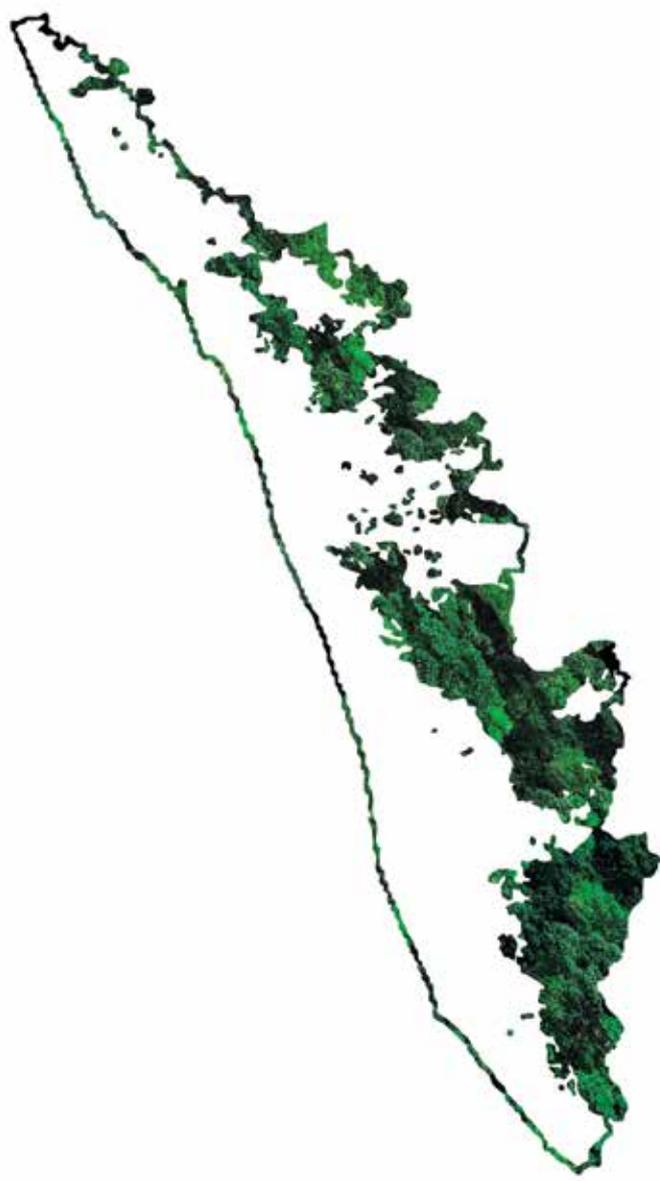


- 4.1 Aimed at environmental protection, the previous Government had brought out a White Paper on environment. It had brought out different environmental issues existing in different parts of the State. Aligning to the broad framework of the White Paper, this policy document presents a general view on how forests and allied sectors can be conserved.
- 4.2 The ecological issues resulting from the over-exploitation of natural resources and depletion of habitats is critically affecting the quality of human life. A healthy and natural environment is the key to sustainable economic growth and a sound society. Understanding the fundamental link between them and acting accordingly will take us close to sustainable development.

- 4.3 The ecological health of existing forests has diminished due to various reasons. Hence, it is important to implement programmes to protect and facilitate conservation and enrich ecological health, with the participation of the general public, especially the forest-dependent communities. This document puts forth the vision and necessary interventions towards this.
- 4.4 This policy explains a perspective aimed at removing the presence of those plant and animal species that pose a threat to the ecological health of our natural habitats. Along with that, it also put forward proposals to examine which species are suitable for each habitat and promote the same.
- 4.5 This will turn out to be a process through which the species which are not conducive to our environment/habitat are removed not only in our forest areas but also in other habitats as well. At the same time, it will also be an activity to plant and protect species that are friendly to the habitats.



- 4.6 To ensure sustainable development by ensuring protection of environment and livelihoods, the State Forest Department, local Self Government Institutions, other Government Departments, Non-Government Organisations, commercial establishments, students, public and voluntary organisations should come together in a mutually-complementing manner. In furtherance of this, it is envisioned to come up with a plan, in association with partners concerned, for sustainable development based on eco-restoration.
- 4.7 Kerala becomes the first State to take up such a large-scale ecorestoration programme. This will improve major ecosystem services and job opportunities. The Ecorestoration Policy, 2021 proposed to be implemented through public participation, will be a milestone in the history of Kerala. It also points to the significance of forming a people's movement, thereby rallying the masses for ecorestoration and environmental protection.
- 4.8 The Policy envisages major social mobilization of the forest-dwelling communities and the public at large to achieve forest conservation and environmental protection. The environmental awareness thus created in the Society will be passed on to the generations to come thereby paving the way for protecting Kerala's forest wealth and its ecology.





Kerala Forests & Wildlife Department