

**RE-ANALYSING THE CONCEPT OF ECOLOGICALLY FRAGILE  
LANDS (EFLs) WITH PARTICULAR REFERENCE TO WAYANAD  
DISTRICT, KERALA**

**By  
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(2010-17-104)**

**THESIS**

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**COLLEGE OF FORESTRY  
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**2012**

## **DECLARATION**

I here by declare that this thesis entitled “**Re-analysing the concept of ecologically fragile lands (EFLs) with particular reference to Wayanad district, Kerala**” is a bonafide record of research done by me during the course of research and that the thesis has not previously formed the basis for the award of any degree, diploma, fellowship or other similar title, of any other University or Society.

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Certified that this thesis entitled “**Re-analysing the concept of ecologically fragile lands (EFLs) with particular reference to Wayanad district, Kerala**” is a record of research work done independently by **Jiss. K. Varkey** (2010-17-104) under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, fellowship or associateship to him.

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EXTERNAL EXAMINER

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# *Introduction*

## INTRODUCTION

The distribution and magnitude of the biodiversity that exists today is a product of over 3.5 billion years of evolution. Human pressure poses threat to biodiversity changing the environment into a fragile ecosystem. There exists an imminent possibility of permanent and irreparable loss of extant life forms from the world or significant damage to the natural process of evolution and speciation. The fundamental idea of ecological fragility is that loss of biodiversity needs to be measured not only against some measures of the current stock, but also in terms of the potential that must be preserved for future generations. Almost any human activity causes ecological damage to one extent or another, both in terms of loss of life forms and of habitats. A rigid interpretation of fragile ecosystems may lead to a substantial, and perhaps unacceptable, curtailment in development activities.

The concept of ecologically fragile land points towards public trust easement which has its roots in the 'doctrine of public trust'. Honourable Supreme Court of India (Supreme Court of India, 1997) made it clear that public trust doctrine primarily rests on the principle that resources like air, sea, water and forest have such a great importance to the people as a whole that it would be wholly unjustified to make them a subject of private ownership and that the doctrine enjoins the government to protect the natural resources. Hon'ble Supreme Court unconditionally held that public at large is the beneficiary of ecologically fragile lands. Hon'ble Supreme Court exercised the term 'ecologically fragile land', to designate a land which supports natural resources, that is a potential of the land to sustain natural resources like bio-diversity. The term 'ecologically fragile land' was not used in the initial set of notifications issued under Environment Protection Act of 1986. The first attempt towards identifying the parameters determining ecological fragility of an area was made in 1990 by the Ministry of Environment and Forests (MoEF) in its report entitled 'Parameters for Determining Ecological Fragility'. Subsequently MoEF had asked all the state governments to identify ecologically sensitive/fragile areas in their respective jurisdictions. Thus Government of Kerala promulgated 'The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003' for taking over ecologically fragile lands (EFLs) for the maintenance of ecological balance and

conserving the biodiversity. Using this act, the government has taken possession of 14,049 ha of land in the state. In Wayanad district alone, 2,688 ha. of land were notified as EFLs since 2005 (Kerala Forest Department, 2012a).

Unlike other districts in the state, rural economy of Wayanad is totally dependent on agriculture. Almost 80-90 per cent of the farmers are small and marginal. Average size of their holdings is 0.20 ha. The landscape of Wayanad is an interspersing of valleys and hills with forests, coffee and tea plantations, paddy fields, vegetables and other crops. During the past, around 100 traditional rice varieties were cultivated in the district, but has now fallen to 16 in number. At the same time, Wayanad is well-known for high degree of endemism and species richness. Forest cover occupies 83.29 per cent of the geographical area of the district (Forest Survey of India, 2011). Wayanad Wildlife Sanctuary, which covers an area of 344.55 sq. km, forms part of the Nilgiri Biosphere Reserve (NBR). Human-wildlife conflict is a long standing forest management problem in the district. The controversies and allegations connected with the implementation of the EFL Act in the district has created new tensions between forest department and civil society.

A sum of 988 beats were declared as EFLs in Kerala among which 442 beats consisted of land holdings of area less than 2 ha. A number of small and marginal farmers were affected from the present set of notifications. In Wayanad, more than 350 small farmers were facing departmental action in connection with EFLs (Kerala Forest Department, 2012b). According to section 2(c) of the act, forest means any land principally covered with naturally grown trees and undergrowth and includes any forests statutorily recognized and declared as reserved forest, protected forest or otherwise, but does not include any land which is used principally for the cultivation of crops of long duration such as tea, coffee, rubber, pepper, cardamom, coconut, arecanut or cashew or any other sites of residential buildings and surroundings essential for the convenient use of such buildings (Government of Kerala, 2005). Farmers contended interpretation of section 2(c) in such a way that land under cultivation was indiscriminately being classified as EFLs and no compensation was provided. Addressing the concerns of various sections of the society, the EFL Act was amended in 2009 to permit farmers submit their appeals for re-evaluation of notified holdings. As per the amendment, any owner or any person having the right of

possession or enjoyment of land having area not more than 2 ha may file revision application before the custodian giving details of the location, extent, survey number, crops cultivated etc seeking a scrutiny of the notification and to decide whether such land qualify to be notified as ecologically fragile in accordance with the provision of the Act. But the definition of forest [section 2(c)] remain unchanged, creating hurdles for the farmers to get back their holdings.

It was under these state of affairs, an evaluation seeking the perception of stakeholders associated with ecologically fragile lands in Wayanad assumed great importance. The principal objective was to re-analyze the concept of ecologically fragile lands, identify pitfalls if any in the existing concept and develop re-oriented criteria and indicators of EFLs with particular reference to Wayanad district employing concept mapping method used for planning and evaluation (Kane and Trochim, 2007).

# *Review of Literature*

## **REVIEW OF LITERATURE**

This chapter aims to highlight relevance in addressing the central research question to see how the stakeholders in Wayanad conceived Ecologically Fragile Lands (EFLs). The review makes a case of environmental legislations and the basic principles they upheld, the concept of ecologically fragile lands (EFLs), EFL Act, 2003 and its amendments in Kerala, amendment to the legislation and its implications. The review accounts for the limitations to the use of quantitative approaches in stakeholder based evaluation and illustrate the need to employ more qualitative, participatory methods. Concept mapping is presented as a promising participatory approach in co-constructing a contextually relevant sketch of EFLs in Wayanad from the point of view of different stakeholders associated with it.

### **2.1. ENVIRONMENTAL LEGISLATIONS**

Ecosystems are being fragmented by diverse human activities throughout the world. Environmental legislations are only a limited approach to this broad range of problems. Most of them are reactive or damage controlling rather than proactive, problems are treated only after degradation is obvious (Karr, 1990). The term ‘ecological integrity’, recognises the importance of biological integrity and ecological health as explicit goals of environmental legislations. Biological integrity refers to the capability of supporting and maintaining a balanced, integrated and adaptive species composition comparable to that of natural habitat of the region.

Ecological health occurs when the inherent potential of an ecosystem is realised, its condition is stable, and capacity for self repair is preserved with a minimal external support (Scheuer, 1989). Unfortunately, these concepts are not central to implementation programmes in many environmental situations.

### **2.2. DOCTRINE OF PUBLIC TRUST**

Public trust doctrine rests on the principle that certain natural resources including forests have such a great importance to the people as a whole that it would be wholly unjustified to make them a subject of private ownership (Sax, 1970). The doctrine of public trust has evolved over the years to emerge as a cardinal principle for the judiciary to determine the validity of Governmental action that interferes with

the use by the general public of certain natural resources (Karthik, 2007). The doctrine enjoins upon the government to protect the resources for the enjoyment of the general public rather than to permit their use for private ownership or commercial purposes. The public trust doctrine has its origin in Roman law. This rule of law runs close to the right to life as given in Indian constitution. The higher jurisprudence of Article 21 of the constitution embraces the protection and preservation of nature's gift without which life ceases to be viable. Another aspect of right to life is the application of public trust doctrine to protect and preserve the public land. The public trust doctrine may provide the means for increasing the effectiveness of environment impact assessment laws. According to this set of guidelines, the state has a duty as a trustee under Article 48A to protect and improve the environment and safeguard the forests and wildlife. While applying Article 21, the state is obliged to take account of Article 48A, a directive principle of state policy which means that trusteeship duties of the state has been expanded to include a right to a healthy environment (Kapoor, 2007).

### **2.3. ECOLOGICALLY SENSITIVE/FRAGILE AREAS**

Ecologically Sensitive Areas (ESAs) have been identified and notified by the Ministry of Environment and Forests (MoEF) since 1989. The Environment (Protection) Act (EPA), 1986, under the jurisdiction of the MoEF is officially considered to be the umbrella legislation to regulate environment degradation in India. The enactment of the EPA is directly linked to the commitments India made at the United Nations Conference on Human Environment held in Stockholm in June 1972. The EPA primarily empowers the central Government to take measures necessary to protect and improve the quality of environment. Section 3(2) (v) of the Act empowers the central Government to take all such measures that it deems necessary to protect and improve the quality of the environment and prevent environmental pollution (Government of India, 1986a). Further, section 5(1) of the Environment (Protection) Rules (EPR), 1986, specifies certain criteria like topographic and climatic features of an area, biological diversity of the area, environmentally compatible land use, extensive cultivation, proximity to the protected areas, etc. can be considered while prohibiting or restricting certain operations in different areas (Government of India, 1986b). Notifications declaring



areas as ESAs are issued under the Environment (Protection) Act 1986. The clauses of the EPA which allow for the notification of ESAs hold the possibility of realising landscape level conservation.

In 1996, a Task Force of the Planning Commission also published a report titled 'Conserving ecologically fragile ecosystems'. Alongside the efforts of the Planning Commission, there were discussions within the MoEF to constitute a committee to identify the parameters for designating the Ecologically Sensitive Areas in the country. The MoEF felt that the areas notified before this as 'ecologically sensitive' under the Environment (Protection) Act 1986, were without any proper study or analysis. Therefore, the MoEF decided to appoint a committee of experts to draw up a list of scientific criteria for declaring an area as ESA. In 1999, the Expert Committee with Dr. Pronab Sen of the Planning Commission as its Chairman was constituted to frame parameters for designation of areas as ecologically fragile. The Committee Report was submitted to the MoEF in September 2000. While describing biodiversity loss, it accounts for the loss of potential bio-resources as well that need to be preserved for future generations. These criteria are divided further into three categories: species based, ecosystem based and geomorphologic features based. The species based category includes criteria like endemism, rarity, presence of endangered species and centres of evolution of domesticated species as primary criteria and centres of lesser known food plants as auxiliary criteria. The ecosystem based category includes corridors for migratory species, specialised habitats, special breeding site/area and areas with intrinsically low resilience, sacred groves and frontier forests as primary criteria and wetlands and grasslands as auxiliary criteria. Geomorphologic features based category includes uninhabited islands, steep slopes and origins of rivers as primary criteria and upper catchment areas, not-so-steep slopes and high rainfall areas as auxiliary criteria. While accepting the report, the MoEF excluded three of the primary criteria, namely uninhabited islands in the sea, steep slopes and wildlife corridors, on the grounds that other parameters can cover these areas and therefore these don't need separate mention (Sen, 2000).

On January 1, 2001, the MoEF issued an order constituting an Expert Committee to review the existing and new proposals received by the MoEF for declaring areas as ecologically fragile. The Committee was chaired by Dr. H. Y.

Mohan Ram. The Environment Impact Assessment (EIA) Notification 1994 (Government of India, 2003) had used the word ‘ecologically sensitive areas’ in a generic manner to include all the areas like national parks, sanctuaries, tiger reserves, reserve forests, coral reefs, mangroves, marine parks, corals, breeding and spawning ground of fish and other marine animals. But in 2006, the new EIA Notification stated under its General Conditions, any project or activity specified in Category B<sub>2</sub> will be treated as Category A, if located in whole or in part within 10 km from the boundary of (i) Protected Areas notified under the Wildlife (Protection) Act, 1972 (ii) Critically Polluted Areas as notified by the Central Pollution Control Board from time to time (iii) Notified Eco-Sensitive Areas (iv) Inter-state boundaries and international boundaries. Thus the concept of biosphere reserves, ecologically sensitive areas and community conserved areas has led to newer and wider frameworks for conservation at the landscape level. This has also been expressed and given legal sanctity through the Environment Protection Act 1986 and several such areas have already been notified in India.

#### **2.4. LAND LAWS IN KERALA**

Kerala stands as a model in the implementation of land reforms. The Land Reforms Act, 1963 which was promulgated after the unification of Kerala, brought within its ambit all tenures including crop share and conferment of ownership rights to tenants. Along with tenants who cultivated land with hired labour or with family labour, who were attached labourers got ownership rights over their homestead, but not over the agricultural land on which they were labouring for years. Thus the actual benefits accrued from the land reforms in the post-independence period varied across the non-traditional land owning groups and have generated new ruptures. Land Reforms Act, 1963 envisaged the level of ceiling which applies to a family of five members comprising husband, wife and their unmarried children, as 12 standard acres. Allowance was made for larger families exceeding five members at the rate of one standard acre for each additional member subject to an upper limit of 20 standard acres. The ceiling limit in terms of ordinary acres was, however, not to be less than 15 acres or more than 36 acres (Government of Kerala, 1964). Ceilings laws were enacted in two phases: Phase I covered the ceiling laws during the late fifties and the sixties, and Phase II came only around early 1970s when more stringent ceiling laws

were enacted basically to plug the loopholes of the earlier laws. In fact, the ceiling laws of Phase I remained, both theoretically and practically, a nebulous item in the scheme of agrarian reforms; these were at best an expression of a vague politico-economic concept which promised practically nothing to the landless and the small, uneconomic holdings (Government of India, 2007). However, the land reforms in Kerala still not complete. The failures in the implementation of measures such as exclusion of plantations from the ambit of land reforms and non-implementation of the ceiling act are pointed out as reasons for the unsuccessful outcomes of land reforms (Scaria, 2010).

On 21<sup>st</sup> January 1971, the Kannan Devan Hills Produce (Resumption of Lands) Act was passed as a measure of Land Reforms (Government of Kerala, 1971a). The Private Forests in the Kerala were taken over by the government as per Ordinance No.14/71 issued by the Governor on 10th May, 1971. The ordinance was later replaced by the Kerala Private Forests (Vesting and Assignment) Act, 1971, (Government of Kerala, 1971b). The constitutional validity of this Act was challenged in the High Court of Kerala and on 21<sup>st</sup> June, 1972, declared that the Kerala Private Forests (Vesting and Assignment) Act, 1971, was unconstitutional and void. Later Supreme Court upheld validity of the legislation considering the appeal of Kerala State. The report of Vested Forest Committee observed that the Madras Preservation of Private Forests Act, 1949 was a temporary measure proposed to safeguard the private forests pending further legislation. For various reasons, this was delayed. Government did not seem to have contemplated taking over or even controlling the areas till 1971(Kerala Legislative Assembly, 1975).

According to the Kerala Land Assignment (Regularization of Occupation of Forest Land prior to 01.01.1977) Special Rules (Government of Kerala, 1993), the extent of land that may be assigned to a family shall not exceed four acres. The land in possession of a family in excess of four acres shall be resumed by government and the said family shall not be eligible for any compensation for improvements effected on such land. The assignment shall be liable to be cancelled for contravention of the provisions of the 1993 Act or if there was any irregularity in assignment or in the procedure.

## 2.5. THE KERALA FORESTS (VESTING AND MANAGEMENT OF ECOLOGICALLY FRAGILE LANDS) ACT, 2003

Kerala legislature enacted The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act in 2003 [Appendix I] with effect from the second day of June 2000. It was a legislation to provide for the vesting the ecologically fragile lands with the Government and managing such lands with a view to maintaining ecological balance and conserving the biodiversity. According to this Act, an ecologically fragile land refers to any forest land or any portion thereof held by any person and lying contiguous to or encircled by a reserved forest or a vested forest or any other forest land owned by the Government and predominantly supporting natural vegetation, or any land declared to be an ecologically fragile land by the Government by notification in the Gazette under section 4 of the EFL Act (Government of Kerala, 2005).

The Government shall have power to declare, by notification in the Gazette, any land to be ecologically fragile land on the recommendation of the advisory committee appointed for the purpose under section 15, giving the owner a notice of thirty days for being heard. No person shall change the legal or physical status or ownership of the land proposed to be declared as an ecologically fragile land after the notice being issued. Subject to the provisions of section 16, all ecologically, fragile lands vested in Government under section 3 and section 4 shall be deemed to be reserved forests constituted under the Kerala Forest Act, 1961. The vested EFLs will be managed by the forest department in accordance with the provisions of the management plans approved by the Government from time to time. The custodian or an officer not below the rank of Divisional Forest Officer authorised by him in this behalf may evict any person in occupation of any ecologically fragile land vested in the Government under section 3 or section 4 after giving such person thirty days notice. In respect of the land vested under sub-section (4) of section 4, the owner thereof shall be eligible for compensation of the said land including the permanent improvements. No compensation shall be payable for the vesting in the Government of any ecologically fragile land or for the extinguishment of the right, title and interest of the owner or any person thereon under sub-section (1) of section 3 (Government of Kerala, 2005).

The Government may constitute tribunals for the purpose of EFL Act, 2003 decides all matter within its competence and may review any of its decisions in the event of there being an error. The Government or any person objecting to any decision of the tribunal may, within a period of sixty days from the date of that decision, file appeal at the High Court and the High Court may admit an appeal preferred after the expiry of the specified period if it is satisfied that the appellant has sufficient cause. If the High Court decides that any land is not an ecologically fragile land or portion thereof has not vested in the Government, the custodian shall, as soon as restore possession of such land or portion to the owner. Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Rules, 2007 (Appendix II) made guidelines for advisory committees, demarcation of boundaries, determining compensation, application for review of notification, preparation of management plan and fund for implementation of the act (Government of Kerala, 2007a).

## **2.6. THE KERALA FORESTS (VESTING AND MANAGEMENT OF ECOLOGICALLY FRAGILE LANDS) AMENDMENT ACT, 2009**

An amendment to the EFL Act, 2003 was introduced in 2009 [Appendix III] for inserting two new sections namely 10A and 10B. Section 10A meant for filing fresh revision application with respect to lands having an extent of not more than two hectares. The condition is applicable to land notified under section 3 of the Act without any compensations. Section 10B constituted dispute redressal committees for considering claims on ecologically fragile lands (Government of Kerala, 2009).

## **2.7. CRITICISM OF ECOLOGICALLY FRAGILE LANDS ACT**

Supreme Court upheld the right of the people to benefit from ecologically fragile land into fundamental right under Article 21 and the State has a duty to prevent user of the land to protect ecology and environment under Article 48A of the Constitution. The Court also held that the people of the country also have a fundamental duty under Article 51A (g) of the Constitution to protect environment and ecology and therefore could not contend that regulation of user of ecologically fragile land could not be resorted since they have absolute right to use their land in whatever manner they wanted. The right of the people to be benefited out of ecologically fragile land is protected under Article 21 of the Constitution of India and

the duty and power of the Government to protect such land flows from Articles 48A and 51 A (g) of the Constitution of India (Chandrasekhar, 2007). Creation of two categories of land which are being acquired in two different ways is not violating Article 14 of the constitution because there is a distinction between the two categories of land. The first category is the land which is ecologically fragile on account of it being forest land which is contiguous to forests. No compensation is being provided for the vesting of lands under section 3(a) of the Act because no permanent improvements have been made by the petitioner to these lands. So that there is no requirement to pay compensation for the natural growth and vegetation that is present in these lands. Compensation is however provided for the lands being vested under section 4(1) because these lands have been subject to permanent improvements and is not forest land (Government of Kerala, 2007b).

Patches of land in some settlement areas had been taken over under the Ordinance of 2001 on the ground that they were encroached, on environmentally fragile forest areas. As the Government policy is to allow farmers who had encroached upon forests prior to 1977, this action had been contested by farmers. Some areas notified had lost the status of forests in a practical sense. When the Ordinance was replaced by an Act in 2003, the then Government had incorporated a provision exempting land used principally for the cultivation of crops of long duration such as tea, coffee, rubber, pepper, cardamom, coconut, areca nut and cashew and sites of residential buildings and appurtenances. Kerala Government had taken possession of 14,049 hectares of land from farmers following the enactment of the Kerala Forest (Vesting and Management of Ecologically Fragile Land) Act, 2003. It was in Palakkad that the largest extent of land (5,209 ha.) was taken over, followed by Wayanad (2,688 ha.), Malappuram (1,264 ha.), and Idukki (1,255 ha.). All these lands were notified under section 3(1) of the act so that no compensation was applicable (Kerala Forest Department, 2012b). After the amendment in 2009, 1055 farmers filed review petition to get back their holdings, together coming to around 500 hectares, vested with the Government on being declared ecologically fragile land (EFL). If the applications are found genuine, about four per cent of the total vested land in the state has to be returned.

## **2.8. STAKEHOLDERS ASSOCIATED WITH ECOLOGICALLY FRAGILE LANDS IN WAYANAD**

Altogether 2,688 hectare land was notified as EFLs in Wayanad applying section 3(a) of the Act. Therefore no provision for compensation was applicable. Victims of this notification include both small scale farmers and agricultural labourers. Many of them got trapped since they purchased the land after the stipulated date mentioned in the Act. These farmers in Wayanad consider EFL Act as an excuse for the government to obtain huge funds from various sources for social forestry programmes in future. The dispute redressal committees constituted as per the amendment Act of 2009 consisted of representatives from forest department, agriculture and revenue departments, research institutes, legislative assembly, local self Government institution etc. Gadgil et al. (2011) insisted the importance of taking on board perceptions of the civil society and local bodies to decide on areas that they consider being ecologically fragile.

## **2.9. STAKEHOLDER BASED EVALUATION**

Stakeholder based evaluation is an approach to identify, relevant individuals or groups. Stakeholders are the distinct groups interested in the results of an evaluation, either because they are directly involved in the activities concerned, or because they must engage in decision making roles (Gold, 1983). It is useful in conceptually framing general program evaluation problem (Alkin, 1991). Patton (1997) reviewed the technique of stakeholder mapping, in which stakeholders can be categorized using a matrix according to their initial inclination toward the concept and how much they have at stake in the outcome of the evaluation. Four different stakeholder roles were distinguished by Alkin et al. (1998). These include stakeholders as (1) primary users of evaluation (2) information sources for framing the evaluation (3) data sources during the evaluation and (4) the spectators of the evaluation report.

## **2.10. CONCEPT MAPPING**

Concept mapping is a type of structured conceptualisation which can be used by groups to develop a conceptual framework which can be used for program planning and evaluation (Trochim, 1989). The literature reveals concept mapping as a

graphic technique for promoting social interaction and exchange by creating the conditions for the understanding of thoughts and their relations in interpretations (Khattri and Miles, 1994). The technique of concept mapping is particularly appropriate for group exercises. Specifically, it generates a group map that makes it attractive for use with a number of stakeholders in a single evaluation.

To construct the map, ideas are to be generated first, and the relationships between them articulated (Anderberg, 1973; Everitt, 1980; Trochim, 1989; Hair et al. 1998). Once the ideas have been generated they are subsequently sorted, rated and analysed through multidimensional scaling (MDS) and cluster analysis. Hence, both qualitative and quantitative methodologies are combined in concept mapping. Mapping is a theory of consequential learning. According to Wandersee (1990), concept mapping relates directly to such theoretical principles as prior knowledge, progressive differentiation, cognitive bridging, and integrative reconciliation. Concept mapping is an effective method for building awareness among key stakeholders as the entire process is based on group understanding. The final step in the mapping process involves a group discussion on how the final concept map might be used to enhance either planning or evaluation. Thus the whole procedure can work well in assisting stakeholder groups in developing a clearer understanding of key concepts and their practical utility and effectiveness in practice (Kane and Trochim, 2007).

Trochim and Lynton (1986) elaborated that concept mapping is a type of structured conceptualisation that can be used by groups to develop a conceptual framework which may guide evaluation or planning. Jaliya (2008) studied the concept of agricultural development in the context of Kerala using concept mapping and a model for agricultural development was constructed from ten most preferred activity statements ranked by four respondent groups among physical, economic, socio-psychological and ecological dimensions.

## **2.11. STUDIES BASED ON CONCEPT MAPPING METHODOLOGY**

Michalski and Cousins (2000) used concept mapping in their work to investigate differences in stakeholder perceptions on training results and evaluation in a major division of a multinational network-design and engineering company. Referencing a research framework informed by multiple constituency views of



organisational effectiveness, this single case study examined group perceptions of the results and evaluation of training among 39 knowledge workers organized into three equal groups of 13. These groups consisted of (1) line managers as sponsors of training, (2) product developers as participants in training, and (3) training professionals as providers of training. A set of 21 pattern matches were performed to investigate stakeholder differences both within (intra) and between (inter) groups. Correlation (Pearson  $r$ ) coefficients were also calculated for each pattern matches for comparison.

National Association of Chronic Disease Directors (NACDD, 2003) generated pattern matching results in order to compare cluster ratings between the two rating variables of importance and impact, as well as comparing aging and public health organisations on each variable. The Hawaii Department of Health used concept mapping techniques to engage local stakeholders and national subject area experts in defining the community and system factors that affect individuals' behaviors related to nutrition and physical activity. A sequence of multivariate statistical analyses, including multidimensional scaling (MDS) and hierarchical cluster analysis, generated maps and figures. The results also provide empirical support for the premise that both community and systems factors ought to be considered when planning comprehensive health improvement initiatives (Trochim et al., 2004).

Ridings et al. (2008) presented how concept mapping method was employed to drive a community building effort by a large not-for-profit organisation in Chicago around the issue of African and American male youth. The study generated reflection on intended and unintended benefits. Again concept mapping was used as a tool used to rapidly assess the variations in thinking of large stakeholder groups in a study to engage a community in Health disparity identification (Risisky et al., 2008). The responses from 132 stakeholders configured eight general clusters namely economic issues, government, contextual factors, cultural factors, stress factors, diseases, environment, and motivation. Haque and Rosas (2010) successfully sequenced and integrated photovoice and concept mapping. Active involvement of immigrant residents was facilitated to systematically organise and build consensus around the wide range of neighbourhood factors.

## 2.12. THEORETICAL FOUNDATION OF CONCEPT MAPPING

An understanding of the psychological and sociological origins of the concept mapping process is critical in its application. Work in cognitive theory by Ausubel (1968) played a key role in establishing the psychological foundations from which contemporary concept mapping theory and methods evolved. Concept mapping produces a visual illustration of accessible information from a specific point of reference. Concept mapping technologies are embedded in cognitive learning theory. In general, the acquisition and storage of knowledge delineated in cognitive learning theory directly parallels the concept mapping steps defined by Trochim (1989). Participants in concept mapping processes are encouraged to access related knowledge on the area under focus during the brainstorming phase (Rizzo-Michelin, 1998). The cognitive learning processes of guiding learners to develop new structures or knowledge about the structures are represented by the processes of generating and developing ideas and interconnections in concept mapping.

The sociological principles of concept mapping provide the processes for understanding the connections in terms of social processing (Garling et al., 1984). Huberman (1990) envisaged acquisition of knowledge as an interactive process between and within the environment. It is these interactive networks that are precisely the foundations on which concept mapping variations rely. Concept mapping relies heavily on these interactions in creating construct maps that reflect these communications.

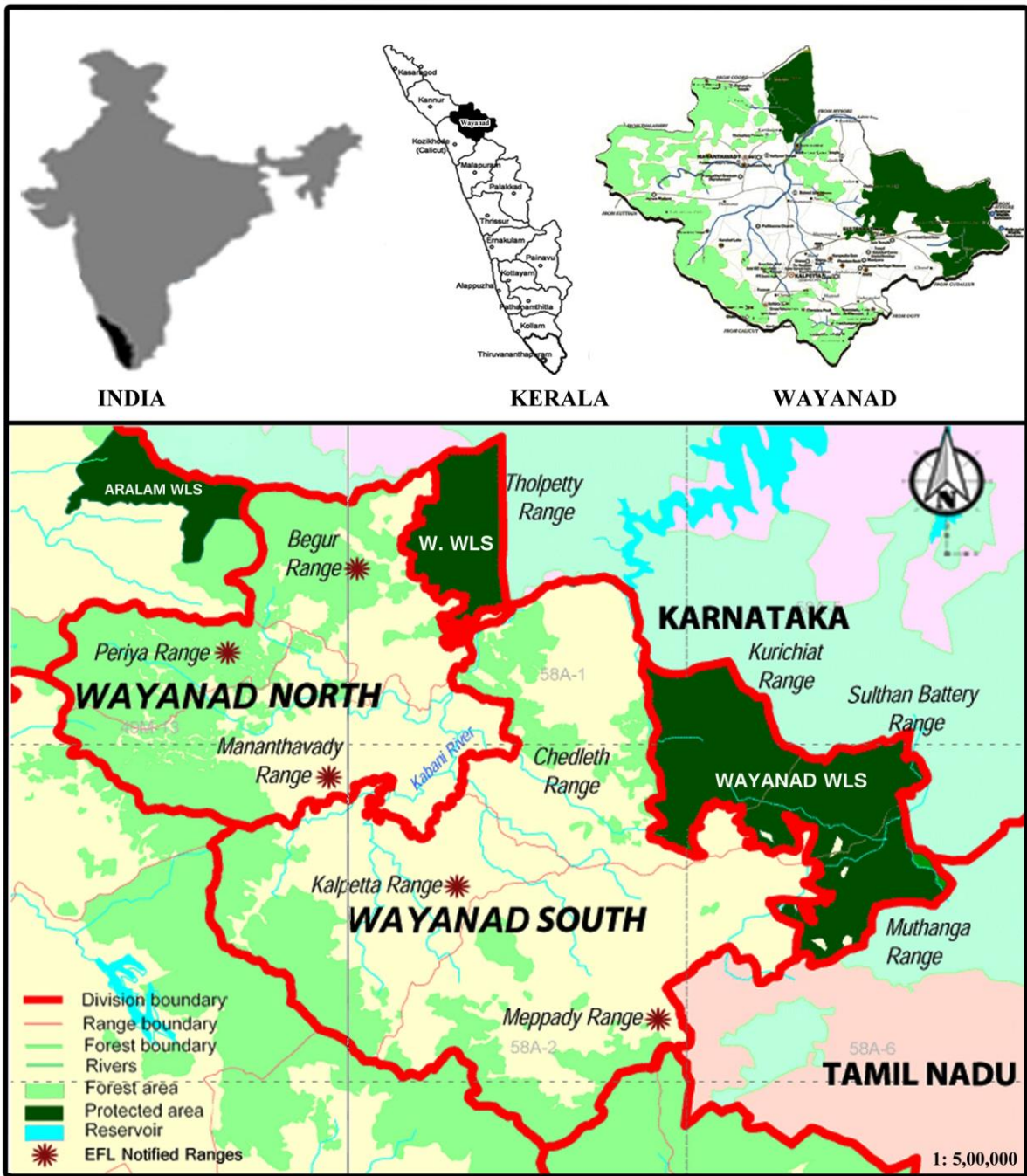
## *Materials and Methods*

## MATERIALS AND METHODS

### 3.1. STUDY AREA

Wayanad district in Kerala lies on the edge of the Deccan plateau and is unique because of its elevation (700 m-2100 m. above MSL) compared to the rest of the plains in the state. Physically, Wayanad sits where the Western Ghats and Eastern Ghats converge, bringing together the elements of both systems in once place. The geographic area of the district is 2,131 km<sup>2</sup>. Fig. 1 represents EFL notified ranges within the South and North Forest Divisions of Wayanad (Kerala Forest Department, 2012a). The lofty hills of the district are one of the highest points facing the southern end of the Deccan Plateau. The north-east and eastern borders of Wayanad are covered by thick forests that continue to span most of the Kerala-Karnataka border. Distribution of reserved and vested forests under the jurisdiction of North and South Forest Divisions of Wayanad are respectively detailed in Table 1 and Table 2.

Wayanad forms part of Nilgiri Biosphere Reserve (NBR) and Project Elephant Reserve No.7. It is contiguous with Mudumalai Wildlife Sanctuary of Tamil Nadu and Bandipur and Nagarhole National Parks in Karnataka. The area is significant because of ecological and geographic continuity with other protected areas such as Bandipur Tiger Reserve and Nagarhole N.P. of Karnataka in north-eastern portion and Mudumalai Tiger Reserve of Tamil Nadu in south-eastern side offering an unique eco system enriched with wildlife, forming natural corridor for the seasonal migration of long ranging animals within the greater conservation unit. The Sanctuary has the typical moist and dry deciduous forests, few patches of semi ever green forests and the moist deciduous ones are intervened with natural growth of bamboo thickets. About 30 per cent of the Sanctuary is under plantations of teak, eucalyptus and silver oak. However, the recent management of the sanctuary aims conservation in total including the fragile landscape. After the enactment of the EFL Act 2003, Kerala Forest Department notified 2688 ha of ecologically fragile lands in Wayanad district alone (Kerala Forest Department, 2012a). More than 350 small farmers and agricultural labourers are facing the threat of eviction by departmental action. Widespread turmoil prevails in the district against the notifications process. Under these state of affairs, a stakeholder based evaluation in connection with ecologically fragile lands in Wayanad gains prominence.



**Basic information on Wayanad district**

11. 27' to 15. 58' North latitude  
 75. 47' to 70. 27' East longitude  
 Area: 2,131 km<sup>2</sup>  
 Total forest area: 884.18 km<sup>2</sup>  
 Total EFL area notified: 26.88 km<sup>2</sup>

Figure 1. EFL Notified Ranges\* in Wayanad district, Kerala (Map by *nairpv@kfri.org*)

Table 1. Distribution of reserved and vested forests in North Wayanad Forest Division

North Wayanad Forest Division (HQ: Mananthavadi)				
Name of the Range	Headquarters	Forest area (ha)		Total (ha)
		Reserved	*Vested	
1. Begur	Begur	7336.10	1616.20	8952.30
2. Mananthavadi	Mananthavadi	Nil	2604.72	2604.72
3. Peria	Niravilpuzha	6066.30	2298.90	8365.20
Sub total		13402.40	6519.82	19922.22
**P.O.B land area in Begur Range		Nil	Nil	1506.40
Total		13402.40	6519.82	21428.62

**\*Vested Forests:** Vested forest stretches have become the absolute property of the Govt. by virtue of The Kerala Forest (Vesting and Assignment) Act [No. 26/71]. Some vested forest areas are involved in litigation, regarding the ownership of land.

**\*\*P.O.B:** An area of 1214.629 ha in survey numbers 92, 93, 94, 95 and 98 of Dindumal village, Mananthavadi taluk and survey numbers 88 and 452 of Thirunelly village of Wayanad district were ear marked for military purposes and recorded in Prohibitory Order Book (P.O.B.) kept in the Revenue Department. P.O.B land continues to be under the control of Kerala Forest Department (Kerala Forest Department, 2012c).

Table 2. Distribution of reserved and vested forests in South Wayanad Forest Division

South Wayanad Forest Division (HQ: Kalpetta)				
Name of the Range	Headquarters	Forest area (ha)		Total (ha)
		Reserved	Vested	
1. Kalpetta	Kalpetta	1350.90	10791.10	12248.20
2. Meppadi	Meppadi	Nil	11261.60	11685.70
3. Chedleth	Pulpally	5408.90	3191.10	8600.00
Total		6759.8	25243.8	32533.9

### 3.2. CONCEPT MAPPING

This study used a specific form of integrated concept mapping developed and described by Kane and Trochim (2007). Concept mapping is considered a form of psycho-sociological research method for planning and evaluation. It is a standardized approach designed to integrate input from a variety of participants who have varying levels of knowledge, experience and interest in the subject concerned. The approach is used to maximize and instill a sense of trust and respect, not only among actual participants of the study, but also with the study results (Trochim, 1993; Kane and Trochim, 2007). Concept mapping has several notable characteristics. Concept mapping method integrates input from multiple sources with differing interests constructs maps using sophisticated and rigorous multivariate data analyses. A series of maps are created visually depicting the composite thinking of the group. The maps be used to guide action planning, program development or evaluation. The concept mapping process involves the following six steps in general.

#### 3.2.1. Preparation

Preparation included working out the logistics of completing the study and developing the focus prompt. Concept mapping allows for a variety of participant involvement. There is no strict limit to the number of people who take part in the process. Stratification is the process of dividing members of the population into homogeneous subgroups before sampling. Stratified survey could thus claim to be more representative of the population than a survey of simple random sampling. Four distinct stakeholder groups were identified in association with EFLs in Wayanad. Stakeholder groups and respective sample size were illustrated in Table 3.

*Table 3.* Stakeholders and respective sample size in concept mapping

<b>Stakeholders</b>		<b>Sample size</b>
Group A	Officials from forest, agriculture and revenue departments	30
Group B	Environmentalists, green activists and legal professionals	30
Group C	Policy makers and local political leaders	30
Group D	Farmers and agricultural labourers in Wayanad	30
Total number of stakeholders participated in the concept mapping process		120

Group A consisted of ten officials not below the rank of Deputy Range Officers (Dy. ROs) in Kerala Forest Department, Agriculture Officers from EFL notified villages in Wayanad district and representatives from Revenue Department not below the rank of Village Officers. Group B consisted of respondents from various organizations working for environmental causes like Wayanad Green Corps, Kerala Sasthra Sahithya Parishad (KSSP), Organization of Industrial Spiritual and Cultural Advancement (OISCA-International), Wayanad Social Service Society and Arshabharath. Representatives from NGOs working with legal sector like Neethivedhi, Kerala State Legal Service Authority (KELSA), legal practitioners and public prosecutors. Group C consisted of policy makers and local political leaders mostly associated with EFLs in one way or the other. Members of Legislative Assembly, District, Block and Village panchayaths, local leaders of various political organizations including CPI(M), CPI, Congress (I), Kerala Congress (M), Kerala Congress (B), Congress (S), Socialist Janatha, INFARM, Janatha Dal (S), IUML, RSP and BJP. Group D consisted of farmers and agricultural labourers from Vythiri and Mananthavadi Taluks in Wayanad, where the EFL notified ranges are situated. A balance was maintained by selecting appropriate number of small farmers and agricultural labourers (area of holding 2 ha. or less), medium and large farmers (area of holding above 2 ha.). Such a distinction was made since the fixed ceiling limit was 2 ha for enabling a farmer to file revision application under the provision of The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Amendment Act, 2009 (Government of Kerala, 2009).

### **3.2.2. Generation of the statements/ideas**

This step signals the beginning of the actual concept mapping process with the generation of statements/ideas [Appendix IV] ideally representing the conceptual domain for the topic of interest. During the brainstorming exercises, respondents were encouraged to generate a number of statements and without any criticism or discussion regarding the legitimacy of the statements.

### **3.2.3. Structuring, sorting and rating of the statements/ideas**

The sorting task [Appendix V] instructed participants to sort each statement into a pile in a way that made sense to them. The participants could not put each



statement into its own group, nor could they put all statements into one group. They were also instructed to provide a sensible title to each group or pile of statements. Later, rating of the individual statements was accomplished using a Likert-type response scale (1 to 5 scale) to indicate the importance of each statement. The statements were rated using the following five point rating scale:

**1:** Relatively Unimportant

**2:** Somewhat Important

**3:** Moderately Important

**4:** Very Important

**5:** Extremely Important

### **3.2.4. Representation of statements/ideas in maps**

The sort data analyzed through MDS (Kruskal and Wish, 1978; Davison and Skay, 1991). Each participant who completed the sort task produced sort data, which identified whether or not each statement was paired in the same group with each of the other statements. All of the sort data was combined into an association matrix, which represents how many sorters paired each of the same two statements into the same pile or group. The association matrix was then used to calculate the two dimensional point map and then the cluster map.

For each statement, the MDS analysis yields  $x$  and  $y$  values which when plotted make up the point map form of the concept map. The points on the map represent each individual statement from the statements generated. The location of the point on the map is determined by the MDS and reflects how each sorter paired that statement with all other statements. In MDS, the statistic that indicates goodness of fit is called a stress value. The stress value represents how well the two dimensional point map represents the way participants actually sorted the data. Calculation of stress value is as follows,

Step 1: Determine the proportion of sorters ( $p_{ij}$ ) who placed statement  $i$  and  $j$  together

$$p_{ij} = \frac{s_{ij}}{m}$$

Where,

$s_{ij}$  = Number of sorters who placed point  $i$  and  $j$  together in the same pile

$m$  = Total number of sorters

Step 2: Standardized Euclidean distance ( $d_{ij}$ ) between all pairs points  $i$  and  $j$ .

$$d_{ij} = \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}$$

Where,

$x_i$  = MDS x-coordinate for point  $i$

$y_i$  = MDS y-coordinate for point  $i$

$x_j$  = MDS x-coordinate for point  $j$

$y_j$  = MDS y-coordinate for point  $j$

Step 3: Calculation of bridging value ( $b_i$ )

$$b_i = \frac{\sum_{j=1}^n (p_{ij} \times d_{ij})}{\sum_{j=1}^n p_{ij}}$$

Where,

$p_{ij}$  = Proportion of sorters who placed point  $i$  and  $j$  together in the same pile

$d_{ij}$  = Standardized Euclidean Distance between points  $i$  and  $j$

The idea of the stress value in concept mapping is similar to the idea of the reliability of a measurement (Concept Systems, 2011). Stress value measures the degree to which the distances on the map are discrepant from the values in the input similarity matrix. High stress values (greater than 0.365) imply that there is a greater discrepancy and that the map does not represent the input data and the low stress values imply a better fit. In general, stress values will be lower when there are more statements and more people rating the statements than otherwise.

The multidimensional scaling (MDS)  $x$ ,  $y$  values serve as input for the hierarchical cluster analysis, which results in a non-overlapping cluster map. The cluster map represents how the participants as a group sorted various statements. If many participants sorted statements in the same group, these end up on the point map in close proximity and then tend to be clustered together in the cluster analysis. All hierarchical cluster analysis procedures give as many possible cluster solutions as there are statements. But the task was to decide on how many clusters that statements should be grouped into for the final solution. The hierarchical cluster analysis can yield anywhere from maximum (each statement in its own cluster) to one (all statements in one) cluster. To determine the level at which the clusters make the most

sense, thorough understanding of the focus prompt is essential. This decision is reached by considering which statements are being clustered together and obtaining a consensus as to whether this makes sense.

Ratings for statements contained in each concept and for all concepts are presented in the form of a concept rating map. Matching the patterns involves comparing the rankings between the two groups. The pattern refers to the importance ranking based on the rating of each statements providing an easy way of making comparison by identifying which concepts show the greatest consensus or disconnection. The values at the top and bottom of the vertical sides of the ladder show the range of average ratings out of 5 from the Likert scale. Using average statement ratings, the two patterns are compared with a Pearson product-moment correlation indicating the strength of consensus between various groups. Together, the ladder graph and its correlation describe the relationship between the patterns of the two groups of participants. The closer the correlation is to 1.0 the more similarly the two groups rated importance. Negative values imply an inverse relationship. Criteria for evaluating the correlations were as follows; an  $r$  value greater than 0.75 is good to excellent agreement, from 0.75 to 0.50 is moderate to good, from 0.50 to 0.25 is fair and from 0.25 to 0.00 or less show little to no agreement. The average importance rating for distinct groups on each statement is plotted on the go-zone graph; so named for the upper right quadrant of the scatter plot. The shaded quadrant represents the area of the graph that falls above the average statement rating for each group of stakeholders. The average rating for each group is indicated as a shaded line on the graph. The placement of the line (average rating of all statements per stakeholder group) is computed by dividing the sum of all average statement ratings within each group by the number of statements. The numbers along the x and y axes indicate the range of rating scores and the average ratings. The go-zone graph can assist in identifying agreement and disagreement between the two groups (Kane and Trochim, 2007). All the output statements from each go-zone graphs were compiled to generate re-oriented criteria and indicators of EFLs with particular reference to Wayanad.

### **3.2.5. Interpretation of the maps**

Cluster map is the most directly interpretable map. This step involves reconvening the brainstorming groups or convening a group of experts for the

interpretation exercise. Naming of the individual clusters done by closely examining the cluster map in a way that seems sensible to represent the idea. Naming of the clusters is a decisive phase in concept mapping process.

### **3.2.6. Utilization of the maps**

Concept maps are having following conveniences in general,

- ❖ To discuss how the maps might be useful in the planning and evaluation
- ❖ To closely understand the issues connected with each concepts
- ❖ To prioritize immediate, short and long term goals based on the findings
- ❖ Concept map can be used as a framework for a planning project

### **3.3. VALIDITY OF THE CONCEPT MAPPING METHOD**

The concept mapping method adds validity to the results because it uses multidimensional scaling (MDS) and hierarchial cluster analysis in a manner that allows associations and meanings among sorters by combining the individual perceptions of all participants. Additionally, having a number of participants involved in the sorting task, whereby each sorter conceives his or her own categories. Concept mapping uses both human judgment and statistical analysis together (qualitative and quantitative analysis), making concept mapping more data-driven than depending on researcher judgments (Kane and Trochim, 2007).

*Results*

## **RESULTS**

The concept maps generated from the response of four different stakeholder groups associated with ecologically fragile lands (EFLs) in Wayanad are presented in the order of increasing complexity and detail.

### **4.1. GENERATION OF STATEMENTS/IDEAS**

A set of brainstormed statements were generated by the respondents from various groups of stakeholders. Thirty individuals each from four distinct stakeholders groups contributed their ideas. The statements were structured and refined through a series of discussions further involving representatives from stakeholders and experts. At last 45 statements or suggestions were finalised by avoiding duplications if any (Table 4). The final set of statements were presented before the stakeholder groups and accomplished sorting and rating assignments.

### **4.2. STRUCTURING AND SORTING OF THE STATEMENTS/IDEAS**

The statements were sorted by the respondents in to groups/ piles representing a concept in a way that made sense to them. The sorting data were used for carry out multidimensional scaling (MDS). Resulting point map (Fig. 2) represented all statements/ideas in 2 Dimension. Goodness of fit of the statements (Table 5) showed all the stress values including Normalized raw stress, Stress I, Stress II and S- Stress falls in a range between 0.10 and 0.365. The stress values validated representation of the statements/ideas in the point map and sensibility of the sorting process.

### **4.3. HIERARCHIAL CLUSTER ANALYSIS**

Hierarchical cluster analysis was done using SPSS Ver.17 and represented as a dendrogram in Fig. 3. Individual statements/ideas from the point map were grouped accordingly into five clusters. Essentially, it was possible to have up to 45 clusters (one for each statement) down to a single cluster (all statements in one cluster). But a five cluster solution was finalised in qualitative terms each representing a theme or concept, identified by closely examining the content statements. Six statements were interchanged or adjusted [represented by (\*) in the dendrogram] between adjoining clusters at the very preliminary clustering stage itself, in order to make them more meaningful.

*Table 4. Combined statement generation by the stakeholder groups*

#	Statements/ideas in relation to ecologically fragile lands in Wayanad
1.	Ecologically fragile area due to the historical importance and livelihood sustaining values.
2.	EFL status out of a legal framework.
3.	A fragile landscape having physical continuance to reserved forests or vested forests.
4.	Wildlife corridors/sacred groves.
5.	EFL status due to political reasons.
6.	Fair compensation for EFLs irrespective of area of holdings.
7.	Awareness programmes among public regarding importance of EFLs.
8.	Green taxation for mass tourism activities adjoining to notified EFLs.
9.	Trim down inequality stuck between districts in EFL declaration.
10.	Detailed guidelines regarding the parameters to be considered by dispute redressal committee.
11.	Return notified lands back to farmers when it lacks physical continuity to natural forests.
12.	A private holding having reserved forest status.
13.	Budgetary provision for compensation to EFLs.
14.	Expert committee for validating scientific backup of EFL status.
15.	Habitat of rare and endangered species of flora and fauna.
16.	Fair justice to farmers irrespective of the size of their holdings.
17.	Declaration of EFLs in trust of public.
18.	Representation of local self government institutions in EFL committees.
19.	Measures for vesting extensive unexploited private lands sustaining natural vegetation.
20.	Intervention of NGOs and legal service authorities in resolving social tension.
21.	Central government should respond to legal sanctity of EFL legislation.
22.	Deteriorated private lands adjoining to reserved forest areas.
23.	A private holding with similar biodiversity richness as of a natural forest.
24.	EFL status since no taxes levied by revenue department.
25.	Proposed vested forests, involved in litigation regarding ownership of the land.
26.	A vital landscape sustaining ecological and climatic values.
27.	EFL status strictly due to technical reasons.
28.	EFL Act is a 'black law'.
29.	Centrally sponsored scheme for acquiring private lands with sufficient compensation.
30.	Large farmers should get compensation for at least two hectares.
31.	Compensation should not be lower than base rate fixed by revenue department.
32.	Enforcement of the EFL Act.
33.	The fixed limit of two hectares land for re-evaluating the status of EFLs is not enough.
34.	Areas prone to natural disasters.
35.	Private land holdings surrounded by natural forests.
36.	Once the ecological value of an area is lost, very hard to restore.
37.	A significant locale in wetland conservation.
38.	An area having importance in relieving human pressure on forests.
39.	Effective and transparent functioning of dispute redressal committee.
40.	Legal assistance to small farmers and agricultural labourers.
41.	Steps by government for learning public dilemma associated with EFL notifications.
42.	Comprehensive rehabilitation package for small farmers and agricultural labourers.
43.	Awareness among public on importance of valuable species in the homesteads.
44.	Participatory move in conservation of ecologically fragile lands.
45.	Separate guidelines for effective management of EFLs by forest department.

# Fixed serial number for statements/ideas in the order they were generated

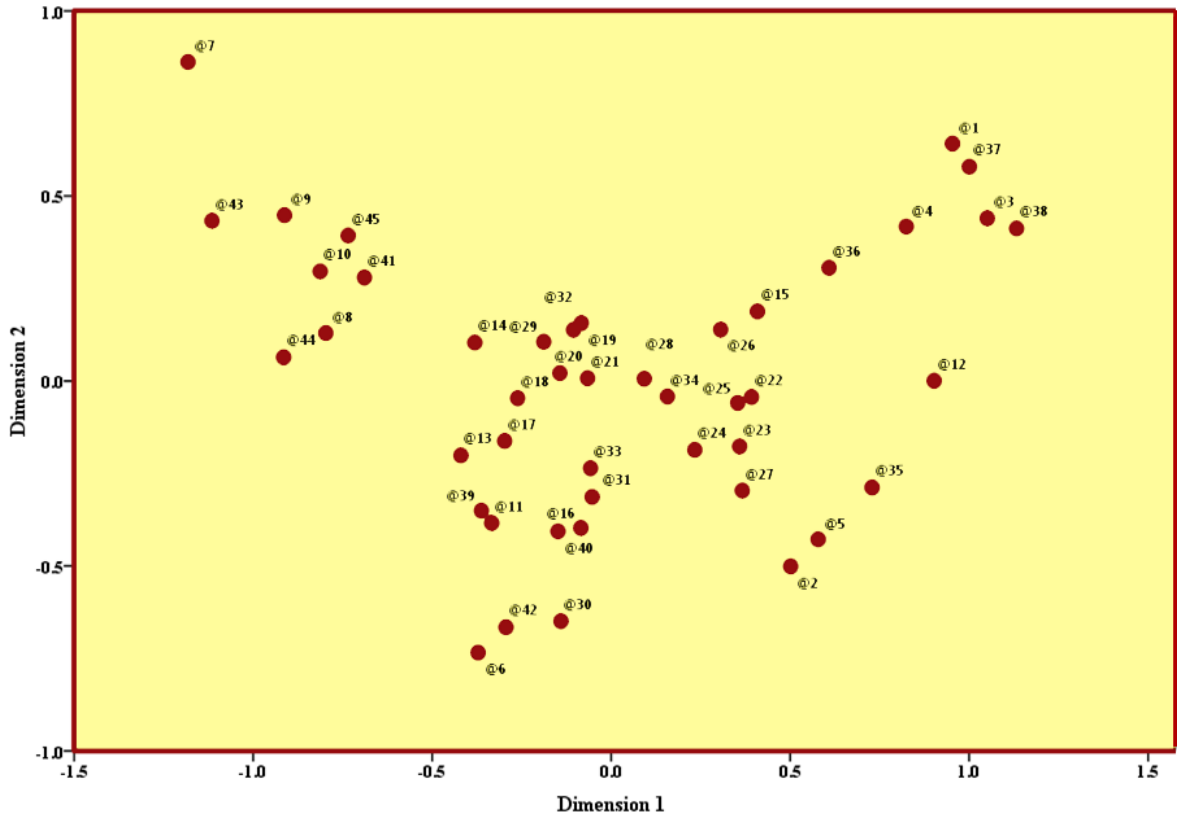


Figure 2. Point map generated through Multidimensional Scaling (MDS) analysis

Table 5. Goodness of fit for the statements/ideas in point map (Stress values)

Stress and fit measures (SPSS)	
Normalized Raw Stress	0.01190
Stress-I	0.10909 <sup>a</sup>
Stress-II	0.22138 <sup>a</sup>
S-Stress	0.01746 <sup>b</sup>

a. Optimal scaling factor = 1.012

b. Optimal scaling factor = 1.001



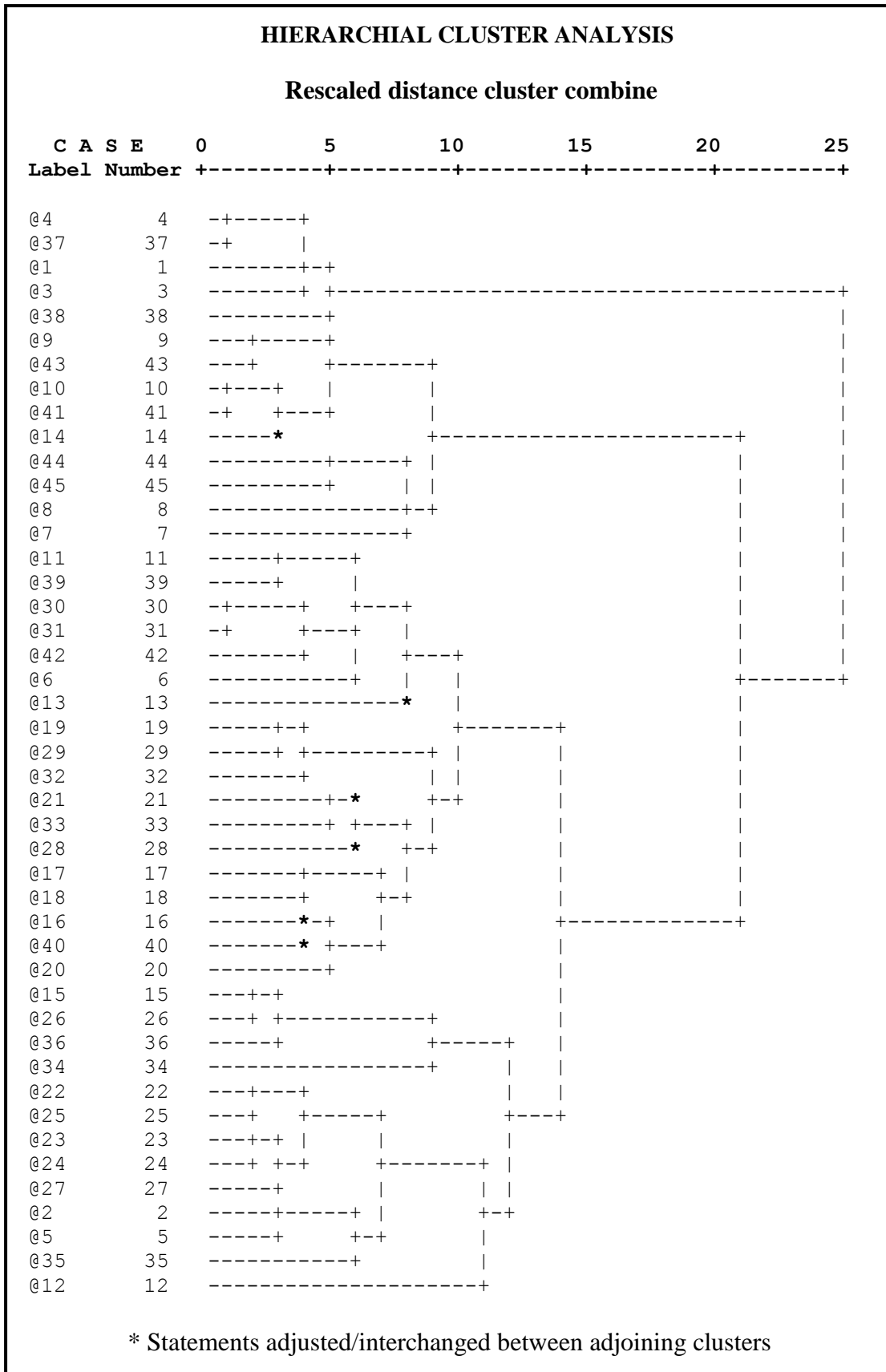


Figure 3. Hierarchical cluster analysis output represented as a dendrogram (SPSS Ver.17)

#### 4.4. CLUSTER MAPS AND NAMING OF THE CLUSTERS

Clustering of the statements/ideas (Fig. 4) based on hierarchical cluster analysis configured 5 clusters. Separate distinguishable colours were given to clusters in order to maintain identity and work out pattern matches for comparison at a later stage. Essentially, some clusters from the original five cluster solution were eliminated by moving statements into other clusters and one cluster was eventually split into two to reflect two concepts. Naming of individual clusters was done through content analysis to have final cluster solution (Fig. 5). The closeness and validity of the clustering process was analysed using bridging index values for individual statements (Table 6). Bridging values were found in the range scaling from 0.0 to 1.0. The cluster names given below reflected essentially the idea of ecologically fragile lands in Wayanad district.

1. Ecological dimensions
2. Situational dimensions
3. Socio-economic dimensions
4. Framework dimensions
5. Better EFL dimensions

Average bridging values (Table 7) for individual clusters indicated validated the original sorting done by respondents. Ecological dimensions had a mean bridging value of 0.17. Situational dimensions had 0.25, socio-economic dimensions got 0.29 and framework dimensions conformed 0.30 as average bridging value. The cluster with the highest mean bridging value (0.36) was better EFL dimensions.

#### 4.5. AVERAGE CLUSTER RATING SCORES

Rating task of individual statements was carried out using a Likert-type scale (1 to 5 scale). Average rating scores conformed by the stakeholder groups for each identified clusters are summarized in Table 8 to Table 12. Average rating for ecological dimensions was 3.22 (Table 8). Likewise, average rating for situational dimensions and socio-economic dimensions were 2.41 (Table 9) and 2.88 (Table 10) respectively. Framework dimensions conformed 3.07 (Table 11) and better EFL dimensions had 2.96 (Table 12) as average score. The average scores conformed for individual cluster solutions were useful in establishing a cluster rating map by assigning layers corresponding to certain prescribed range of scores.

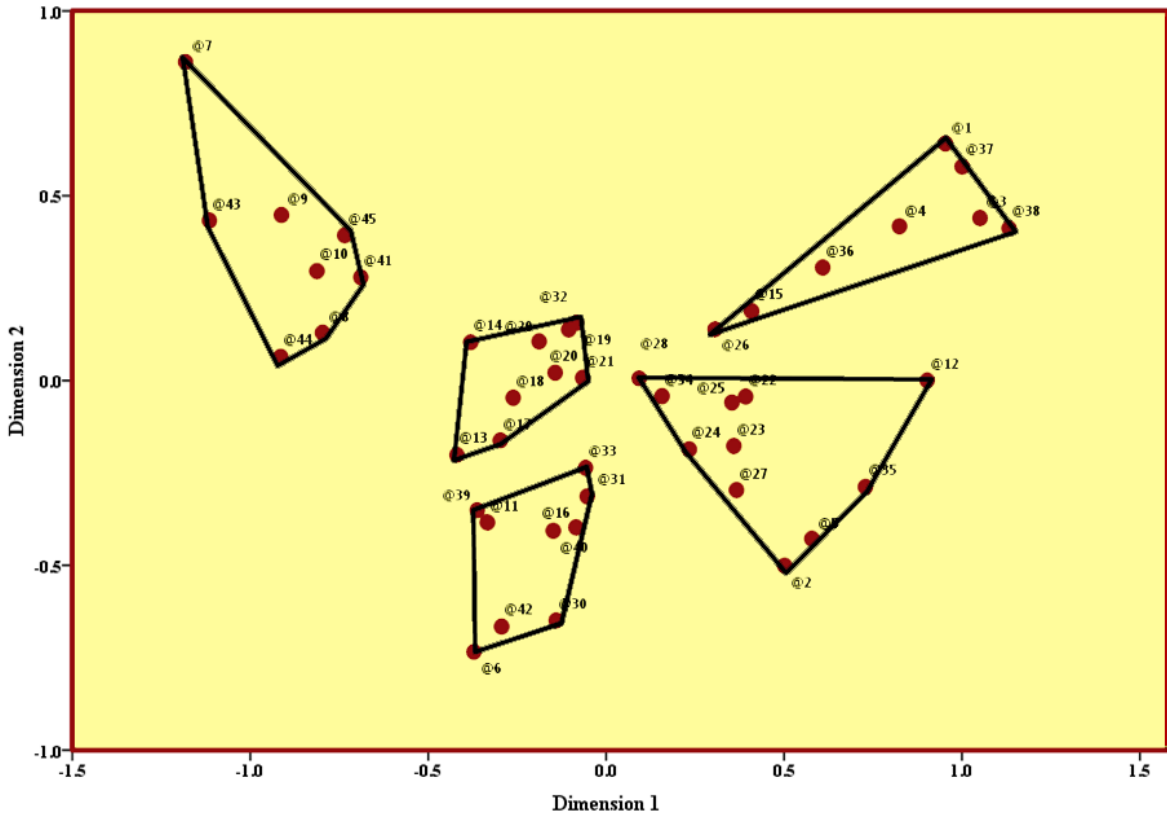


Figure 4. Clustering of the statements/ideas based on hierachial cluster analysis

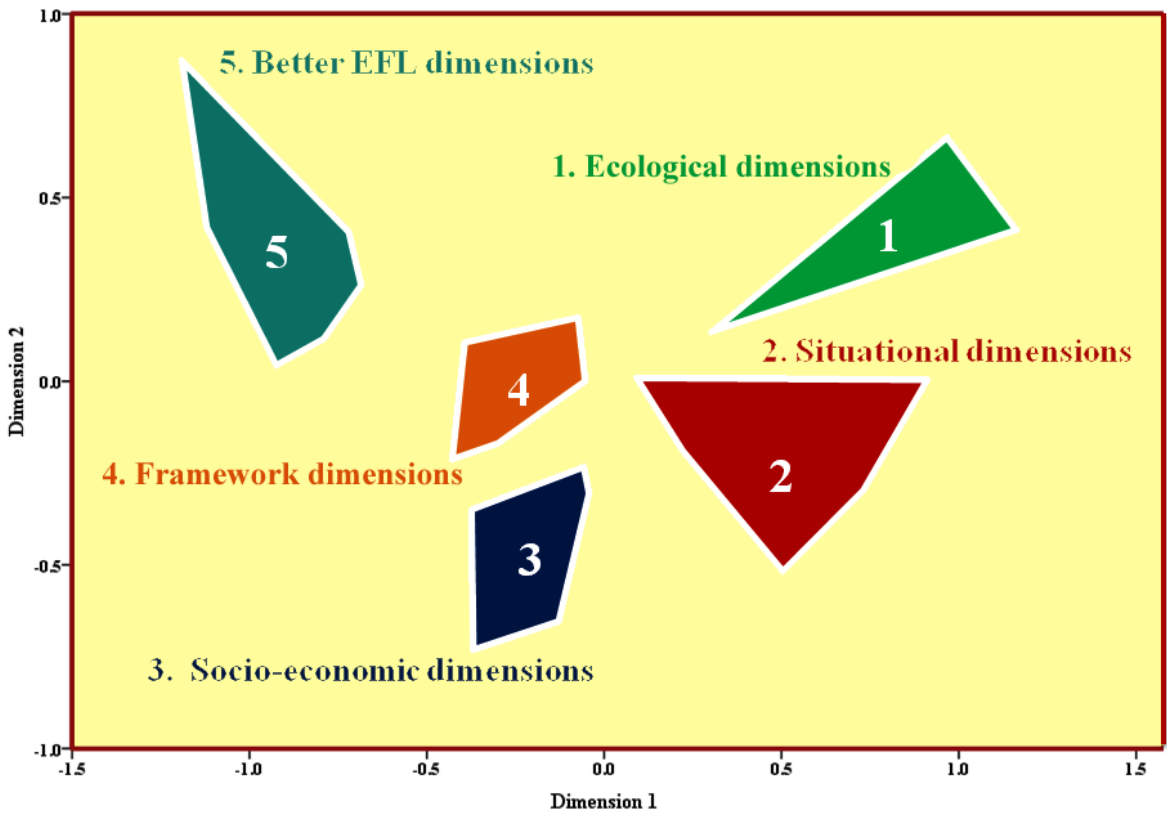


Figure 5. Final cluster solution with individual cluster names and fixed colours

Table 6. Bridging values for individual statements in cluster solution

#	Statements/ideas	Bridging value
<b># Cluster 1</b>		
1.	Ecologically fragile area due to the historical importance and livelihood sustaining values.	0.02
3.	A fragile landscape having physical continuance to reserved forests or vested forests.	0.01
4.	Wildlife corridors/sacred groves.	0.21
15.	Habitat of rare and endangered species of flora and fauna.	0.14
26.	A vital landscape sustaining ecological and climatic values.	0.41
36.	Once the ecological value of an area is lost, very hard to restore.	0.09
37.	A significant locale in wetland conservation.	0.39
38.	An area having importance in relieving human pressure on forests.	0.12
<b># Cluster 2</b>		
2.	EFL status out of a legal framework.	0.25
5.	EFL status due to political reasons.	0.42
12.	A private holding having reserved forest status.	0.19
22.	Deteriorated private lands adjoining to reserved forest areas.	0.60
23.	A private holding with similar biodiversity richness as of a natural forest.	0.02
24.	EFL status since no taxes levied by revenue department.	0.25
25.	Proposed vested forests, involved in litigation regarding ownership of the land.	0.53
27.	EFL status strictly due to technical reasons.	0.06
28.	EFL Act is a 'black law'.	0.07
34.	Areas prone to natural disasters.	0.29
35.	Private land holdings surrounded by natural forests.	0.12
<b># Cluster 3</b>		
6.	Fair compensation for EFLs irrespective of area of holdings.	0.01
11.	Return notified lands back to farmers when it lacks physical continuity to natural forests.	0.34
16.	Fair justice to farmers irrespective of the size of their holdings.	0.20
30.	Large farmers should get compensation for at least two hectares.	0.29
31.	Compensation should not be lower than base rate fixed by revenue department.	0.48
33.	The fixed limit of two hectares to re-evaluate the status of EFLs is not enough.	0.45
39.	Effective and transparent functioning of dispute redressal committee.	0.58
40.	Legal assistance to small farmers and agricultural labourers.	0.19
42.	Comprehensive rehabilitation package for small farmers and agricultural labourers.	0.08

Table 6. Contd.

#	Statements/ideas	Bridging value
<b># Cluster 4</b>		
13.	Budgetary provision for compensation to EFLs.	0.45
14.	Expert committee for validating scientific backup of EFL status.	0.28
17.	Declaration of EFLs in trust of public.	0.48
18.	Representation of local self government institutions in EFL committees.	0.66
19.	Measures for vesting extensive unexploited private lands sustaining natural vegetation.	0.34
20.	Intervention of NGOs and legal service authorities in resolving social tension.	0.12
21.	Central government should respond to legal sanctity of EFL legislation.	0.17
29.	Centrally sponsored scheme for acquiring private lands with sufficient compensation.	0.01
32.	Enforcement of the EFL Act.	0.17
<b># Cluster 5</b>		
7.	Awareness programmes among public regarding importance of EFLs.	0.13
8.	Green taxation for mass tourism activities adjoining to notified EFLs.	0.39
9.	Trim down inequality stuck between districts in EFL declaration.	0.18
10.	Detailed guidelines regarding the parameters to be considered by dispute redressal committee.	0.54
41.	Steps by government for learning public dilemma associated with EFL notifications.	0.42
43.	Awareness among public on the importance of valuable species in the homesteads.	0.29
44.	Participatory move in conservation of ecologically fragile lands.	0.46
45.	Separate guidelines for effective management of EFLs by forest department.	0.45

Table 7. Average bridging values for individual cluster solutions.

Cluster number	Name of the cluster	Average bridging value
1	Ecological dimensions	0.17
2	Situational dimensions	0.25
3	Socio-economic dimensions	0.29
4	Framework dimensions	0.30
5	Better EFL dimensions	0.36

Table 8. Average cluster scores derived for ecological dimensions

<b>Ecological dimensions</b>					
<b>#</b>	<b>Statements</b>	<b>Average Rating A</b>	<b>Average Rating B</b>	<b>Average Rating C</b>	<b>Average Rating D</b>
<b>1</b>	Ecologically fragile area due to the historical importance and livelihood sustaining values.	3.96	4.10	2.83	2.10
<b>3</b>	A fragile landscape having physical continuance or adjoining to reserved forests or vested forests.	3.93	3.90	3.20	1.80
<b>4</b>	Wildlife corridors/sacred groves.	3.76	3.80	2.50	1.60
<b>15</b>	Habitat of rare and endangered species of flora and fauna.	4.33	3.20	3.20	2.96
<b>26</b>	A vital landscape sustaining ecological and climatic values.	3.96	4.53	3.76	2.96
<b>36</b>	Once the ecological value of an area is lost, very hard to restore.	4.20	3.80	2.60	1.80
<b>37</b>	A significant locale in wetland conservation.	3.10	3.20	2.83	1.56
<b>38</b>	An area having importance in relieving human pressure on forests.	4.16	4.53	2.30	2.60
Cluster average		3.92	3.88	2.90	2.17
Total cluster average			3.22		

Table 9. Average cluster scores derived for situational dimensions

<b>Situational dimensions</b>					
<b>#</b>	<b>Statements</b>	<b>Average Rating A</b>	<b>Average Rating B</b>	<b>Average Rating C</b>	<b>Average Rating D</b>
<b>2</b>	EFL status out of a legal framework.	2.83	1.43	2.40	1.56
<b>5</b>	EFL status due to political reasons.	2.13	1.56	2.20	1.40
<b>12</b>	A private holding having reserved forest status	3.93	2.86	2.60	1.30
<b>22</b>	Deteriorated private lands adjoining to reserved forest areas.	1.40	1.80	1.40	1.63
<b>23</b>	A private holding with similar biodiversity richness as of a natural forest.	2.83	2.53	1.90	2.50
<b>24</b>	EFL status since no taxes levied by revenue department.	3.20	3.46	1.96	2.43
<b>25</b>	Proposed vested forests, involved in litigation regarding ownership of the land.	4.50	3.66	2.20	2.30
<b>27</b>	EFL status strictly due to technical reasons.	1.80	1.96	2.80	2.76
<b>28</b>	EFL Act is a 'black law'.	1.40	1.83	2.60	3.40
<b>34</b>	Areas prone to natural disasters.	3.20	3.86	2.40	1.80
<b>35</b>	Private land holdings surrounded by natural forests.	3.40	2.96	1.60	2.36
Cluster average		2.78	2.54	2.19	2.13
Total cluster average			2.41		

Table 10. Average cluster scores derived for socio-economic dimensions

<b>Socio-economic dimensions</b>					
<b>#</b>	<b>Statements</b>	<b>Average Rating A</b>	<b>Average Rating B</b>	<b>Average Rating C</b>	<b>Average Rating D</b>
6	Fair compensation for EFLs irrespective of area of holdings.	1.63	1.80	3.40	4.66
11	Return notified lands back to farmers when it lacks physical continuity to natural forests.	2.23	3.16	3.26	4.80
16	Fair justice to farmers irrespective of the size of their holdings.	2.46	3.60	2.80	3.80
30	Large farmers should get compensation for at least two hectares.	1.43	2.83	3.00	2.60
31	Compensation should not be lower than base rate fixed by revenue department.	1.20	1.40	1.56	4.60
33	The fixed limit of two hectares to re-evaluate the status of EFLs is not enough.	1.50	2.20	1.76	3.50
39	Effective and transparent functioning of dispute redressal committee.	3.66	4.13	3.20	3.80
40	Legal assistance to small farmers and agricultural labourers.	3.20	3.60	2.00	3.80
42	Comprehensive rehabilitation package for small farmers and agricultural labourers.	2.26	2.40	2.60	3.80
Cluster average		2.17	2.79	2.62	3.93
Total cluster average			2.88		

Table 11. Average cluster scores derived for framework dimensions

<b>Framework dimensions</b>					
<b>#</b>	<b>Statements</b>	<b>Average Rating A</b>	<b>Average Rating B</b>	<b>Average Rating C</b>	<b>Average Rating D</b>
13	Budgetary provision for compensation to EFLs.	2.50	3.40	4.20	4.76
14	Expert committee for validating scientific backup of EFL status.	2.40	3.20	3.90	4.40
17	Declaration of EFLs in trust of public.	2.20	3.76	4.16	4.90
18	Representation of local self government institutions in EFL committees.	1.56	1.10	2.40	3.50
19	Measures for vesting extensive unexploited private lands sustaining natural vegetation.	4.20	2.66	2.20	1.30
20	Intervention of NGOs and legal service authorities in resolving the social tension.	2.40	3.70	3.66	3.20
21	Central government should respond to the legal sanctity of EFL legislation.	1.23	2.30	3.50	4.30
29	Centrally sponsored scheme for acquiring private lands with sufficient compensation.	1.53	3.80	3.60	3.40
32	Enforcement of the EFL Act.	4.26	3.80	2.00	1.30
Cluster average		2.48	3.08	3.29	3.45
Total cluster average			3.07		

Table 12. Average cluster scores derived for better EFL dimensions

<b>Better EFL dimensions</b>				
# Statements	Average Rating A	Average Rating B	Average Rating C	Average Rating D
7 Awareness programmes among public regarding importance of EFLs.	3.43	3.76	2.60	1.30
8 Green taxation for mass tourism activities adjoining to notified EFLs.	2.56	3.70	2.13	1.23
9 Trim down inequality stuck between districts in EFL declaration.	2.13	3.46	3.66	3.60
10 Detailed guidelines regarding the parameters to be considered by dispute redressal committee.	3.16	4.16	3.80	3.80
41 Steps by government for learning public dilemma associated with EFL notifications.	3.40	3.43	4.20	3.16
43 Awareness among public on importance of conserving valuable species in the homesteads.	2.83	2.70	4.16	3.80
44 Participatory move in conservation of ecologically fragile lands.	1.36	2.16	3.50	2.23
45 Separate guidelines for effective management of EFLs by forest department.	2.46	3.40	2.20	1.23
Cluster average	2.67	3.35	3.28	2.54
Total cluster average	2.96			

#### 4.6. CLUSTER RATING MAP

A cluster rating map (Fig. 6) was configured by assigning layers to every clusters based on average rating scores derived from rating task. Number of layers and corresponding range of ratings are provided with the map. The average scores for the clusters were found in a range between 2.41 and 3.22. In order to assign layers to clusters, some fixed range of scores and analogous number of layers were fixed. The fixed interval was 0.30 and a minimum of 1 to maximum 4 layers were possible within the prescribed interval.

Ecological dimensions configured 4 layers, situational dimensions had a single layer and socio-economic dimensions got two layers. Remaining two concepts/themes such as framework dimensions and better EFL dimensions had three layers each in final cluster rating map. The number of layers assigned to each concepts/themes were found helpful in visual interpretation of them based on average scores derived from importance rating session. Cluster rating output were summarized in Table 13.



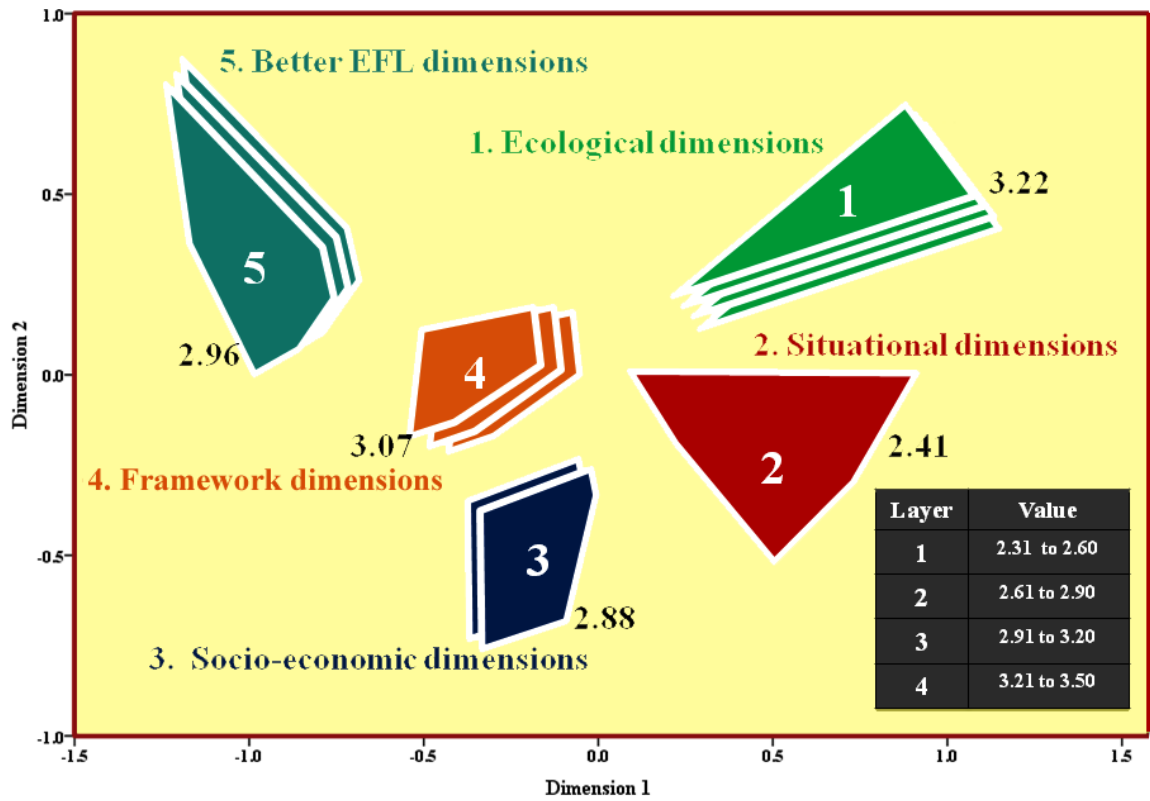


Figure 6. Cluster rating map with corresponding cluster layers

Table 13. Summary of cluster rating output

#	Name of the cluster	Average score	Number of layers
1	Ecological dimensions	3.22	4
2	Situational dimensions	2.41	1
3	Socio-economic dimensions	2.88	2
4	Framework dimensions	3.07	3
5	Better EFL dimensions	2.96	3

#### 4.7. COMPARISON OF IMPORTANCE RATING (PATTERN MATCHES)

Average ratings scores derived from the rating task of the respondent groups were used for performing the pattern matches between two different groups through Pearson product-moment correlation ( $r$ ). A unique colour code for each cluster was followed throughout the process in order to maintain uniformity of the results. Comparative account of the pattern matching results using Pearson product-moment correlation ( $r$ ) are summarized in Table 14. The pattern match between group A (feasibility rating) and group B (importance rating) had a good correlation (+0.76) and that for group A (feasibility rating) and group C (importance rating) had a feeble correlation (+0.01). Similar evaluation for group A (feasibility rating) and group D (importance rating) conformed a negative correlation (-0.73). Pattern match for group B (importance rating) and group C (feasibility rating) showed a positive correlation (+0.59) and that between group B (feasibility rating) and group D (importance rating) conformed a negative correlation (-0.33). During the pattern match performed for group C (feasibility rating) and group D (importance rating), the correlation was positive (+0.22). The pattern matches or ladder graphs are presented in Fig. 7, useful in visual interpretation of the results and area of divergence in stakeholder thought.

*Table 14.* Comparative account of pattern matches using Pearson product-moment correlation ( $r$ )

Case	Feasibility rating	Importance rating	( $r$ )	Remarks/construal
1.	Group A	Group B	+0.76	Good agreement
2.	Group A	Group C	+0.01	Little agreement
3.	Group A	Group D	-0.73	No agreement
4.	Group C	Group B	+0.59	Moderate agreement
5.	Group B	Group D	-0.33	No agreement
6.	Group C	Group D	+0.22	Little agreement

Group A: Representative officials from forest, agriculture and revenue departments

Group B: Environmentalists, green activists and legal professionals

Group C: Policy makers and local political leaders in Wayanad district

Group D: Affected group of farmers and agricultural labourers in Wayanad district

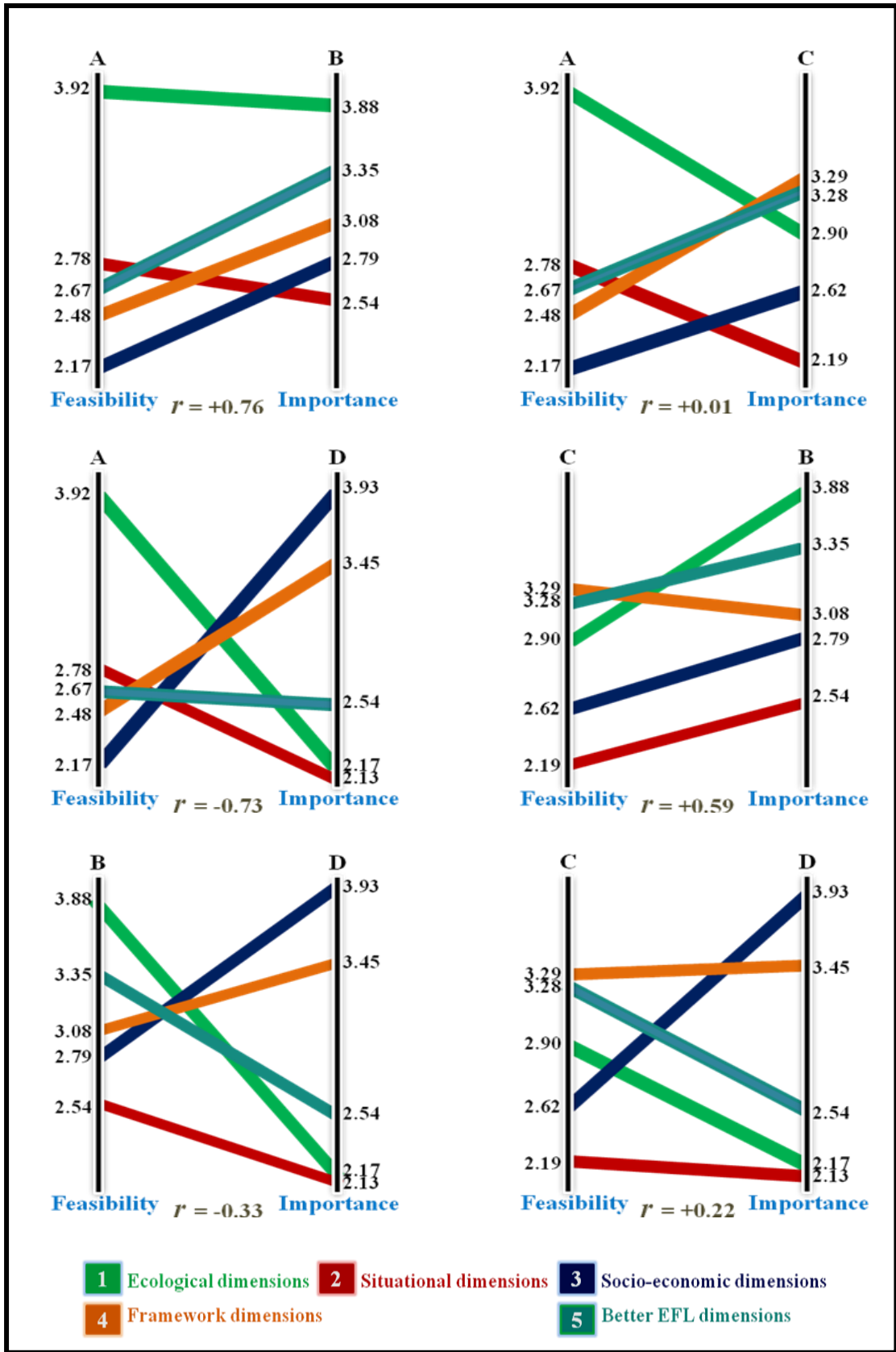


Figure 7. Pattern matches between different stakeholder groups (A, B, C & D)

#### **4.8. CONSENSUS IN STAKEHOLDER RESPONSE (GO-ZONES)**

Apart from performing pattern matches, go-zone analysis was also being performed between various stakeholder groups to recognize consensus in their response. Go-zones, so named for the upper right quadrants of the scatter plots consisted of statements/ideas with high importance and high feasibility as conformed by distinct stakeholder groups during the rating task. Statements/ideas were plotted based on the average scores derived for them. The placement of the line (average rating per stakeholder group) was computed by dividing the sum of all average statement ratings within each group by the number of statements. The numbers along the x and y axes indicated the range of rating scores and the average ratings.

##### **4.8.1. Consensus go-zone analysis for Group A and Group B**

Group A consisted of officials from forest, agriculture and revenue departments and Group B had ecologists, environmentalists and legal professionals as key respondents. Group A provided feasibility rating for every importance rating given by Group B. Resulting go-zone plot (Fig. 8) comprised of 17 statements/ideas posing high importance and high feasibility. Output statements/ideas were summarized in Table 15.

##### **4.8.2. Consensus go-zone analysis for Group A and Group C**

Group A consisted of officials from forest, agriculture and revenue departments and Group C comprised of policy makers and local political leaders/activists as respondents. Group C was entrusted with importance rating and Group A provided feasibility rating. Go-zone plot (Fig. 9) of the analysis had 9 output statements as summarized in Table 16.

##### **4.8.3. Consensus go-zone analysis for Group A and Group D**

Group A consisted of officials from forest, agriculture and revenue departments and Group D consisted of farmers and agricultural labourers largely affected from notification of EFLs in Wayanad. Group D was entrusted with importance rating and Group A with feasibility rating. Only 7 statements/ideas were evolved in go-zone analysis (Fig. 10) posing high importance and high feasibility. The output statements/ideas were summarized in Table 17.

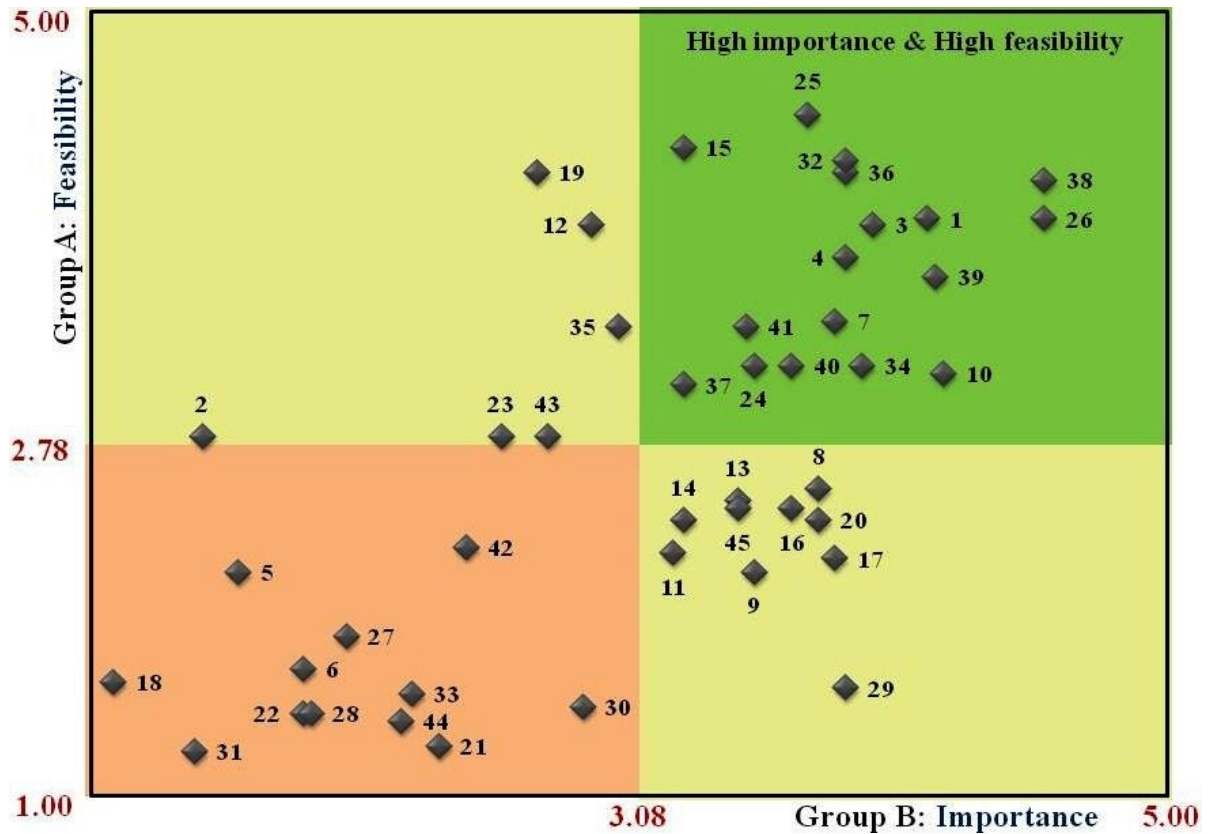


Figure 8. Go-zone plot for Group A (officials from Forest, Agriculture and Revenue Departments) and Group B (ecologists, environmentalists and legal professionals)

Table 15. Output statements/ideas from go-zone plot for Group A and Group B

❖ <b>Ecological dimensions</b>	1. Ecologically fragile area due to the historical importance and livelihood sustaining values.
	3. A fragile landscape having physical continuance to reserved forests or vested forests.
	4. Wildlife corridors/sacred groves.
	15. Habitat of rare and endangered species of flora and fauna.
	26. A vital landscape sustaining ecological and climatic values.
	36. Once the ecological value of an area is lost, very hard to restore.
	37. A significant locale in wetland conservation.
	38. An area having importance in relieving human pressure on forests.
❖ <b>Situational dimensions</b>	24. EFL status since no taxes levied by revenue department.
	25. Proposed vested forests, involved in litigation regarding ownership of the land.
	34. Areas prone to natural disasters.
❖ <b>Socio-economic dimensions</b>	39. Effective and transparent functioning of dispute redressal committee.
	40. Legal assistance to small farmers and agricultural labourers.
❖ <b>Framework dimensions</b>	32. Enforcement of the EFL Act.
❖ <b>Better EFL dimensions</b>	7. Awareness programmes among public regarding importance of EFLs.
	10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.
	41. Steps by government for learning public dilemma associated with EFL notifications.

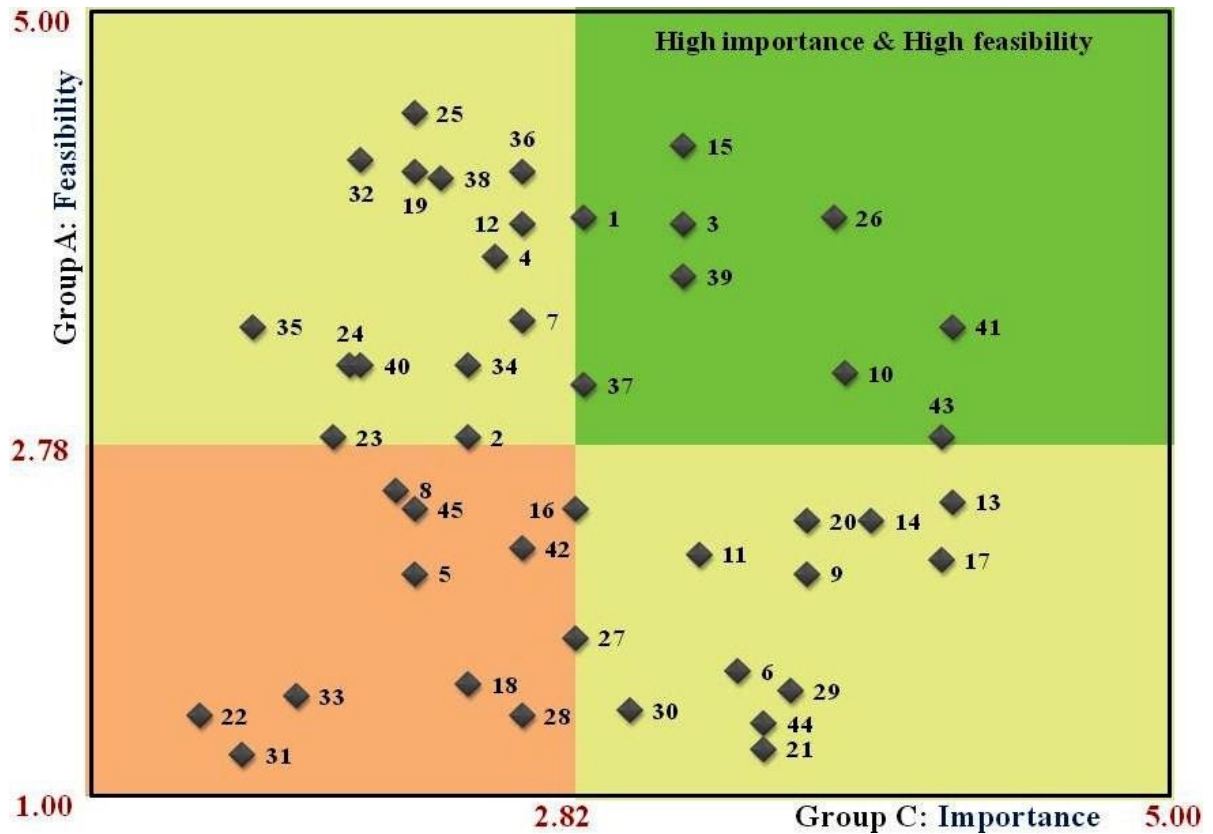


Figure 9. Go-zone plot for Group A (officials from Forest, Agriculture and Revenue Departments) and Group C (policy makers and local political leaders in Wayanad)

Table 16. Output statements/ideas from go-zone plot for Group A and Group C

<p>❖ <b>Ecological dimensions</b></p> <p>1. Ecologically fragile area due to the historical importance and livelihood sustaining values.</p> <p>3. A fragile landscape having physical continuance to reserved forests or vested forests.</p> <p>15. Habitat of rare and endangered species of flora and fauna.</p> <p>26. A vital landscape sustaining ecological and climatic values.</p> <p>37. A significant locale in wetland conservation.</p> <p>❖ <b>Situational dimensions</b></p> <p>-NA-</p> <p>❖ <b>Socio-economic dimensions</b></p> <p>39. Effective and transparent functioning of dispute redressal committee.</p> <p>❖ <b>Framework dimensions</b></p> <p>-NA-</p> <p>❖ <b>Better EFL dimensions</b></p> <p>10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.</p> <p>41. Steps by government for learning public dilemma associated with EFL notifications.</p> <p>43. Awareness among public on importance of conserving valuable species in the homesteads.</p>
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#### **4.8.4. Consensus go-zone analysis for Group C and Group B**

Group C consisted of policy makers and local political leaders in Wayanad district and Group B had ecologists, environmentalists and legal professionals as key respondents. Group C provided feasibility rating for every importance rating given by Group B. Resulting go-zone plot (Fig. 11) comprised of 13 statements/ideas posing high importance and high feasibility. Output statements/ideas were summarized in Table 18.

#### **4.8.5. Consensus go-zone analysis for Group B and Group D**

Group B consisted of ecologists, environmentalists and legal professionals and Group D consisted of farmers and agricultural labourers largely affected from notification of EFLs in Wayanad. Group D was entrusted with importance rating and Group B provided feasibility rating. Go-zone plot (Fig. 12) of the analysis had 14 output statements as summarized in Table 19.

#### **4.8.6. Consensus go-zone analysis for Group C and Group D**

Group C consisted of policy makers and local political leaders in Wayanad and Group D consisted of farmers and agricultural labourers largely affected from notification of EFLs in Wayanad. Group D was entrusted with importance rating and Group C provided feasibility rating. Fifteen statements/ideas were evolved in go-zone analysis (Fig. 13) having high importance and high feasibility. The output statements/ideas were summarized in Table 20.

### **4.9. RE-ORIENTED CRITERIA AND INDICATORS OF EFLs IN WAYANAD**

The statements/ideas sourced out from series of go-zone plots were identified as re-oriented criteria and indicators largely representing the perception of stakeholders associated with EFLs in Wayanad district. Output statements/ideas from six possible junctures of go-zones were compiled in Table 21, avoiding duplications, if any. Overall output comprised of 28 statements/ideas contributing to the set of re-oriented criteria and indicators with particular reference to EFLs in Wayanad. The 5 distinct dimensions derived for EFLs through this psycho-sociological evaluation represented the criteria of EFLs and corresponding statements contributed towards indicators.



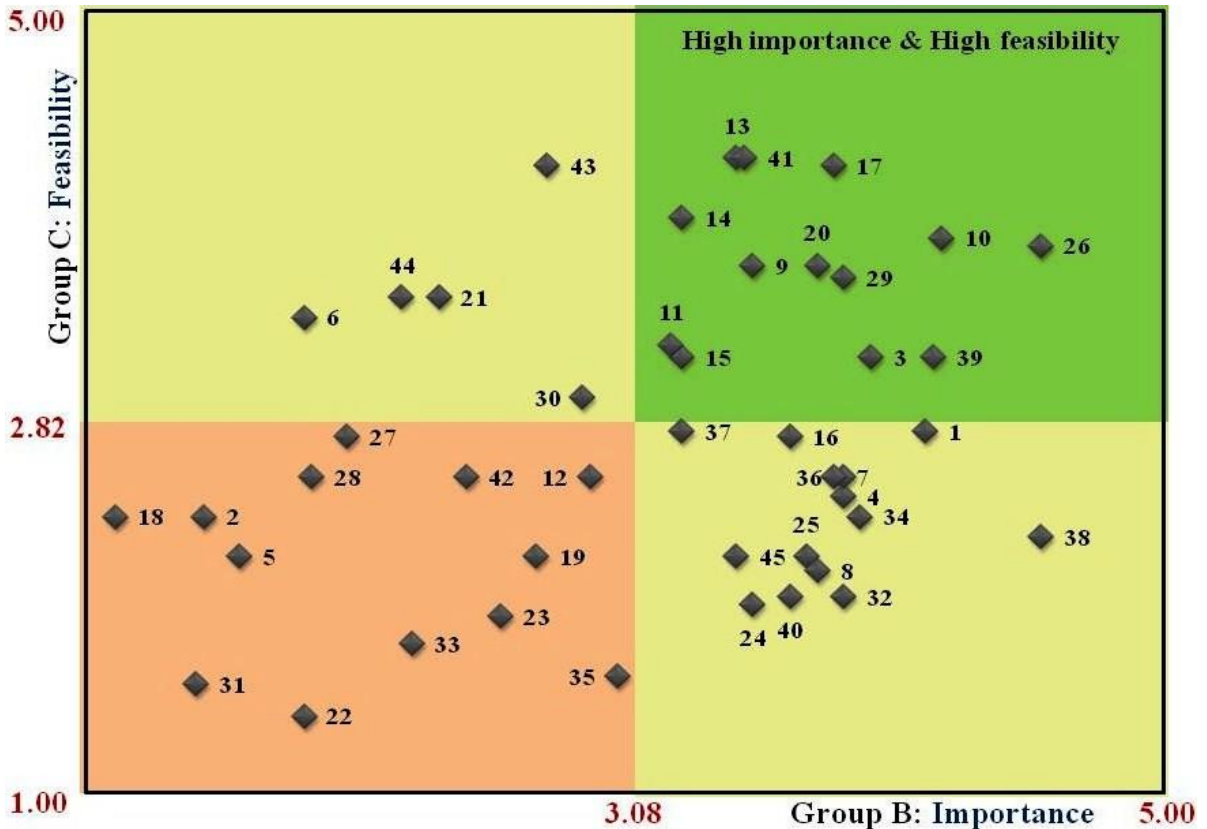


Figure 11. Go-zone plot for Group C (policy makers and local political leaders in Wayanad) and Group B (ecologists, environmentalists and legal professionals)

Table 18. Output statements/ideas from go-zone plot for Group C and Group B

<ul style="list-style-type: none"> <li>❖ <b>Ecological dimensions</b> <ul style="list-style-type: none"> <li>3. A fragile landscape having physical continuance to reserved forests or vested forests.</li> <li>15. Habitat of rare and endangered species of flora and fauna.</li> <li>26. A vital landscape sustaining ecological and climatic values.</li> </ul> </li> <li>❖ <b>Situational dimensions</b> <ul style="list-style-type: none"> <li>-NA-</li> </ul> </li> <li>❖ <b>Socio-economic dimensions</b> <ul style="list-style-type: none"> <li>11. Return notified lands back to farmers when it lacks physical continuity to natural forests</li> <li>39. Effective and transparent functioning of dispute redressal committee.</li> </ul> </li> <li>❖ <b>Framework dimensions</b> <ul style="list-style-type: none"> <li>13. Budgetary provision for compensation to EFLs.</li> <li>14. Expert committee for validating scientific backup of EFL status.</li> <li>17. Declaration of EFLs in trust of public.</li> <li>20. Intervention of NGOs and legal service authorities in resolving social tension.</li> <li>29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.</li> </ul> </li> <li>❖ <b>Better EFL dimensions</b> <ul style="list-style-type: none"> <li>9. Trim down inequality stuck between districts in EFL declaration.</li> <li>10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.</li> <li>41. Steps by government for learning public dilemma associated with EFL notifications.</li> </ul> </li> </ul>
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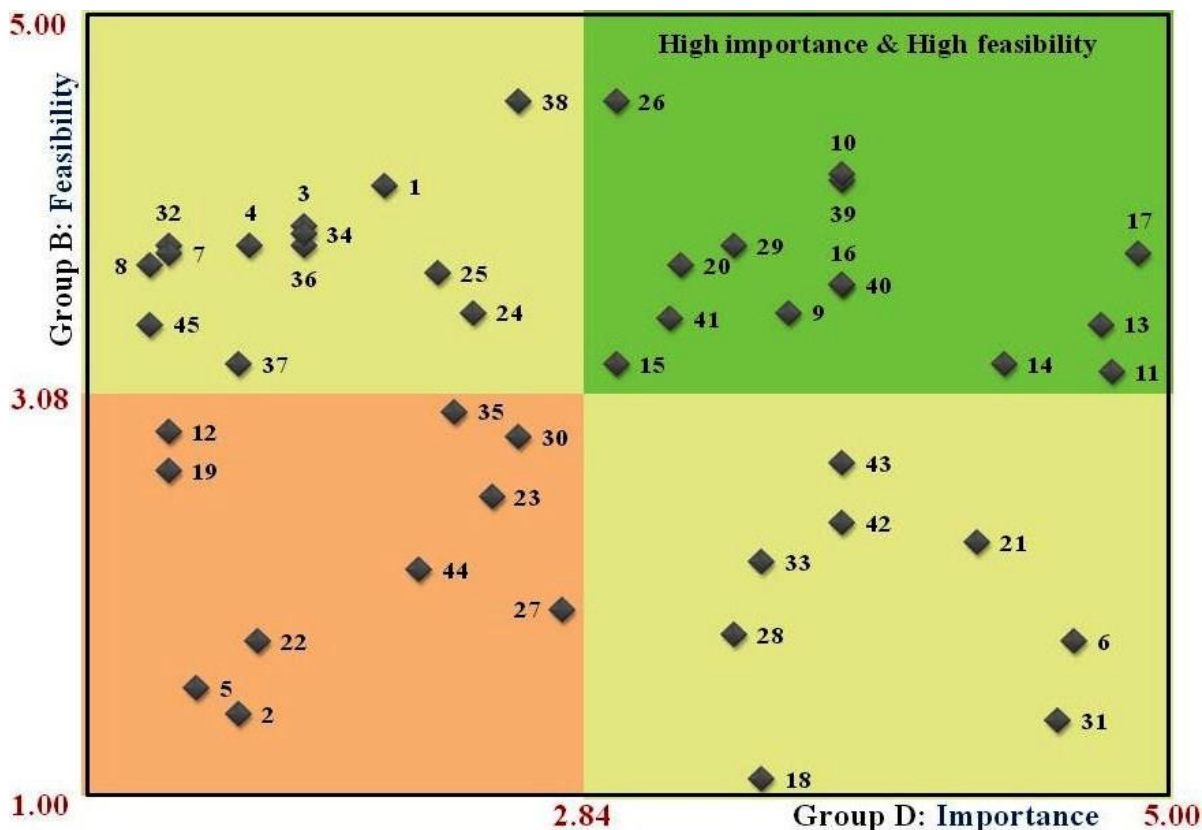


Figure 12. Go-zone plot for Group B (ecologists, environmentalists and legal professionals) and Group D (farmers and agricultural labourers in Wayanad)

Table 19. Output statements/ideas from go-zone plot for Group B and Group D

❖ <b>Ecological dimensions</b>	15. Habitat of rare and endangered species of flora and fauna. 26. A vital landscape sustaining ecological and climatic values.
❖ <b>Situational dimensions</b>	-NA-
❖ <b>Socio-economic dimensions</b>	11. Return notified lands back to farmers when it lacks physical continuity to natural forests 16. Fair justice to farmers irrespective of the size of their holdings. 39. Effective and transparent functioning of dispute redressal committee. 40. Legal assistance to small farmers and agricultural labourers.
❖ <b>Framework dimensions</b>	13. Budgetary provision for compensation to EFLs. 14. Expert committee for validating scientific backup of EFL status. 17. Declaration of EFLs in trust of public. 20. Intervention of NGOs and legal service authorities in resolving social tension. 29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.
❖ <b>Better EFL dimensions</b>	9. Trim down inequality stuck between districts in EFL declaration. 10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee. 41. Steps by government for learning public dilemma associated with EFL notifications.

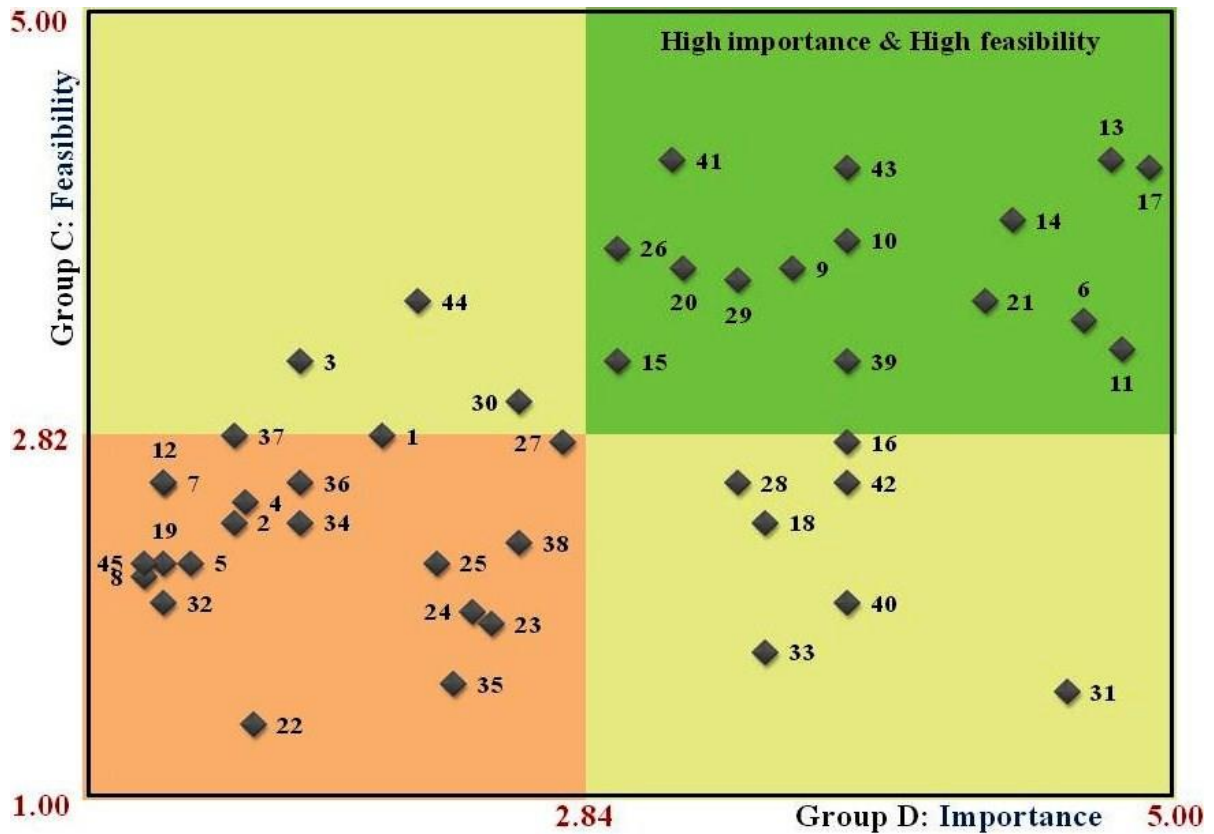


Figure 13. Go-zone plot for Group C (policy makers and local political leaders in Wayanad) and Group D (farmers and agricultural labourers in Wayanad)

Table 20. Output statements/ideas from go-zone plot for Group C and Group D

❖ <b>Ecological dimensions</b>
15. Habitat of rare and endangered species of flora and fauna.
26. A vital landscape sustaining ecological and climatic values.
❖ <b>Situational dimensions</b>
-NA-
❖ <b>Socio-economic dimensions</b>
6. Fair compensation for EFLs irrespective of area of holdings.
11. Return notified lands back to farmers when it lacks physical continuity to natural forests
39. Effective and transparent functioning of dispute redressal committee.
❖ <b>Framework dimensions</b>
13. Budgetary provision for compensation to EFLs.
14. Expert committee for validating scientific backup of EFL status.
17. Declaration of EFLs in trust of public.
20. Intervention of NGOs and legal service authorities in resolving social tension.
21. Central government should respond to legal sanctity of EFL legislation.
29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.
❖ <b>Better EFL dimensions</b>
9. Trim down inequality stuck between districts in EFL declaration.
10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.
41. Steps by government for learning public dilemma associated with EFL notifications.
43. Awareness among public on importance of conserving valuable species in the homesteads.

Table 21. Re-oriented criteria and indicators derived and compiled from go-zone outputs.

❖ **Ecological dimensions**

1. Ecologically fragile area due to the historical importance and livelihood sustaining values.
3. A fragile landscape having physical continuance to reserved forests or vested forests.
4. Wildlife corridors/sacred groves.
15. Habitat of rare and endangered species of flora and fauna.
26. A vital landscape sustaining ecological and climatic values.
36. Once the ecological value of an area is lost, very hard to restore.
37. A significant locale in wetland conservation.
38. An area having importance in relieving human pressure on forests.

❖ **Situational dimensions**

24. EFL status since no taxes levied by revenue department.
25. Proposed vested forests, involved in litigation regarding ownership of the land.
34. Areas prone to natural disasters.

❖ **Socio-economic dimensions**

6. Fair compensation for EFLs irrespective of area of holdings.
11. Return notified lands back to farmers when it lacks physical continuity to natural forests.
16. Fair justice to farmers irrespective of the size of their holdings.
39. Effective and transparent functioning of dispute redressal committee.
40. Legal assistance to small farmers and agricultural labourers.

❖ **Framework dimensions**

13. Budgetary provision for compensation to EFLs.
14. Expert committee for validating scientific backup of EFL status.
17. Declaration of EFLs in trust of public.
20. Intervention of NGOs and legal service authorities in resolving social tension.
21. Central government should respond to legal sanctity of EFL legislation.
29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.
32. Enforcement of the EFL Act.

❖ **Better EFL dimensions**

7. Awareness programmes among public regarding importance of EFLs.
9. Trim down inequality stuck between districts in EFL declaration.
10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.
41. Steps by government for learning public dilemma associated with EFL notifications.
43. Awareness among public on importance of conserving valuable species in the homesteads.

*Discussion*

## DISCUSSION

Qualitative and quantitative components of concept mapping are inextricably interwoven enabling diverse group of stakeholders to articulate their ideas and represent them in a variety of quantitatively derived visual results (Greene and Caracelli, 1997). This chapter discusses the reflection of stakeholders on EFLs in Wayanad in terms of structured ideas, concepts, importance and feasibility ratings.

### 5.1. GENERATION OF STATEMENTS/IDEAS

Concept mapping addressed the research question, combining quantitative and qualitative methods within a participatory group processes. It helped individuals to think more effectively as a group, but without losing the uniqueness of their individual contributions. Altogether 45 statements or ideas were finalised (Table 4), and most of them were definitive or suggestive in nature. Theoretically, there was no limit to the number of statements that can be processed, but large numbers of statements imposed serious practical constraints in the subsequent participant activities. Based on prior concept mapping studies, a statement list of 40 to 60 statements appeared to be both representative of all stakeholder views as well as manageable (Cousins and Mac Donald, 1998; Michalski and Cousins, 2000). Formal content analysis was done by removing similarities and obvious redundancies within the larger list of statements (Krippendorff, 2004). Every effort was made to preserve the balance in stakeholder responses during scrutiny of the statements.

### 5.2. STRUCTURING AND SORTING OF THE STATEMENTS/IDEAS

The sorting process was carried out manually. The manual method involved printing each statement on a separate card and each participant physically sorted the cards into piles/stacks (Rosenberg and Kim, 1975; Weller and Romney, 1988). The method had the advantage that all the cards can spread before the respondents and simultaneously sort them as suggested by Kane and Trochim (2007). Each person was instructed to group the ideas into piles in a way that made sense to them. Sorting things into piles of similar items is a most common human activity; it helps to organize complexity in one's context. The grouping, or sorting, of disparate statements or ideas into piles helps identify a stakeholder's view of the

interrelationships of the ideas. Based on the sort data, a similarity matrix was created showing the number of participants who sorted each pair of statements together in accomplishing their sorts (Kruskal, 1964; Hair et al., 1998). Multidimensional scaling (MDS) of similarity matrix was done to locate each statement as a separate point on a two dimensional map called point map (Fig. 2).

The key diagnostic statistic in multidimensional scaling (MDS) is called stress index (Kruskal and Wish, 1978). A high stress value implies that there is a greater discrepancy between the input matrix data and the representation of those data on the two-dimensional array, and that the map does not represent the input data as well; a low stress value suggests a better overall fit. Meta-analytic studies across a broad range of concept mapping projects estimated an average stress value of 0.285 with a standard deviation of 0.04 (Trochim, 1993). Approximately 95% of concept mapping projects are likely to yield stress values that range between about 0.10 and 0.365. The stress values obtained in the present study falls within these approximations. The maximum stress value obtained was 0.22128 for Stress II as given in Table 5.

### **5.3. HIERARCHIAL CLUSTER ANALYSIS**

Hierarchial cluster analysis procedure gives as many possible cluster solutions as there are statements (Anderberg, 1973; Everitt, 1980). According to Trochim (1989), these clustering methods begin by considering each statement to be its own cluster (N-cluster solution). At each stage in the analysis, the algorithm (Fig. 3) combined two clusters until, at the end, all of the statements are in a single cluster. The task was to decide how many clusters, the statements should be grouped into for the final solution.

There is no single “correct” number of clusters, and there is no mathematical way to select this automatically. The task was completed (Fig. 4) in consultation with a small participant advisory group. Jaliya (2008) concept mapped agricultural development in Kerala context and identified four clusters/themes namely physical, economic, socio-psychological and ecological dimensions. Five distinct themes or concepts were identified using hierarchial cluster analysis output. Six statements were interchanged between clusters in order to make them meaningful as allowed by the concept mapping method (Kane and Trochim, 2007).

#### 5.4. CLUSTER MAPS AND NAMING OF THE CLUSTERS

A five cluster solution (Fig. 5) was finalized by examining different possible solutions and deciding which one made sense for the case at hand (Trochim, 1989). Content analysis was employed (Krippendorf, 2004) to identify themes/concepts among all sort grouping labels, although linking such an analysis to the map geography required additional qualitative review. The statements in each cluster represented an idea or theme and accordingly naming task was completed. The validity of clustering was analysed using bridging index values. Several optional analyses helps to understand the meaning of different areas of the map (bridging/anchoring analysis) or the potential labels for each cluster (cluster label analysis). Here in this study, calculated bridging values for the current cluster solution satisfied analytical requirements and substantiated the clustering process. The values found in a range between 0.0 and 1.0 (Table 6). Further, the average bridging values computed for each cluster solution was found in the prescribed range (Table 7).

##### 5.4.1. Ecological dimensions

Ecological dimensions signified the idea of an ecologically fragile/ sensitive area based on ecological understanding of the stakeholders. Sen (2000) documented criteria and indicators of ecological fragility or sensitivity of a landscape and identified a series of parameters based on species, ecosystem and geo-morphology were developed. In addition to these primary parameters, seven auxiliary parameters were also identified. The idea of ecological dimensions found complementing findings of Sen (2000) in view of the ecological understanding of the stakeholder groups. In the present study, ecological understanding of the stakeholders drew attention to historical importance, livelihood sustaining values, ecological and climatic values of the landscape while determining the extent of ecological fragility. A fragile landscape may offer habitat for rare and endangered species of flora and fauna and also may provide habitat connectivity ensuring free movement of animals. According to Hilty et al. (2006), demarcated fragile landscapes may substitute buffer zones for protected areas in order to relieve human pressure on natural forests. Santhoshkumar and Ichikawa (2010) quoted special bearing of the topography of Wayanad in hydrological and watershed functions of the landscape.



#### **5.4.2. Situational dimensions**

The elements infuriating sentiments on EFLs were traced in Situational dimensions. Existing protocols deciding ecological fragility and mode of land acquisition were largely criticized. Large bits of notified EFLs were involved in litigation regarding ownership of the land. EFLs widened the sentiments in Wayanad as the landscape is very fragmented and prone to human-wildlife conflicts. Situational dimensions tried to convince that certain resources granted by government to the general public lies in the sense as a tract of public land granted to a specific individual. But subsequent effort to withdraw the right would confront the same barrier that the government faces when it condemn a private property (Sax, 1970).

#### **5.4.3. Socio-economic dimensions**

Socio-economic dimensions highlighted fair justice to farming communities and fair compensation for EFLs. Land owners were disappointed with the fixed ceiling limit of holdings to be eligible for re-consideration (Government of Kerala, 2009). However, the fixed ceiling limit should not be upsetting the provision of Kerala Land Reforms Act, 1963 both on existing holdings and on future acquisition. Demand was made for returning notified lands when they lack physical continuity to natural forests. Irregularities in the vesting process may be legally corrected, despite muddling with EFL notifications.

Sax (1970) pointed out that a private property shall not be taken for public use without just compensation. The rationale was that economic benefits are to be protected against certain kinds of public acquisitiveness. The concept of 'eminent domain' has been applied for acquiring private holdings in trust of nature conservation. Potential conflicts may arise in these compulsory exchanges, but since compensation was provided as to little or no compensation under the observed reallocation, it seems likely that there would have been less contention (Fischel, 1998). In this context, Supreme Court of India in its judgement dated 27 April, 2012 held that when a farm land is being compulsorily acquired, the owner is entitled to the highest value which similar land in the locality is shown to have fetched in a bonafide transaction entered into between a willing purchaser and a willing seller near about the time of the acquisition.

#### 5.4.4. Framework dimensions

Framework dimensions listed consistent options for resolving the tensions out of EFLs in Wayanad. Declaration of EFLs in trust of public and budgetary provision for taking over lands on a compensation basis would be instrumental according to the results. However, an expert committee for validating scientific backup of EFLs would be imperative in resolving the crisis. Local self-government institutions demanded access to various EFL committees. In a nutshell, the traditional biodiversity management models following ‘control and command’ approach are to be replaced by an ‘inform and share’ approach (Gadgil, 2007).

Legal validity of the EFL legislation was questioned alleging violation of Forest Conservation Act, 1980. EFL Act provided a different definition for ‘forest’, totally different from the one provided by the central act (Government of India, 1988; Government of Kerala, 2005). Due to this, EFL Act sought President’s assent according to the provision of Article 254 of the constitution which says, ‘the law made by the legislature of a State with respect to one of the matters enumerated in the concurrent list (List III of 7<sup>th</sup> schedule) contains any provision repugnant to the provisions of an earlier law made by Parliament or an existing law, then, the law so made by the legislature of such State shall prevail only if it was reserved for the consideration of the President and received the assent (Bakshi, 2002).

Intervention of NGOs in acquiring private agriculture lands on compensation basis would be appreciable. For example, 10.2 ha. private land in Karnataka was purchased by the Wildlife Trust of India (Wildlife Trust of India, 2012) in collaboration with International Fund for Animal Welfare (IFAW) as part of reviving Kollegal (Edayarhalli–Doddasampige) elephant corridor. In Wayanad, inhabitants of Pulayankolly village had given up their land as part of vitalizing an elephant corridor and opted for voluntary resettlement. The scheme was facilitated by the Kerala Forests Department, Wildlife Trust of India (WTI) and United Kingdom based Charity Elephant Family. Fifteen families of the village, were provided land and housing at alternative locations. Such measures would ensure useful alternatives for farmers who made landless as part of any eco-restoration interventions by forest department.

#### **5.4.5. Better EFL dimensions**

Better EFL dimensions fetched certain suggestions such as generating awareness among public regarding ecological fragile lands and their conservation values. A public awareness programme may welcome, encourage, and celebrate the involvement of general public and youth in planning environmental/sustainability initiatives. Effort should be taken to conserve rare and endangered species of vegetation in homesteads as suggested by the stakeholders. Section 2(c) of the act included trees and undergrowth in the definition of 'forest' (Kerala Forest Department, 2005) consequently farmers in Wayanad largely removed undergrowth from their holdings adjoining to vested forests fearing legal actions. Large bits of EFLs in Wayanad and adjoining districts triggered discussion on how old private forests in Malabar area related with Madras Preservation of Private Forests Act, 1949. Detailed guidelines were sought regarding the parameters to be considered by the dispute redressal committee and strategies to be adopted in future course of action. The public dilemma associated with EFLs must be studied and may work out a participatory approach in conservation of fragile ecosystems like ESAs managed by MoEF (Patwardhan, 2006). Green taxation may be imposed for restricting mass tourism activities adjoining to reserved forests in order to relieve excess human pressure.

#### **5.5. AVERAGE CLUSTER RATING SCORES**

Each individual statement/idea got rated by the respondents based on the relative importance or feasibility they assigned to them. The task reflected the level of agreement for every statement/idea utilizing a Likert type scale quickly and effectively. Average scores conformed for individual statements/ideas were used in deriving average cluster scores (Table 8 to Table 12). It should be kept in mind that cluster averages are not always an indicator of relative importance of the statements contained. However, relative importance of clusters in general and statements/ideas in particular were well understood from cluster rating scores (Kane and Trochim, 2007).

#### **5.6. CLUSTER RATING MAP**

The final cluster solution (Fig. 5) served as the basis for generating cluster rating map (Fig. 6) by assigning layers to each cluster based on average cluster scores

and built a shared foundation of stakeholders responses. Each group had some input into defining and conceptualizing the research problem. Stakeholders gained understanding of their own perception and at the same time got exposed to the views of others during interpretation of cluster maps (Table 13). Highest number of layers (4) configured for ecological dimensions showing ecological understanding of the stakeholders. Situational dimensions configured a single layer, showing that the response of stakeholders in terms of average rating showcased the public predicament associated with EFLs. Framework dimensions and better EFL dimensions configured 3 layers each conversing certain suggestions instrumental in resolving the setbacks associated with EFL notifications in Wayanad.

### **5.7. COMPARISON OF IMPORTANCE RATING (PATTERN MATCHES)**

Comparison of importance rating through pattern matches (Fig. 7) explored inter-subjective interchanges between the stakeholder groups and addressed critical questions such as consensus across groups or consistency of the results. Pattern matching was done typically at the cluster level, although it can also be done for statements within clusters. However, the stakeholders would assign the highest importance ratings to concepts that directly related to their own interests (Southern et al., 2002). Overall findings revealed that the stakeholders reasonably represented their stance and the responses were further found to correspond quite well with the unique role of each stakeholder group (Table 14).

The pattern match between group A (officials from forest, agriculture and revenue departments) and group B (environmentalists, green activists and legal professionals) showed little divergence in importance and feasibility rating between various dimensions. Pearson product moment correlation ( $r$ ) value confirmed overall strength of association between the two rating patterns. Fairly strong agreement was observed with the results ( $r = +0.76$ ). A good consensus was observed with ecological dimensions. The trend shown by socio-economic dimensions, framework dimensions and better EFL dimensions remained the same in comparative rating results, but for situational dimensions, the trend got reversed. Similar trend was observed in National Association of Chronic Disease Directors (2003). Fairly strong agreement was

observed between importance and impact ratings across all the clusters, particularly with regards to overall correlation (+0.73).

Considerable divergence was traced with ecological and situational dimensions in case of pattern match between group A (officials from forest, agriculture and revenue departments) and group C (policy makers and local political leaders in Wayanad) and a feeble correlation (+0.01) was observed. Some ideological differences were existed between bureaucracy and political groups regarding status and notification of EFLs.

No agreement was traced with four dimensions except better EFL dimensions when compared group A (officials from forest, agriculture and revenue departments) and group D (farmers and agricultural labourers in Wayanad), which configured a negative correlation (-0.73). Similar cluster level correlation (-0.75) was reported in Michalski and Cousins (2000). Farmers and agricultural labourers in the district disregarded sensibility of ecological dimensions in EFL Act, but tried to convince socio-economic dimensions and framework dimensions. Similar result was traced in pattern match between group B (environmentalists, green activists and legal professionals) and group D (farmers and agricultural labourers in Wayanad). The pattern match found to have a negative correlation (-0.33), consequently large divergence in output.

The pattern match between group B (environmentalists, green activists and legal professionals) and group C (policy makers and local political leaders in Wayanad) were found to have good agreement except for ecological dimensions ( $r = +0.59$ ). Pattern match between group C (policy makers and local political leaders in Wayanad) and group D (farmers and agricultural labourers in Wayanad) conformed little agreement in response ( $r = +0.22$ ). Notable divergence was traced with respect to situational dimensions, socio-economic dimensions and framework dimensions. Political organizations were motivated primarily by their desire to avoid blame for unpopular actions rather than by seeking to claim credit for popular ones (Weaver, 1986). This attitude resulted from voters negativity bias; their tendency to be more sensitive to real or potential losses than to gains. Diversity in responses rating were attributable to how each stakeholder group conceived ecologically fragile lands in

Wayanad and understood the real field situations. Areas of divergence in pattern matches may be taken into account while planning future course of actions.

## **5.8. CONSENSUS IN STAKEHOLDER RESPONSE (GO-ZONES)**

Six possible junctures of go-zones were generated using scatter plots based on average scores configured for individual statements/ideas. Output statements with high importance and high feasibility were traced in upper right quadrant of the go-zone graph.

### **5.8.1. Consensus go-zone analysis for group A and group B**

Go-zone output (Fig. 8) had 17 statements/ideas representing all 5 dimensions of EFL (Table 15). However, some concepts/themes got priority over the others due to certain ideological individuality the stakeholder groups had. Ecological dimensions of EFLs were totally conceived. The output suggested enforcement of EFL Act incorporating some suggestions from better EFL dimensions like awareness campaigns and steps by government to learn public dilemma associated with EFL notifications. Detailed guidelines were sought regarding the parameters to be considered by the dispute redressal committee (Government of Kerala, 2009). Legal assistance may provided to small farmers involved in litigations and consider the fallacies outlined in situational dimensions.

### **5.8.2. Consensus go-zone analysis for group A and group C**

Consensus was observed with 9 statements/ideas (Table 16) in go-zone output (Fig. 9). Situational dimensions and framework dimensions were totally absent. Socio-economic dimensions mooted effective and transparent functioning of the dispute redressal committee constituted for verifying EFL status of a holding (Government of Kerala, 2009). The policy makers and political leaders were aware of EFLs and its ecological dimensions as perceived by the results.

### **5.8.3. Consensus go-zone analysis for group A and group D**

Here group A (officials from forest, agriculture and revenue departments) and group D (farmers and agricultural labourers in Wayanad) shared their views on EFLs. Only 7 statements/ideas (Table 17) were traced in go-zone (Fig. 10). Farmers found agreed with two aspects of EFLs like a vital landscape sustaining ecological or

climatic values and habitat for rare and endangered species. Demand made for detailed guidelines for dispute redressal committee and its transparent functioning.

#### **5.8.4. Consensus go-zone analysis for group C and group B**

Situational dimensions found no access to the go-zone output (Fig. 11). The stakeholder groups agreed that EFLs were fragile landscapes having physical continuance to reserved forests or vested forests. At the same time, demand made for returning notified lands back to farmers when it had no physical continuity to natural forests. Framework dimensions demanded budgetary provision for compensation to notified EFLs and a number of suggestions that would be useful in resolving the social crisis. Better EFL dimensions demanded government to trim down inequality stuck between districts in EFL notification and declare EFLs in trust of public.

#### **5.8.5. Consensus go-zone analysis for group B and group D**

The go-zone (Fig. 12) sourced out certain ideas from socio-economic dimensions and framework dimensions (Table 19). According to the results, an expert committee for validating scientific backup of EFLs and intervention of NGOs/legal service authorities would be imperative in resolving the social tension. However, farmers should get fair justice irrespective of the size of their holdings and the fixed ceiling limit of 2 ha. should not violate existing norms of land laws in Kerala (Government of Kerala, 1964; Government of Kerala, 2009).

#### **5.8.6. Consensus go-zone analysis for group C and group D**

Group C provided feasibility rating to every importance rating done by group D (Fig. 13). The results explained how the policy makers and local political leaders responded towards certain concerns and demands made by farming community of Wayanad. Even though the policy makers and political leaders in Wayanad were reluctant towards situational dimensions, they agreed with such resolving measures put forth by framework dimensions and better EFL dimensions. Statement #21 within framework dimensions needed special attention. The policy makers and political leaders together demanded central government to respond to legal sanctity of EFL Act and specify whether EFL concept had relation to ESA concept as identified by Sen (2000) and implemented by MoEF in collaboration with different state

governments. Such participatory interventions or approaches were traced in Patwardhan (2006).

### 5.9. RE-ORIENTED CRITERIA AND INDICATORS OF EFLs IN WAYANAD

A holistic approach was adopted in compiling the output statements/ideas from every go-zones to generate re-oriented criteria and indicators with particular reference to EFLs in Wayanad district (Table 21). To all intents and purposes, 28 statements/ideas were sourced out. The criteria of EFLs were analogous to five distinct dimensions presented with the results (Fig. 5), the content statements/ideas served as indicators of EFLs in Wayanad.

Ecological dimensions viewed EFL status of a landscape due to its historical importance and livelihood sustaining values. This perspective of EFL seems logical in tropical forestry conditions especially in a fragmented landscape like Wayanad. Livelihood sustaining values of the forests in terms of food, fodder, fuelwood and fiber were of enormous importance to the public in general and aboriginal tribal communities in particular. Ecological and climatic values served by the landscape assumed great relevance while considering historical importance and livelihood values. EFLs have significance in maintaining physical continuity of reserved forests and conservation of wildlife corridors and wetland ecosystems. Sen (2000) found that even isolated strips, usually attached to a patch of somewhat similar vegetation, could serve as a wildlife corridor. Further, a series of wetland habitats on network of staging sites along the migratory routes would be crucial for conservation of birds. EFLs may have emphasis on protection of the endangered flora and fauna with due emphasis on scientific conservation. Sayer et al. (2003) viewed restoration in densely settled tropical areas would be crucial in biodiversity conservation and delivering forest goods and services to wide range of stakeholders. Retention of even small fragments of natural vegetation is justified by their great potential value in providing the building blocks for future restoration programmes. However, care needs to be taken in planning and executing such programmes.

Situational dimensions observed EFL status of a private holding as no tax was levied by revenue department. Forest department notified private holdings as EFLs and blocked accepting land taxes for such holdings creating tensions. EFLs in



Wayanad included many private holdings adjoining to vested forests (Kerala Forest Department, 2012a), involved in litigation regarding ownership. Such private forests were over exploited and mismanaged during early 1900s. The Madras Preservation of Private Forest Act came into force in 1949 and all the private forests exceeding 40ha came under the purview of the Act (Government of Madras Presidency, 1949). Nevertheless, the Act could not fully control the destruction of forests. Therefore Kerala Legislature passed Kerala Private Forests (Vesting and Assignment) Act 26 of 1971 which came into force with effect from May 10, 1971. Kerala Forest Department notified many such private forests as EFLs. General public in Wayanad conceived EFLs as areas prone to natural disasters like landslide, flood or sometimes earthquakes in general. Only campaigns could correct such misconceptions among public as proposed by better EFL dimensions.

Socio-economic dimensions demanded compensation in ensuring fair justice to farmers irrespective of their area of holdings. In the opinion of many stakeholders, the fixed ceiling limit of 2 ha. was contrary to the provisions of prevailing land laws in Kerala. Land Reforms Act (Government of Kerala, 1964) fixed the level of ceiling which applies to a family of five members as 12 standard acres and an allowance of one acre for each additional member subject to an upper limit of 20 standard acres. Small and marginal farmers sought legal assistance to combat the overwhelming situation and demanded transparent functioning of the dispute redressal committee entrusted with re-evaluation of EFLs (Government of Kerala, 2009).

Suggestive interventions were traceable with framework dimensions (7 indicators) and better EFL dimensions (5 indicators). Even though section 4 of the EFL Act contained scope of compensation, no budgetary provision was sanctioned yet (Government of Kerala, 2005). A centrally sponsored scheme for taking over private holdings as in the case of Mudumalai-Wayanad and Edayarhalli-Doddasampige elephant corridors (Wildlife Trust of India, 2012) would be useful. Compensation to eligible farmers may avoid judicial interventions in favour of land lords, affecting the authority of EFLs. Framework dimensions mooted declaration of EFLs in trust of public, and upheld the role of NGOs and legal service authorities. It backed an expert committee for validating the scientific backup of EFLs and demanded central government to respond to legal sanctity of the legislation as the

definition of forest in EFL Act was different from what provided by Forest Conservation Act of 1980 (Government of India, 1988; Government of Kerala, 2005).

Since the definition of forest remained unchanged even after the 2009 amendment, no farmer got benefited from sections 10A and 10B. Better EFL dimensions suggested awareness campaigns on EFLs in general and regarding importance of valuable flora. The definition of forest included ‘trees and undergrowth’, so that section 2(c) of the EFL Act was misinterpreted or misused in defining forests and notifying EFLs. Nature of profuse undergrowth in tropics could be well understood from 322 medicinal species of herbs, shrubs and climbers growing in the lower most stratum of Western Ghat forests (Muraleedharan et al., 1999). Farmers extensively removed undergrowth from their holdings adjoining to vested forests fearing EFL notification. Such confusions might be resolved through proposed awareness campaigns. Better EFL dimensions demanded government to learn public dilemma associated with EFLs and trim down inequality stuck between districts in EFL notifications. EFLs were notified in 11 districts only and mainly found in Malabar area, previously a part of Madras Presidency (Kerala Forest Department, 2012b). Consensus was traced with the demand for detailed guidelines regarding the parameters to be considered by dispute redressal committee. Such guidelines could validate credibility of EFL notifications.

#### **5.10. POLICY IMPLICATIONS/RECOMMENDATIONS**

Implications are analyses derived from two or more research findings bridging certain policy recommendations. Implications have a direction, new information and certain needs guiding people to interpret the findings. Recommendations offer specific actions in program planning supposed to be specific, measurable, action-oriented, realistic and time bound (Yinger, 2003). In the light of the findings from re-analysing the concept of EFLs with particular reference to Wayanad district, certain policy implications/recommendations are proposed.

1. Authorities may recognize 5 distinct dimensions of EFLs such as ecological dimensions, situational dimensions, socio-economic dimensions, framework dimensions and better EFL dimensions.

2. Ecological sensitivity/fragility of a landscape is always a subset of wider environmental concerns as illustrated by ecological dimensions so as to accord special protection.
3. Verify how the concept of Ecologically Sensitive Areas (ESAs) envisaged by MoEF (Sen, 2000) differs from the concept of Ecologically Fragile Lands (EFLs) according to The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003.
4. Apart from EFLs, detailed investigation to be carried out concerning practicality of ESAs in Kerala conditions. ESAs are managed by respective state governments through a central aided scheme involving non-governmental and civil society organizations. Ongoing process of rehabilitating forest dwellers from interior forests and acquiring private lands for elephant corridors in Wayanad (Wildlife Trust of India, 2012) served as suitable models/interventions in this respect.
5. Considering the issues addressed by situational dimensions and socio-economic dimensions, adopt interventions necessary to level out the disputes concerning legal definition of EFLs (Government of Kerala, 2005).
6. Check whether the 2009 amendment of the EFL Act actually benefited the small farmers and agricultural labourers (Government of Kerala, 2009), if not, quash the amendment and subscribe new options.
7. Demarcation of Ecologically Fragile Lands (EFLs) is a multipart endeavor which requires considerable expertise, as it may vary from criterion to criterion. To address the task, detailed guidelines may be issued regarding the parameters [eg. criteria and indicators of ESAs identified by Sen (2000)] to be considered by dispute redressal committee apart from what prescribed in The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Rules (Government of Kerala, 2007a).
8. Necessary orders may be issued for notifying small and marginal holdings [the ceiling limit can be 2 ha. (Government of Kerala, 2009)] as EFLs employing section 4 of the EFL Act in unavoidable cases (eg. to maintain physical

continuity of natural/ reserved/forests). Budgetary provision may be sanctioned for compensation so that small farmers and agricultural labourers will be benefitted. It can be the discretion of the government to decide whether minimum compensation would be applicable for private holdings exceeding fixed ceiling limit.

9. Comprehensive rehabilitation measures and re-distribution packages may be announced for plantation labourers entrapped in EFL disputes. Once an area has been declared ecologically fragile, and accordingly notified as vested forests, it should be made clear that the area shall not be de-notified in any respects in future. However, power for operationalising the EFL Act should be vested with Kerala Forest Department itself, and no compromise in this respect.
10. Misconceptions on EFLs among public may be rectified through comprehensive monitoring programmes and network of activities involving government agencies, expert institutions, Universities and NGOs, ensuring declaration of EFLs in trust of public.

### **5.11. CONCLUSIONS**

Overall results revealed that each stakeholder groups represented their stance accordingly. Clustering of the statements/ideas configured five discrete dimensions of EFLs, new to the literature except ecological dimensions (Sen, 2000). Cluster rating map conveyed relative importance of each dimensions. Ecological dimensions constituted four layers and situational dimensions, a single layer. Consensus pattern matches and go-zones made comparison of stakeholder response. Area of divergence were further found to correspond quite well with the unique role of each stakeholder group. Compilation of go-zone outputs sourced out 27 re-oriented criteria and indicators. Current definition of EFLs recognized certain setbacks as communicated by situational dimensions and better EFL dimensions. Appropriate interventions by government agencies, considering indicators of framework dimensions and better EFL dimensions would be imperative in resolving apprehensions and that too without compromising the spirit of ecological dimensions.

*Summary*

## SUMMARY

The study employed concept mapping (Kane and Trochim, 2007) for the purpose of analysing how the stakeholders in Wayanad could collaborate on a definition of EFLs envisaged by The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003. An intentionally structured practice of discourse for the concept mapping process probed into the complex environment of ecological fragile lands in Wayanad. The research findings are summarized below.

- 1.** Four distinct stakeholder groups were identified each consisting of 30 individuals. Group A consisted of officials from forest, agriculture and revenue departments, group B had ecologists, environmentalists and legal professionals, group C comprised of policy makers and local political leaders and group D included farmers and agricultural labourers in Wayanad.
- 2.** A set of 45 statements/ideas were generated during the questionnaire survey. The statements/ideas represented various dimensions of EFLs in Wayanad and was subjected to sorting and rating tasks by the respondent groups.
- 3.** Multidimensional scaling (MDS) of the sort data configured a point map representing the statements/ideas in two dimensions. Hierarchical cluster analysis configured five distinct clusters/themes. Content analysis named the clusters as ecological dimensions, situational dimensions, socio-economic dimensions, framework dimensions and better EFL dimensions. Bridging values of individual statements and average bridging values for the clusters validated sensibility of the clustering process.
- 4.** Average cluster scores derived from rating task generated cluster rating map by assigning layers to each individual clusters. Ecological dimensions had four layers indicating green facet of the EFLs and was embraced by most of the stakeholders. Situational dimensions scored the lowest average score with a single layer exposing the ground realities.
- 5.** Consensus pattern matches and go-zones co-constructed importance and feasibility solutions indented for comparison of responses rating. Comparison of

importance rating between group A and Group B showed a good correlation ( $r = +0.76$ ). Group A and Group C got a feeble correlation ( $r = +0.01$ ). Group A and Group D showed some divergence in response with a negative correlation ( $r = -0.73$ ). Group C and Group B had a positive correlation ( $r = +0.59$ ). Comparative account of Group B and Group D configured negative correlation ( $r = -0.33$ ) and that between Group C and Group D had a positive value ( $r = +0.22$ ).

**6.** Six possible junctures of go-zones were compiled to generate re-oriented criteria and indicators of EFLs in Wayanad. Overall output comprised of 28 statements/ideas having relevance in future management interventions. Ecological dimensions were totally represented and situational dimensions had 3 output statements. Socio-economic dimensions generated 5 statements in output. Framework dimensions and better EFL dimensions were found to have 7 and 5 statements/ideas respectively.

**7.** Ecological dimensions viewed ecological fragility of landscape due to its historical importance and livelihood sustaining values. Such fragile landscapes may be seated adjoining to reserved forest areas and plays major role in relieving human pressure on natural forests. EFLs can be wildlife corridors/sacred groves, habitats for rare and endangered species of flora and fauna and wetlands sustaining ecological and climatic values. Once the ecological value of such a landscape is lost, it would be very hard to restore.

**8.** Situational dimensions addressed the issues on EFLs including land tax, vested forest status and areas prone to natural disasters. Such misconceptions may be resolved by adopting appropriate interventions as suggested by framework dimensions and better EFL dimensions.

**9.** Socio-economic dimensions supported compensation in ensuring fair justice to farmers and returning notified lands back to farmers when it lacks physical continuity to natural forests. Effective and transparent functioning of dispute redressal committee, providing legal assistance to small farmers and agricultural labourers were among the demands.

**10.** Framework dimensions suggested constitution of an expert committee for validating scientific backup of EFLs, declaration of EFLs in trust of public, intervention of NGOs and legal service authorities in resolving the social tension, central government to respond to legal sanctity of the legislation and centrally sponsored scheme for taking over private lands with sufficient compensation in effective enforcement of EFL Act.

**11.** Better EFL dimensions envisaged awareness programmes among public regarding importance of EFLs and trimming down inequality stuck between districts in EFL declaration. Detailed guidelines were sought regarding the parameters to be considered by dispute redressal committee and demanded government to take steps in learning public dilemma out of EFL notifications in Wayanad.

**12.** Policy implications/recommendations of the findings suggested government to verify how the concept of Ecologically Sensitive Areas (ESAs) envisaged by MoEF differs from the concept of Ecologically Fragile Lands (EFLs) in its essence and implementations. Apart from EFLs, practicality of ESAs in Kerala conditions to be investigated and evaluate effectiveness of 2009 amendment of the EFL Act. Necessary orders may be issued for notifying small and marginal holdings as EFLs only by employing section 4 of the Act.



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**RE-ANALYSING THE CONCEPT OF ECOLOGICALLY FRAGILE  
LANDS (EFLs) WITH PARTICULAR REFERENCE TO WAYANAD  
DISTRICT, KERALA**

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**ABSTRACT OF THE THESIS**

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## ABSTRACT

Concept mapping technique was employed to investigate how the stakeholders in Wayanad district conceived The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003. Referencing a research framework informed by multiple views of the stakeholders, evaluation of 120 respondents was carried out by organizing into four equal groups. These groups consisted of (A) officials from forest, agriculture and revenue departments (B) ecologists, environmentalists and legal professionals (C) policy makers and local political leaders and (D) farmers and agricultural labourers in Wayanad. A set of 45 statements/ideas were generated by the respondents to describe their understanding on ecologically fragile lands (EFLs). Sensible sorting and individual statement rating were used to find out conceptual similarities and/or differences and to realize feasibility solutions. The outcome configured five clusters from the point map namely ecological dimensions, situational dimensions, socio-economic dimensions, framework dimensions and better EFL dimensions. The stress and fit measures and the bridging values substantiated the sensibility of multidimensional scaling (MDS) and subsequent clustering process. Cluster rating map confirmed highest average rating to ecological dimensions and lowest to the situational dimensions. Pattern matches and go-zones investigated divergence among stakeholders in terms of importance/feasibility rating. Large divergence was observed in two cases where importance rating done by farmers/agricultural labourers and feasibility rating offered by government officials or by the group consisting of environmentalists/legal professionals. Consensus was found with 28 statements/ideas when sourced out in the course of six possible junctures of go-zones. The output statements/re-oriented criteria and indicators envisaged EFLs as vital in sustaining ecological and climatic values of the landscape. Emphasis was made for adequate compensation to eligible farmers in ensuring fair justice in order to relieve the shared instabilities concerning implementation of the EFL Act, 2003. The findings laid down certain policy implications/recommendations on EFLs, useful in future course of actions.

# *Appendices*

## APPENDIX I

### **THE KERALA FOREST (VESTING AND MANAGEMENT OF ECOLOGICALLY FRAGILE LANDS) ACT, 2003**

An Act to provide for the vesting in the Government of ecologically fragile lands in the State of Kerala and for the management of such lands with a view to maintaining ecological balance and conserving the bio- diversity.

Preamble.-WHEREAS the earth's biological resources with their intrinsic ecological, genetic, economic, social, cultural, scientific, educational, recreational and aesthetic values are global assets and public trust vital to the sustained economic and social development, maintenance of ecological balance and the very existence of humanity;

AND WHEREAS the fundamental requirement for the conservation of biological diversity is the in situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings;

AND WHEREAS the tropical forests in the Western Ghats, which has been declared a bio-diversity hot-spot by the International Union for Conservation of Nature and Natural Resources, are very rich repositories of bio-diversity extremely susceptible to rapid irreversible degradation;

AND WHEREAS it has become inevitable to conserve effectively the ecologically fragile lands, minimizing the reduction or degradation of these ecosystems and biological diversity therein, which evolved through millions of years;

AND WHEREAS it is considered necessary to manage such lands in an integrated and uniform manner within their ecological boundaries in accordance with the management plans based on sound scientific principles.

Be it enacted in the Fifty-fourth year of the Republic of India as follows:-

1. Short title and commencement:-

- (1) This Act may be called the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003
- (2) It shall be deemed to have come into force on the 2 nd day of June 2000.

2. Definitions In this Act, unless the context otherwise requires:-

- (a) "custodian" means the Principal Chief Conservator of Forests of the State or any other officer not below the rank of a Conservator of Forests appointed by the Government, by notification in the Gazette, to exercise the powers and perform the functions of the custodian under this Act;
- (b) "ecologically fragile lands" means,-
  - (i) any forest land or any portion thereof held by any person and lying contiguous to or encircled by a reserved forest or a vested forest or any other forest land owned by the Government and predominantly supporting natural vegetation, and

- (ii) any land declared to be an ecologically fragile land by the Government by notification in the Gazette under section 4;
- (c) “forest” means any land principally covered with naturally grown trees and under growth and includes any forest statutorily recognized and declared as reserved forest, protected forest or otherwise, but does not include any land which is used principally for the cultivation of crops of long duration such as tea, coffee, rubber, pepper, cardamom, coconut, arecanut or cashew or any other sites of residential buildings and surroundings essential for the convenient use of such buildings;
- (d) “land” includes rivers, streams and its origin and other water bodies;
- (e) “natural vegetation” means a growing stock predominantly of a plant species or of a number of plant species occurring naturally on the land;
- (f) “owner” in relation to an ecologically fragile land includes a mortgagee, lessee or any other person having the right of possession and enjoyment of the ecologically fragile land;
- (g) “prescribed” means prescribed by rules made under this Act;
- (h) “reserved forests” means the forests reserved under section 19 of the Kerala Forest Act, 1961 (4 of 1962) and includes forests notified under section 4 of the said Act;
- (i) “tribunal” means a tribunal constituted under section 9 of this Act;
- (j) “vested forests” means any forest vested in Government under section 3 of the Kerala Private Forests(Vesting and Assignment) Act, 1971 (26 of 1971)

3. Ecologically fragile land to vest in Government.- (1) Notwithstanding anything contained in any other law for the time being in force, or in any judgement, decree or order of any court or tribunal or in any custom, contract or other documents, with effect from the date of commencement of this Act, the ownership and possession of all ecologically fragile lands held by any person or any other form of right over them, shall stand transferred to and vested in the Government free from all encumbrances and the right, title and interest of the owner or any other person thereon shall stand extinguished from the said date.

(2) The lands vested in the Government under sub-section (1) shall be notified in the Gazette and the owner shall be informed in writing by the custodian and the notification shall be placed before the Advisory committee constituted under section 15 for perusal.

4. Power to declare ecologically fragile land.- (1) The Government shall have power to declare, by notification in the Gazette, any land to be ecologically fragile land on the recommendation of the Advisory Committee appointed for the purpose under section 15 of this Act.

(2) No declaration under sub-section (1) shall be made without giving the owner a notice of thirty days for being heard.

(3) No person shall change the legal or physical status or ownership of the land proposed to be declared as an ecologically fragile land after the notice issued under sub-section (2).

(4) With effect from the date of declaration of any land as ecologically fragile land under sub-section (1), the ownership and possession of the land or any other form of right over it, shall subject to the provisions of this Act, stand transferred to and

vested in the Government free from all encumbrance and the right, title and interest of the owner or any other person thereon shall stand extinguished from the said date.

5. Ecologically fragile land to be deemed to be reserved forests.- Subject to the provisions of section 16, all ecologically, fragile lands vested in Government under section 3 and section 4 shall be deemed to be reserved forests constituted under the Kerala Forest Act, 1961 (4 of 1962), and the provisions of that Act shall, so far as may be, apply to such lands.

6. Demarcation of boundaries.- (1) Within such time as may be prescribed, after the coming into force of this Act or the notification under sub-section (1) of section 4, as the case may be the custodian shall cause to demarcate the boundaries of ecologically fragile lands vested in the Government under section 3 or section 4.

(2) Notwithstanding the pendency of an application under section 10 before the Tribunal, the custodian may, if he is satisfied that any land is vested in the Government under section 3 or section 4, demarcate or cause to demarcate the boundaries thereof.

7. Eviction of persons in unauthorized occupation.- (1) The custodian or an officer not below the rank of Divisional Forest Officer authorised by him in this behalf may evict any person in occupation of any ecologically fragile land vested in the Government under section 3 or section 4 after giving such person thirty days notice thereof.

(2) Notwithstanding anything contained in any other law for the time being in force, the custodian or the officer authorised by him in this behalf may take such steps as may be necessary to evict any person who refuses to vacate the land in accordance with the notice issued under sub-section (1).

8. Compensation of vesting.- (1) In respect of the land vested under sub-section (4) of section 4, the owner thereof shall be eligible for compensation of the said land including the permanent improvements thereon.

(2) No compensation shall be payable for the vesting in the Government of any ecologically fragile land or for the extinguishment of the right, title and interest of the owner or any person thereon under sub-section (1) of section 3.

(3) The compensation payable under sub-section (1) and the mode of payment shall be determined in such manner as may be prescribed.

9. Constitution of Tribunals.- (1) The Government may, by notification in the Gazette, constitute one or more Tribunal for the purpose of this Act.

(2) The Tribunal shall be a Judicial Officer not below the rank of a District Judge.

(3) Where more than one Tribunal is constituted under sub-section (1), the Government shall define the areas within which each Tribunal shall exercise jurisdiction.

(4) The Tribunal shall decide all matter within its competence and may review any of its decisions in the event of there being an error on the face of the record or correct any arithmetical or clerical error therein.

(5) The Tribunal shall in exercising its powers, follow such procedure as may be prescribed.

10. Settlement of disputes by the Tribunal.- (1) Where any dispute arises as to whether,- (a) any land is an ecologically fragile land or not; or (b) any ecologically fragile land or portion thereof has vested in the Government or not; or

(c) the compensation determined under section 8 is insufficient or not, the person who claims that the land is not an ecologically fragile and or that the ecologically fragile land has not vested in the Government, or that the compensation is not sufficient, may, within five years from the date of commencement of this Act or within six months from the date of the notification under sub-section (1) of section 4 declaring the land to be an ecologically fragile land or the date of communication of compensation under section 8, as the case may be, or within such time as the Government may notify in this behalf, apply to the Tribunal for settlement of the dispute.

(2) An application under sub-section (1) shall be in such form and contain such particulars as may be prescribed.

(3) If the Tribunal decides that any land is not an ecologically fragile land or that an ecologically fragile land or portion thereof has not vested in the Government and,-

(a) no appeal under section 11 has been preferred against the decision of the Tribunal within the period specified therein; or

(b) such appeal having been preferred under section 11 has been dismissed by the High Court; the custodian shall, as soon as may be, after the expiry of the period referred to in clause (a) or, as the case may be, after the date of the order of the High Court dismissing the appeal, restore possession of such land or portion as the case may be, to the owner of such land.

(4) If the Tribunal decides that the compensation determined under section 8 is not adequate and revises the amount of compensation and,-

(a) no appeal under section 11 has been preferred against the decision of the Tribunal within the period specified therein; or

(b) such appeal having been preferred under section 11 has been dismissed by the High Court; the custodian shall, as soon as may be, after the expiry of the period referred to in clause (a) or, as the case may be, after the date of the order of the High Court dismissing the appeal, pay such compensation to the owner of such land.

11. Appeal to the High Court.- (1) The Government or any person objecting to any decision of the Tribunal may, within a period of sixty days from the date of that decision, appeal against such decision to the High Court: Provided that the High Court may admit an appeal preferred after the expiry of the period of sixty days if it is satisfied that the appellant has sufficient cause for not preferring the appeal within the aforesaid period.

(2) The appeal shall be in the prescribed form and shall be verified in the prescribed manner and shall be accompanied by a fee of five hundred rupees.

(3) On receipt of an appeal under sub-section (1) the High court may, after giving the parties a reasonable opportunity of being heard, either in person or by a representative,-

(a) Confirm or cancel the decision of the Tribunal appealed against; or

(b) set aside such decision and remand the case to the Tribunal for decision after such further inquiry as may be directed by the High Court; or

(c) pass such orders as it may think fit.

(4) If the High Court decides that any land is not an ecologically fragile land or

that an ecologically fragile land or portion thereof has not vested in the Government, the custodian shall, as soon as may be, restore possession of such land or portion, as the case may be, to the owner.

(5) If the High Court decides that the compensation determined under section 8 or under section 10 is not adequate and determines a higher compensation, the custodian shall, as soon as may be, pay such compensation as determined by the High Court to the owner of such land.

12. Power of Tribunal.- The Tribunal shall, for the purpose of exercising any power conferred by or under this Act, have all the powers of a civil court while trying a suit under the Code of Civil Procedure, 1908 (Central Act 5 of 1908), in respect of the following matters, namely:-

- (a) Summoning and enforcing the attendance of any person and examining him on oath;
- (b) Requiring the discovery and production of any document;
- (c) Receiving evidence on affidavit;
- (d) Issuing commission for the examination of witnesses or for local investigation;
- (e) Inspecting any property or thing concerning which any decision has to be taken;
- (f) Requisitioning of any public record or copy thereof from any Court or office; and
- (g) Any other matter which may be prescribed.

13. Bar jurisdiction of Civil Court.- Except as otherwise provided in this Act no civil court shall have jurisdiction to decide or deal with any question or to determine any matter which is by or under this Act, required to be decided or dealt with or to be determined by the Tribunal, the custodian or any other officer.

14. Indemnity:- No suit, prosecution or legal proceedings shall lie against the Government or the Tribunal or the custodian or any other officer for anything in good faith done or intended to be done under this Act or any rule or order made thereunder.

15. Constitution and function of the Advisory Committee.- (1) The Government may, by notification in the Gazette, constitute an Advisory Committee to identify lands which are ecologically fragile and recommended to Government the said lands for declaration as ecologically fragile lands.

(2) The Advisory Committee shall consist of the following members, namely:-

- |   |          |
|---|----------|
| (i) The Principal Chief Conservator of Forests  | Chairman |
| (ii) Two Members of the Legislative Assembly nominated by the Government                                  | Members  |
| (iii) The Secretary, Forest Department or his nominee not below the rank of Joint Secretary to Government | Member   |
| (iv) The Law Secretary or his nominee not below the rank of Joint Secretary to Government                 | Member   |
| (v) The Revenue Secretary or his nominee not below the rank of Joint Secretary to Government.             | Member   |
| (vi) The Director, Scheduled Tribes Development Department  | Member   |
| (vii) The Director, Kerala forest Research Institute, Peechi  | Member   |



(viii) The Director, Tropical Botanical Garden and Research institute, Pacha, Palode	Member
(ix) The Director, Centre for Earth Science Studies, Thiruvananthapuram	Member
(x) The Director, Centre for Water Resource Development and management, Kozhikode	Member
(xi) One representative of leading Non-Governmental Organisations working in the field of conservation of nature or forest nominated by the Government	Member

(3) The Committee shall identify lands which are ecologically fragile and recommend to the Government for the declaration of such lands under section 4 as ecologically fragile.

(4) The Committee shall take into consideration,- (i) the abundance of flora and fauna;

(ii) The rare and endemic flora and fauna;

(iii) The role in conserving the water sources;

(iv) Functions as corridors connecting two or more wildlife habitats; (v) functions as breeding grounds for wildlife; and

(vi) Such other ecological parameters as may be prescribed; and make specific findings on the ecological sensitivity and significance of such land before making its recommendation to the Government sub-section (3).

16. Ecologically fragile lands to be managed by Forest Department as per management Plans.- (1) All ecologically fragile lands vested in the Government shall be managed by the Forest Department in accordance with the provisions of the management plans approved by the Government from time to time.

(2) the management plans shall be prepared in accordance with the guidelines issued from time to time by the State Government and the Government of India for the preparation of Working Plans and Management Plans for the reserved forest areas and protected areas with a view to,-

(i) Conserving natural resources;

(ii) Arresting depletion and degradation of flora and fauna;

(iii) Improving productivity and sustainability; and

(iv) Maintaining ecological balance in the ecologically fragile lands:

Provided that the management plans prepared under his sub-section shall be such as to retaining the rights of the local Scheduled Tribe Communities regarding their means of livelihood.

17. Power to remove difficulties:- If any difficulty arises in giving effects to the provisions of this Act, the Government may, by order do anything not inconsistent with such provisions which appear to them necessary for the purpose of removing the difficulty:

Provided that no order shall be made under this section after the expiry of five years from the commencement of this Act.

18. Power to make rules.- (1) the Government may, by notification in the Official Gazette, make rules, either prospectively or retrospectively, to carry out the purposes of this Act.

(2) Every rule made under this Act, shall be laid, as soon as may be after it is made, before the Legislative Assembly while it is in session for a total period of fourteen days which may be comprised in one session or in two successive sessions, and if before the expiry of the session in which it is so laid or the session immediately following, the Legislative Assembly makes any modification in the rule or decides that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so however that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

19. Validation and Transitory Provisions.- (1) Notwithstanding the expiry of the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Ordinance, 2001 (16 of 2001) (hereinafter referred to as the said Ordinance),-

(a) all ecologically fragile lands vested in the Government under the said Ordinance shall, in so far as it is not inconsistent with the provisions of this Act, be deemed to have been vested under this Act;

(b) anything done or deemed to have been done or any action taken or deemed to have been taken under the said Ordinance shall, in so far it is not inconsistent with the provisions of this Act, be deemed to have been done or taken under this Act;

(2) The expiry of the said Ordinance shall not,-

(a) Affect any right, privilege, obligation or liability acquired, accrued or incurred there under; or

(b) Affect any legal proceedings or remedy in respect of any such right, privilege, obligation or liability and any such legal proceedings or remedy may be instituted, continued or enforced under the provisions of this Act in so far as it is not inconsistent with the provisions of this Act.

(3) Notwithstanding anything contained in the said Ordinance or in any judgement, decree or order of any court,-

(a) no land other than the ecologically fragile land as defined in this Act, whether notified under sub- section (3) of section 3 of the said Ordinance or not, shall be deemed to have vested or ever to have been vested in Government; and

(b) every notification issued in respect of any land under sub-section (3) of section 3 of the said Ordinance shall be scrutinized by the custodian suomotu or on an application made by the owner or any person having the right of possession or enjoyment of such land and if necessary, such notification shall be revised and issued in accordance with the provisions of this Act.

## APPENDIX II

### THE KERALA FOREST (VESTING AND MANAGEMENT OF ECOLOGICALLY FRAGILE LANDS) RULES, 2007

**GOVERNMENT OF KERALA**  
Forest and Wildlife (E) Department  
**NOTIFICATION**

G. O. (P) No. 3/2007/F&WLD. Dated, Thiruvananthapuram, 3<sup>rd</sup> February 2007.

**S.R.O No. 107/2007** – In exercise of the powers conferred by section 18 of the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003 (21 of 2005), the Government of Kerala hereby make the following Rules, namely: -

#### CHAPTER – 1

#### PRELIMINARY

1. *Short title and commencement* – (1) These rules may be called the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Rules, 2007. (2) These shall come into force at once.

2. *Definitions*: - (1) In these rules unless the context otherwise requires,

(a) “Act” means the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003

(b) “Compensation” means any amount granted in respect of the land vested including the permanent improvements thereon under section 8 of the Act.

(c) “Custodian” means custodian as defined under clause (a) of section 2 of the Act.

(d) “Dispute” means a dispute referred to in sub-section (1) of section 10 of the Act.

(e) “Division” means a Forest Division.

(f) “Form” means the form appended to these rules. (g) “Government” means the Government of Kerala.

(h) “Permanent improvements” means any work or products of work which add the value of the holding and includes, -

(i) the erection of dwelling houses, buildings, apartment thereto and farm buildings;

(ii) the construction of tanks, wells, masonry kayyalas, random rubble kayyalas, channels, dams and other works for the storage of supply of water for agricultural of domestic purposes;

(iii) the preparation of land for irrigation;

(iv) the drainage, reclamation from rivers or other waters or protection from floods or from erosion or other damage by water, of land use for agricultural purposes, or waste land which is cultivated;

(v) the reclamation, clearance, enclosure or for permanent improvement of land for agricultural purposes;

(vi) the renewal or reconstruction of any of the foregoing works or alterations therein or additions thereto; and

(vii) the planting or protection and maintenance of fruit bearing trees and other valuable trees and plants except royal trees such as Sandalwood, Rosewood and Teak.

(i) “Residential house” means any building constructed for the purpose of residence and which has been in continuous occupation of the owner or possessor

from a date prior to the 2<sup>nd</sup> day of June 2000;

(j) “Recommendation” means the recommendation submitted by the Advisory Committee constituted under section 15 of the Act; (k) “Section” means section of the Act;

(l) “Surroundings essential for the convenient use of residential building” means an area of 0.5 hectares surrounding the residential building;

(m) “Working plan officer” means an officer appointed for the purpose of section 16 of the Act for the management of reserved forest areas and protected areas.

(2) Words and expressions used but not defined in these rules but defined in the Act shall have the meaning respectively assigned to them in the Act.

## CHAPTER 2

### THE ADVISORY COMMITTEE

3. *Identification of land by the Advisory Committee.* – The Advisory Committee may formulate and follow procedure under the Act for the identification of the ecologically fragile lands. The Committee shall forward their report along with the recommendation to the Government for the declaration such lands under sub-section (1) of section 4 of the Act.

4. *Term of office of the Non-official Member.* – Term of office of the nominated non-official member shall be for period of 3 years from the date of nomination. The quorum for a meeting of the Committee shall be seven including the Chairman.

5. *Notice to the Land Owner.* – On receipt of the recommendation to declare any land as ecologically fragile, the Government, if satisfied on the recommendations, shall cause to issue a notice to the owner or possessor of the land giving 30 days time, to show cause for not declaring the land as ecologically fragile as provided under sub-section (1) of section 4 of the Act.

6. *Enquiry into Claims/Objections.* – (1) After the receipt of the notice issued under rule 5, the owner or possessor or duly authorized agent shall file a statement of claims or objections if any, in writing to the Government within a period of 30 days.

(2) In case where objection have been filed, the Government shall duly cause enquiries into such objections through the custodian and obtain a report on the same. The Government shall examine the report of the custodian and shall pass orders, as it consider necessary on the objections and communicate the same to the owner.

(3) If no objection is filed in respect of any land within time stipulated in the notice, or on disposal of the objections as above, the Government shall by notification in the Gazette declare the land as an ecologically fragile land under sub-section (1) of section 4 of the Act.

7. *Vesting of Property.* – (1) After the disposal of the objections, the Government shall issue a notification under sub-section (1) of section 4 in the Gazette specifying the District, Taluk, Village, survey number, location, name of division, range, extent and the boundaries of the property so vested in Government.

(2) A copy of notification so published shall simultaneously be displayed in the Village Office, Panchayath Office, Office of the Tribunal, Forest Range Office, Office of the Divisional Forest Officer, the Office of the Custodian and the Office of the Sub-Registrar concerned.

(3) The Custodian shall cause to publish the notification, as published under sub-

section (1) of section 4 in two newspapers having wide circulation in the locality.

(4) The ecologically fragile lands vested in Government under section 3 and 4 of the Act shall be deemed to be Reserve Forest and will be managed by the State Government under the provisions of the Kerala Forest Act, 1961 (Act 4 of 1962) for maintaining the ecological balance and preserving the flora and fauna of the ecologically fragile forest lands as such.

### **CHAPTER – 3**

#### **DEMARCATION OF BOUNDARIES**

8. *Demarcation of Boundaries.* – (1) All the lands notified under sub-section (2) of section 3 shall be demarcated by the custodian by erecting permanent cairns along the boundaries within a period of two years from the date of publication of these Rules.

(2) The custodian shall cause the demarcation of the boundaries of any ecologically fragile land notified under section 4 within a period of 2 years from the date of such notification for the land in question by erecting permanent cairns along the boundaries. If for any valid reasons the demarcation could not be done within the time frame, the custodian is empowered to grant reasonable extension of time as he deems fit.

(3) A notification specifying the details of ecologically fragile land, the boundaries of which have been demarcated such as survey and sub division number if any and local name and describing its boundaries shall immediately be published simultaneously in the Village Office, Panchayath Office, Office of the Tribunal, Forest Range Office, Office of the Divisional Forest Officer, the Office of the Custodian and the Office of the Sub Registrar concerned and two Dailies having wide circulation in the area.

### **CHAPTER 4**

#### **COMMITTEE FOR DETERMINATION OF THE COMPENSATION**

9. *Constitution of the Committee.* – (1) The Government may by notification in the Gazette, constitute a Committee in every Division for determining the compensation payable to the land owners whose land has been vested under sub-section (4) of Section 4 of the Act.

(2) The Committee shall consist of the following members, namely: -

(i) The Divisional Forest Officer within whose jurisdiction the land is situated shall be the convener and shall preside over the meeting;

(ii) The Joint Director of Agriculture of the District concerned;

(iii) The Executive Engineer (Building Division), Public Works Department of the area;

(iv) The Tehsildars of the Taluk concerned under whose jurisdiction the land situates;

(v) The Deputy Director, Soil Conservation of the District;

(vi) An Officer not below the rank of an Under Secretary to Government, Forest and Wildlife Department to be nominated;

(vii) an officer not below the rank of an Under Secretary to Government, Finance Department to be nominated.

(3) The Committee constituted under sub-rule (1) shall meet as and when the meeting is called for by the convener to consider each case. The meeting shall

normally be held in the Office of the Divisional Forest Officer, concerned.

10. *Quorum of the Committee.* – The quorum of the Committee shall be four including the Chairman and the decision of the majority shall be treated as the recommendation of the Committee.

11. *Local inspection by the Committee.*- (1) The Committee shall inspect the land and collect such details as it thinks fit for assessing the value of the land and the permanent improvements made thereon by the owner.

(2) The Committee shall also record the nature and the extent of the trees and plants, which are not being the natural tree growth found therein.

12. *Report of Valuation.* – (1) The Committee shall inspect the land and take samples or specimen or conduct statistical analysis as it thinks fit and proper for assessing the physical improvements made by the owner. Based on local inspection and the details collected from the notified land, the Committee shall prepare a report of valuation indicating the reasonable amount payable as compensation to the owner towards the land value and permanent improvements.

(2) When the Committee is assessing the land value it is mandatory that the Tahsildar of the concerned area should be present in its meeting.

(3) In case of assessing value of permanent improvements the concerned Executive Engineer (Building Division), Public Works Department should be present in the committee meeting.

13. *Compensation assessed to be reported to the custodian.* - The Committee shall forward a detailed report of valuation assessed by it to the custodian within three months from the date of reference of a case to it.

14. *Recommendation to Government.* – On receipt of the report of valuation of compensation from the Committee under rule 13 the Custodian shall verify the report and forward the same to the Government within 45 days with his detailed remarks. The Custodian may suggest modification of the amount of compensation payable detailing the reasons thereof.

15. *Quantum of compensation to be paid.* – The Government on receipt of the recommendation of the custodian shall examine the quantum of amount recommended and passed orders on the compensation payable to the owner of the land within a period of six months.

Provided that the Government shall have power to modify the amount of compensation recommended by the Custodian or the Committee for valid reasons to be recorded in writing.

16. *Mode of payment of compensation.* – (1) The Government shall allot sufficient funds under separate heads of account for the payment of compensation awarded to the owner.

(2) On receipt of the amount under sub-rule (1) in respect of the land vested, the custodian shall forward the same to the Divisional Forest Officer concerned within whose territorial jurisdiction the property is situated, for payment to the owners.

## **CHAPTER 5**

### **APPLICATION FOR REVIEW OF NOTIFICATION**

17. *Owner claiming exemption to apply.* – (1) Any owner or any person having the right of possession or enjoyment of any land notified under sub-section (1) of

section 3 of the Act may file an application before the custodian giving details of the location, extent, survey number, crops cultivated etc.; seeking a scrutiny of the notification and to decide whether such land qualify to be notified as ecologically fragile in accordance with the provision of the Act.

Every application filed under sub-rule (1) shall be accompanied by the following documents. (a) documents to prove ownership or possession or enjoyment of the land;

(b) documents to prove that the land is cultivated by such crops that are exempted under the Act.

(c) documents to prove the existence of a residential building if any, with the details thereof;

(d) any other documents as may be necessary for the verification of the particulars mentioned in the application.

(3) Every application under sub-rule (1) shall be accompanied by an affidavit certifying that the records produced along with the application and the particulars mentioned therein are true and valid.

(4) Every application under sub-rule (1) shall be accompanied by a court fee stamp of Rupees One Hundred.

18. *Inspection of the land.* – (1) On receipt of the application under rule 17 the custodian shall as soon as possible cause a local inspection of the land through a committee consisting of the following members:

(a) Divisional Forest Officer of the Territory where the land situated of Wildlife Warden having jurisdiction of the area, as the case may be, who shall act as the convener of the Committee.

(b) The Technical Assistant of the Conservator of Forests of the area. (c) The Working Plan Officer.

(2) The Committee shall inspect the land in respect of which application has been filed and shall prepare a report as to whether the notified area is consistent with the provisions of this Act or not, and submit the same to the custodian with in one month from the date of receipt of the order from the custodian for local inspection of the land.

19. *The Power of the Custodian to make additional enquiries.* – On receipt of report of the Committee under rule 18, if required, the custodian may cause further enquired and call for further records, as he deems fit.

20. *Issue of Revised Notification.* – (1) The custodian, after verification of the particulars mentioned in the application and the documents produced along with the same and after considering the report of the Committee under rule 18 and after such further enquiry as he deems necessary, if satisfied that the land notified, or part thereof; is inconsistent with the provisions of the Act, shall by order make a declaration in writing that such land or part thereof is not vested in the Government as per the Act and issue a revised notification within three months from the date of receipt of an application under rule 17 accordingly.

Provided that in case a revised notification is to be issued in respect of the land notified the custodian shall arrange a survey and demarcation of such land before issuing the revised notification.

(2) A copy of the revised notification shall be communicated to the applicant.

(3) If on scrutiny as per sub-rule (1) of rule 20, the custodian finds that the land

notified is consistent with the provisions of the Act, he shall make a declaration that effect in writing and communicate to the applicant.

21. *Suo-motu revision by the Custodian.* – The procedure prescribed above in rules 18, 19 and 20 and sub-rules (1) and (2) of rule 7 is applicable in all cases of suo-motu scrutiny of the notifications issued under sub-section (1) of section 3 of the Act by the custodian.

## **CHAPTER – 6**

### **PREPARATION OF MANAGEMENT PLAN**

22. *Preparation of Management Plan.* – The Management Plan for all the Ecologically Fragile Lands vested in the Government shall be prepared by the Divisional Forest Officer/Working Plan Officer under whose jurisdiction the area situates. The Management Plans shall be prepared as per the guidelines fixed by the State Government and Ministry of Environment and Forests, Government of India from time to time. The Management Plan so prepared shall be submitted to the Custodian for review and submission to Government for approval.

## **CHAPTER – 7**

### **FUND FOR IMPLEMENTATION OF THE ACT**

23. *Funds for implementation of the Act.* – (1) Government shall allot necessary funds under a separate heads of account for implementing the Act and the Rules issued thereunder including:

- (a) Payment of compensation awarded to the owner.
- (b) Survey and demarcation, Boundary consolidation etc.
- (c) Office expenses for Custodian's Office and Forest Tribunal. (d) Motor vehicles.
- (e) Traveling expenses.
- (f) Preparation of Management Plan.
- (g) Any other activities to be carried out for implementation of the Act and the Rules issued there under.

By order of the Governor,

**L. RADHAKRISHNAN,**  
*Secretary to Government.*



### APPENDIX III

#### THE KERALA FOREST (VESTING AND MANAGEMENT OF ECOLOGICALLY FRAGILE LANDS) AMENDMENT ACT, 2009

*An Act to amend the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003.*

*Preamble.*- WHEREAS, it is expedient to amend the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003 for the purposes hereinafter appearing;

BE it enacted in the Sixtieth Year of the Republic of India as follows:-

**1. Short title and commencement.-**

- (1) This Ordinance may be called the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Amendment Act, 2009.
- (2) It shall be deemed to have come into force on the 20th day of August, 2009.

**2. Insertion of new sections 10A and 10B.-** In the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003 (21 of 2005) (hereinafter referred to as the principal Act), after section 10, the following sections shall be inserted, namely:-

***“10A. Dispute Redressal in respect of lands having an extent of not more than two hectares.-***

(1) Notwithstanding anything contained in section 10, if any owner of the land which has been notified under section 3 and having an extent of not more than two hectares as on 2nd day of June, 2000 has any dispute as to whether such land is an ecologically fragile land or not, may file an application before the Principal Chief Conservator of Forests for the settlement of such dispute:

Provided that no dispute in respect of any land which was already been decided by the Tribunal under section 10 shall be re-opened under sub-section (1).

(2) On receipt of an application under sub-section (1), the Principal Chief Conservator of Forests shall refer the dispute to the Ecologically Fragile Land Claim Dispute Redressal Committee constituted under section 10B and shall if any proceedings pertaining to the land referred to in the said application is pending before any Tribunal, communicate the fact to the said Tribunal and on such communication further proceedings in respect of such land before the Tribunal shall stand suspended.

(3) On such reference under section (2), the Ecologically Fragile Land Claim Dispute Redressal Committee shall after inspecting the land in dispute furnish a detailed report within six months from the date of receipt of the application to the Principal Chief Conservator of Forests regarding the nature of the land, trees and other vegetation on the land.

(4) Immediately on receipt of the report under sub-section (3), the Principal Chief Conservator of Forests shall forward the same with his recommendations to Government and the decision of the Government thereon shall be final.

(5) If the decision under sub-section (4) is that any land or portion thereof is an ecologically fragile land, the Tribunal shall at the option exercised by the applicant, within such time as may be prescribed, continue the proceedings suspended temporarily under sub-section (2) in respect of such land.

(6) If the decision under sub-section (4) is that any land or portion thereof is not an ecologically fragile land, the custodian shall, as soon as may be, return the possession of such land or portion thereof, as the case may be, to the owner of such land and that the said land shall not be purported to have been vested in the Government at any time under the provisions of this Act, and in respect of the land which is returned, the Tribunal shall put an end to the proceedings which is pending before the Tribunal and suspended temporarily under sub-section (2) and pass orders thereon.

(7) No application for settlement of dispute under this section shall be filed after the expiry of six months, as the case may be, from the date of publication of the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Amendment Act, 2009 or from the date of notification declaring such land as ecologically fragile land under section 3.

(8) The form, the manner and fees for preferring an application under sub-section (1) shall be such as may be prescribed.

**10B. Constitution of the Ecologically Fragile Land Claim Dispute Redressal Committee.-**

(1) The Government may, by notification in the Gazette constitute committees in each forest division by name “The Ecologically Fragile Land Claim Dispute Redressal Committee” as soon as may be after the commencement of the Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Amendment Act, 2009 for the settlement of disputes under section 10A.

(2) The Committee shall consist of the following members, namely:-

- (i) Local Divisional Forest Officer/Wildlife Warden, who shall be the Chairman of the Committee;
- (ii) Working Plan Officer, who shall be the Convener of the Committee;
- (iii) Two Scientists from the distinct Research Institutes coming under the Kerala State Science, Technology and Environment Council;
- (iv) The Member of the Legislative Assembly of the area comprising the place which is subjected to inspection;
- (v) The President of the Village Panchayat of the area comprising the place which is subjected to inspection;
- (vi) The Agriculture Officer not below the rank of a Deputy Director or a person nominated by him of the area comprising the place which is subjected to inspection;
- (vii) Revenue officer not below the rank of a Revenue Divisional Officer or a person nominated by him of the area comprising the place which is subjected to inspection.

(3) The rules for the functioning of the Committee shall be such as may be prescribed.”.

**3. Repeal and saving.-**

(1) The Kerala Forest (Vesting and Management of Ecologically Fragile lands) Amendment Ordinance, 2009 (20 of 2009) is hereby repealed.

(2) Notwithstanding such repeal, anything done or any action taken under the principal Act as amended by the said Ordinance shall be deemed to have been done or taken under the principal Act as amended by this Act.

## APPENDIX IV

### OPEN ENDED QUESTIONNAIRE FOR STATEMENTS/ IDEA GENERATION STAGE

**Focus prompt:** Re-analyse the concept of Ecologically Fragile Lands (EFLs) with particular reference to Wayanad district, Kerala.

**Q.A.** How do you conceive ecological fragility or sensitivity of Wayanad?

- 1.
- 2.
- 3.
- 4.
- 5....

**Q.B.** What are the major problems faced by farmers, agricultural labourers and other stakeholders associated with the ecologically fragile lands in Wayanad?

- 1.
- 2.
- 3.
- 4.
- 5.....

**Q.C.** What are the prospective way outs in your opinion, for resolving the setbacks connected with EFLs in Wayanad?

- 1.
- 2.
- 3.
- 4.
- 5....

**Q.D.** How you foresee a better management scenario with respect to EFLs in Wayanad?

- 1.
- 2.
- 3.
- 4.
- 5.....

## APPENDIX V

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### SORTING AND RATING FORM

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- Task 1: **Sorting the 45 outcome statements into groups and recording the results.**
- Task 2: **Rating the importance of each statement as it relates to EFLs with particular reference to Wayanad district, Kerala.**

**Instructions for sorting the statement cards:** The list of statements is enclosed here. Each statement has an ID number. **Group the statements into stacks in a way that makes sense to you**, following the guidelines.

- ❖ Group the statements for how **similar in meaning** they are to one another. (Do not group the statements according to how important they are etc.)
- ❖ There is no right or wrong way to group the statements. You will probably find that you could group the statements in several sensible ways. Choose the arrangement that feels best to you.
- ❖ You cannot put one statement into two stacks at the same time. Each statement must be put into only one stack.
- ❖ We recommend not less than 5 stacks.

**Recording the results:** Record the results of your sorting in sort recording sheet as described below.

- ❖ Pick up any one of your stacks of statements. It does not matter what order the stacks are recorded in.
- ❖ Quickly scan the statements in this stack, and write down a short phrase or title that describes the contents of the stack on the line provided after **stack title** or **main idea** in the first available box on the sort recording sheet.
- ❖ In the space provided under the stack name, write the statement ID number of each card in that stack. Separate the numbers with commas. When you finish with the stack, put it aside so you don't mistakenly record it twice.
- ❖ Move on to your next stack and repeat the three actions above, recording the statement numbers in the next available box on the Sort Recording Sheet. Continue in this way until all your stacks have been named and recorded.
- ❖ Please write legibly and clearly.

**SORT THE FOLLOWING STATEMENTS/ IDEAS IN A WAY THAT MAKES  
SENSE TO YOU**

1. Ecologically fragile area due to the historical importance and livelihood sustaining values.
  2. EFL status out of a legal framework.
  3. A fragile landscape having physical continuance to reserved forests or vested forests.
  4. Wildlife corridors/sacred groves.
  5. EFL status due to political reasons.
  6. Fair compensation for EFLs irrespective of area of holdings.
  7. Awareness programmes among public regarding importance of EFLs.
  8. Green taxation for mass tourism activities adjoining to notified EFL areas.
  9. Trim down inequality stuck between districts in EFL declaration.
  10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee.
  11. Return notified lands back to farmers when it lacks physical continuity to natural forests.
  12. A private holding having reserved forest status.
  13. Budgetary provision for compensation to EFLs.
  14. Expert committee for validating scientific backup of EFL status.
  15. Habitat of rare and endangered species of flora and fauna.
  16. Fair justice to farmers irrespective of the size of their holdings.
  17. Declaration of EFLs in trust of public.
  18. Representation of local self government institutions in EFL committees.
  19. Measures for vesting extensive unexploited private lands sustaining natural vegetation.
  20. Intervention of NGOs and legal service authorities in resolving social tension.
  21. Central government should respond to legal sanctity of EFL legislation.
  22. Deteriorated private lands adjoining to reserved forest areas.
  23. A private holding with similar biodiversity richness as of a natural forest.
  24. EFL status since no taxes levied by revenue department.
  25. Proposed vested forests, involved in litigation regarding ownership of the land.
  26. A vital landscape sustaining ecological and climatic values.
  27. EFL status strictly due to technical reasons.
  28. EFL Act is a 'black law'.
  29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.
  30. Large scale farmers should get compensation for at least two hectares.
  31. Compensation should not be lower than base rate fixed by revenue department.
  32. Enforcement of the EFL Act.
  33. The fixed limit of two hectares land for re-evaluating the status of EFLs is not enough.
  34. Areas prone to natural disasters.
  35. Private land holdings surrounded by natural forests.
  36. Once the ecological value of an area is lost, very hard to restore.
  37. A significant locale in wetland conservation.
  38. An area having importance in relieving human pressure on forests.
  39. Effective and transparent functioning of dispute redressal committee.
  40. Legal assistance to small farmers and agricultural labourers.
  41. Steps by government for learning public dilemma associated with EFL notifications.
  42. Comprehensive rehabilitation package for small farmers and agricultural labourers.
  43. Awareness among public on importance of valuable species in the homesteads.
  44. Participatory move in conservation of ecologically fragile lands in Wayanad.
  45. Separate guidelines for effective management of EFLs by forest department.
-

## **SORT RECORDING SHEET**

Write legibly and clearly the stack title or main idea and record ID Number of statements in each stacks

<b>Stack title or main idea:</b> .....														
<u>Record ID Number of each statements in columns below.</u>														
														...etc.

<b>Stack title or main idea:</b> .....														
<u>Record ID Number of each statements in columns below.</u>														
														...etc.

<b>Stack title or main idea:</b> .....														
<u>Record ID Number of each statements in columns below.</u>														
														...etc.

<b>Stack title or main idea:</b> .....														
<u>Record ID Number of each statements in columns below.</u>														
														...etc.

<b>Stack title or main idea:</b> .....														
<u>Record ID Number of each statements in columns below.</u>														
														...etc.

## RATING OF THE STATEMENTS/IDEAS USING LIKERT TYPE SCALE

**Please record relative importance of the statements/ideas employing the scale below;**

**1:** Relatively Unimportant

**2:** Somewhat Important

**3:** Moderately Important

**4:** Very Important

**5:** Extremely Important

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|---|---------------------|
| 1. Ecologically fragile area due to the historical importance and livelihood sustaining values.   | (1) (2) (3) (4) (5) |
| 2. EFL status out of a legal framework.   | (1) (2) (3) (4) (5) |
| 3. A fragile landscape having physical continuance to reserved forests or vested forests.         | (1) (2) (3) (4) (5) |
| 4. Wildlife corridors/sacred groves.  | (1) (2) (3) (4) (5) |
| 5. EFL status due to political reasons.   | (1) (2) (3) (4) (5) |
| 6. Fair compensation for EFLs irrespective of area of holdings.                                   | (1) (2) (3) (4) (5) |
| 7. Awareness programmes among public regarding importance of EFLs.                                | (1) (2) (3) (4) (5) |
| 8. Green taxation for mass tourism activities adjoining to notified EFLs.                         | (1) (2) (3) (4) (5) |
| 9. Trim down inequality stuck between districts in EFL declaration.                               | (1) (2) (3) (4) (5) |
| 10. Detailed guidelines regarding the parameters to be considered by dispute redressal committee. | (1) (2) (3) (4) (5) |
| 11. Return notified lands back to farmers when it lacks physical continuity to natural forests.   | (1) (2) (3) (4) (5) |
| 12. A private holding having reserved forest status.  | (1) (2) (3) (4) (5) |
| 13. Budgetary provision for compensation to EFLs.   | (1) (2) (3) (4) (5) |
| 14. Expert committee for validating scientific backup of EFL status.                              | (1) (2) (3) (4) (5) |
| 15. Habitat of rare and endangered species of flora and fauna.                                    | (1) (2) (3) (4) (5) |
| 16. Fair justice to farmers irrespective of the size of their holdings.                           | (1) (2) (3) (4) (5) |
| 17. Declaration of EFLs in trust of public.   | (1) (2) (3) (4) (5) |
| 18. Representation of local self government institutions in EFL committees.                       | (1) (2) (3) (4) (5) |
| 19. Measures for vesting extensive unexploited private lands sustaining natural vegetation.       | (1) (2) (3) (4) (5) |
| 20. Intervention of NGOs and legal service authorities in resolving social tension.               | (1) (2) (3) (4) (5) |
| 21. Central government should respond to legal sanctity of EFL legislation.                       | (1) (2) (3) (4) (5) |
| 22. Deteriorated private lands adjoining to reserved forest areas.                                | (1) (2) (3) (4) (5) |
| 23. A private holding with similar biodiversity richness as of a natural forest.                  | (1) (2) (3) (4) (5) |
| 24. EFL status since no taxes levied by revenue department.                                       | (1) (2) (3) (4) (5) |
| 25. Proposed vested forests, involved in litigation regarding ownership of the land.              | (1) (2) (3) (4) (5) |
| 26. A vital landscape sustaining ecological and climatic values.                                  | (1) (2) (3) (4) (5) |
| 27. EFL status strictly due to technical reasons.   | (1) (2) (3) (4) (5) |
| 28. EFL Act is a 'black law'.   | (1) (2) (3) (4) (5) |
| 29. Centrally sponsored scheme for acquiring private lands with sufficient compensation.          | (1) (2) (3) (4) (5) |
| 30. Large farmers should get compensation for at least two hectares.                              | (1) (2) (3) (4) (5) |
| 31. Compensation should not be lower than base rate fixed by revenue department.                  | (1) (2) (3) (4) (5) |
| 32. Enforcement of the EFL Act.   | (1) (2) (3) (4) (5) |
| 33. The fixed limit of two hectares land for re-evaluating the status of EFLs is not enough.      | (1) (2) (3) (4) (5) |
| 34. Areas prone to natural disasters.   | (1) (2) (3) (4) (5) |
| 35. Private land holdings surrounded by natural forests.  | (1) (2) (3) (4) (5) |
| 36. Once the ecological value of an area is lost, very hard to restore.                           | (1) (2) (3) (4) (5) |

37. A significant locale in wetland conservation.	(1) (2) (3) (4) (5)
38. An area having importance in relieving human pressure on forests.	(1) (2) (3) (4) (5)
39. Effective and transparent functioning of dispute redressal committee.	(1) (2) (3) (4) (5)
40. Legal assistance to small farmers and agricultural labourers.	(1) (2) (3) (4) (5)
41. Steps by government for learning public dilemma associated with EFL notifications.	(1) (2) (3) (4) (5)
42. Comprehensive rehabilitation package for small farmers and agricultural labourers.	(1) (2) (3) (4) (5)
43. Awareness among public on importance of valuable species in the homesteads.	(1) (2) (3) (4) (5)
44. Participatory move in conservation of ecologically fragile lands in Wayanad.	(1) (2) (3) (4) (5)
45. Separate guidelines for effective management of EFLs by forest department	(1) (2) (3) (4) (5)

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