AGROBIODIVERSITY CONSERVATION:

EXAMINING COMPLEMENTARITY OF TRADITIONAL AND MODERN PRACTICES

Dissertation submitted to the University of Hyderabad in partial fulfillment of the requirements for the award of the degree of

MASTER OF PHILOSOPHY

REGIONAL STUDIES

SWATHI M. P.

CENTRE FOR REGIONAL STUDIES

SCHOOL OF SOCIAL SCIENCES
UNIVERSITY OF HYDERABAD
Gachibowli
Hyderabad – 500046

JUNE 2019

CENTRE FOR REGIONAL STUDIES
UNIVERSITY OF HYDERABAD

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Hyderabad
28 June 2019

Dr. Arvind S Susarla
(Supervisor)
Centre for Regional Studies

HEAD
Centre for Regional Studies

DEAN
School of Social Sciences

CENTRE FOR REGIONAL STUDIES
UNIVERSITY OF HYDERABAD

DECLARATION

I, SWATHI M. P. (Reg. No. 17SRHL02), hereby declare that this dissertation titled "Agrobiodiversity Conservation: Examining Complementarity of Traditional and Modern Practices" submitted by me under the guidance and supervision of Dr. Arvind S. Susarla is a bonafide research work which is also free from plagiarism. I also declare that it has not been submitted previously in part or in full to this or any other University or Institution for the award of any degree or diploma. I hereby agree that my thesis can be deposited in Shodganga/INFLIBNET.

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To My Grand Mothers Madhavi and Kausu

From whom I inherited the Art of Survival

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Abstract

As the title "Conserving Agrobiodiversity: Examining Complementarity of Traditional and Modern Practices" suggests, this work is an enquiry into the nature of interaction between modern and traditional practices in *in situ* agrobiodiversity conservation. This thesis also unravels the role played by legislations, institutions, and NGOs in *in situ* agrobiodiversity conservation and in the development of a place. Erosion of crop diversity is happening across the world in an alarming rate. There are attempts at various levels committed to combat the loss of agrobiodiversity. International treaties are providing guidelines and support to Nation States, and mandated to ratify legislations at the national level. Communities are cultivating and preserving agrobiodiversity at the grassroot level. This work is looking at the interface of both these efforts and how complementary are these efforts for conserving agrobiodiversity. Wayanad is selected as the site of enquiry, since it's a place rich with biological diversity and also the pioneer district which implemented Biodiversity Act, 2002 (BDA) and formed Biodiversity Management Committees (BMCs) at the local self-governing bodies. Wayanad is also a site of intervention of NGOs (Non-Governmental Organizations), such as Thanal and M S Swaminathan Research Foundation (MSSRF), few farmers' organizations, and farmers-initiated primary producer marketing companies.

A number of methods were employed to gather data, including, semi-structured interviews and participant observation. Both, stratified sampling and snowball sampling were employed to select farmers for interviews. Group of respondents were constituted by farmers and people from NGOs. Data saturation was employed to determine the size of the sample. Audio recorded interviews were then transliterated into English. Content analysis was used to analyze the gathered data. This process of data gathering and preparing for analysis formed the raw data for further interpretation.

The located conservation efforts constitute Wayanad as a backdrop. Wayanad and its people are constituted and reconstituted as a place and people for *in situ* conservation effort. MSSRF, an NGO constitutes Wayanad as a bounded place as a backdrop of their conservation effort. They support the modern Intellectual Property Rights (IPRs) like Geographical Indicators which reinforce the boundedness of place as a part of their located conservation effort. Another NGO named Thanal, invoke Wayanad as a place with porous boundary as a part of their conservation effort. Understanding of place has influenced all the activities of the NGOs. This let Thanal to acknowledge a large and expanding group of stakeholders, while MSSRF identified few communities as stakeholders of agrobiodiversity. IPRs such as Geographical Indicators also reinforced the imaginary of Wayanad as a bounded place. Market linkage was facilitated by both the agents and it made the boundaries more porous. IPRs also contributed to the same by enabling market for traditional crop varieties.

Complementarity of modern and traditional practices facilitated agrobiodiversity conservation in Wayanad. Usage of Indigenous and Modern Knowledge systems by the farmers are in complementary with each other. Farm machineries are employed to cultivate traditional paddy varieties, along with the traditional practices associated with indigenous knowledge systems. Formation of BMCs facilitated the landscape level management in favour of agriculture. New communities are formed by farmers and this provides new spaces to exchange seeds and knowledge among farmers. Informal communities are formed in associations with modern institutions like BMCs, Producer-

marketing company, NGOs which act complementary to the traditionally existing community structure which conserved the agrobiodiversity of Wayanad till date.

CONTENTS

List of Tables **Page No.**

List of Pictures

Page No.

Abbreviations

BDA	Biodiversity Act,2002
BMC	Biodiversity Management Committee
CaBC	Community Agro Biodiversity Centre
CBD	Convention for Biological Diversity
FAO	Food and Agriculture Organisation
FTAK	Fair Trade Alliance of Kerala
IK	Indigenous Knowledge
IPR	Intellectual Property Rights
KJKS	Kerala Jaiva Karshaka Samithy
KSBSAP	Kerala State Biodiversity Strategy and Action Plan
MNREGA	Mahatma Gandhi National Rural Employment Act
MSSRF	M S Swaminathan Research Foundation
NBA	National Biodiversity Authority
NGO	Non-Governmental Organisation
PBR	People's Biodiversity Register
PPVFRA	Protection of Plant Varieties and Farmers Rights Act, 2001
SBB	State Biodiversity Board
SRI	System of Rice Intensification
SSN	Seed Savers Network

TK	Traditional Knowledge
TRIPS	Trade Related Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants
WaMP	Wayanad Agri Marketing Producers Company
WHNFA	Wayanad Holistic and Natural Farmers Association

Chapter 1

Deepening Conundrum of Agrobiodiversity Conservation

Agriculture fields are much more than site of food production. It needs to be understood as an ecosystem that can offer various services apart from food. Agriculture fields offer a number of ecosystem services, and those can be categorised as Provisional services (food, timber), Regulatory services (Climate stabilisation), Supporting services (Pollination), and Cultural services (Aesthetic and recreational assets) (Kreman&Ostfield, 2005). Currently the world is witnessing a shift to ecological agriculture, where emphasis is given to minimisation of agriculture waste, pollution, conservation of soil, water and wild flora and fauna. Maintenance of resource base of the agriculture is important in ecological agriculture, since efforts are directed towards the reduction of reliance on external inputs (Sherr and Mc Neely, 2008). Shennan also shares similar view on ecological agriculture, which aims at reducing negative impacts from biotic interactions at the same time by encouraging positive inputs from it. Greater reliance on manoeuvring of biotic interaction is contrast to replacing those with external energy and agro-chemicals (Shennan, 2008). Importance given to the field level diversity was not only limited to crops, insectary plants, hedge crops and wind breaks found their space in the field. (Shenan et al, 2004 as cited in Shennan, 2008). Agro-ecosystem diversification has to be a priority in agricultural development due to greater stability and reduced risk it can assure to the resource poor farmers (Conway, 1998 as cited in Shennan, 2008). Diversity and stability are closely linked with each other. Diversity will help to reduce the soil erosion, efficient nutrient cycle and also ensure community stability (Shennan, 2008). Proper management of agro-ecosystem is crucial to handle landscape level resources. Land, soil and vegetation management plays important role in managing hydrological cycle (de Vries et al, 2003). The management strategies to control pest and conserve resources go hand in hand. The holistic approach of management makes the system stable, and will tend to reduce the reliance on external inputs like fertilisers and fossil fuels.

Ecological agriculture is the culmination of learning about the ecosystem services provided by agriculture landscapes. This offers us a new way to look at *in situ*

agrobiodiversity conservation, where the key aspect of conservation is not to conserve crops diversity, but also to ensure ecosystem services. Conservation of agrobiodiversity is justified by the ecosystem services offered by traditional landscape anchoring traditional varieties. A study carried out in Tamil Nadu and Pondicherry categorised ecological agriculture as a system of agriculture different from traditional and conventional agriculture. One among the major difference this study drawn between traditional farming and ecological farming is the better market access of the latter against the subsistence nature of the former (Van der Werf and Jager,, 1992). A compilation on ecological agriculture in India raised a different opinion. It has been observed that, organic agriculture, natural farming and bio-dynamic farming are working on the principle of ecological farming. These farming practices are adopted often as a response to agrarian crisis, environmental degradation and health problems. This compilation also attempts to take out ecological farming from the realm of traditional farming. Compatibility with scientific management is identified as a marker, which distinguishes ecological farming from traditional farming (Kavitha, 2015). Green Peace celebrates the example of village Kedia of Jamui district of Bihar for taking of ecological farming. It was the site of intervention as part of their 'Bihar Living Soils' programme. In Kedia, huge reduction in the cost of production is observed. The cost of production is dipped up to 60% (Green peace, 2018). Other NGOs (Non-Governemntal Organisations) are also active in popularising ecological agriculture in India. Navadanya, an organization standing for seed conservation and seed sovereignty claim that they conducted trainings on agroecology (Navadanya, n.d). There are anecdote of farmer turning into ecological farming and how it was helpful in circulation. One among elucidates how MYRADA, an NGO is facilitated adoption of ecological agriculture and how farmers are drawn towards ecological agriculture. This context is one of the reasons behind the adoption of ecological agriculture was the concern about good environment (LEISA INDIA, n.d). These cases show the growing interest on ecological agriculture in India, where the concern of the activity revolve around quality of environment, soil and better price for produce.

A study carried out by Sebastian and Azeez gave an account of locally adapted traditional paddy cultivation practices adopted across Kerala, including Kaipad of Kannur

and Kasargod districts, Kole fields of Thrissur and Ponnani, Pokkali fields of Eranakulam and Kuttnandu. This study highlighted the importance of paddy fields in the environmental and ecological regime of Kerala. They are pertinent for preserving rich diversity of flora and fauna and also in the conservation of ground water (Sebastian and Azeez, 2014). Rain falling in the upper ranges of Kerala is estimated to end up in Arabian Sea within twenty four hours. Here rice paddies serve as a depository by enhancing the ground water recharge and it is very important for a state like Kerala, which is heavily depended on ground water (Shaji, 2011, Shaji et al, 2009 as cited in Sebastian and Azeez, 2014). Apart from the important ecosystem services offered, huge diversity of flora and fauna are reported from rice paddies across Kerala. Jayson and Sivaperuman reported 182 species of birds belonging to 47 families from Kole wetlands of Thrissur district (Jayson, 2002; Sivaperuman and Jayson, 2010 as cited in Sebastian and Azeez, 2014). Narayanan et al reported 225 species of birds belonging to 59 families from Kuttanadu paddy fields (Narayanan et al, 2011 as cited in Sebastian and Azeez, 2014). One forty nine species of plants belonging to 26 families are reported from the paddy fields of Kerala. This further added on the importance of conserving wetland paddies.

Paddy cultivation has been going through a phase of decline in Kerala from 1980s. Diminishing returns, conversion of paddy fields for other crops, land as a speculative asset given the less geographical area of Kerala, scarcity of labour, detachment of new generation, unpredictable climate and development projects are cited as reasons behind the steady decline of land under paddy cultivation in Kerala (Sebastian and Azeez, 2014). Conversion of paddy fields resulted in an overall ecological degradation from hilltop to riverside of the watershed. Reduced humus formation and intense soil erosion exhausted soil fertility. Water percolation is hindered by the speedy surface runoff, and as a result of it the perennial streams originating from the upper ranges of the watershed began to subside (Gopikuttan and Kurup, 2004). Among the districts of Kerala, the rate of conversion of wetland was high in Wayanad, where a large chunk of paddy fields have been converted into banana gardens. The district witnessed a severe drought in the year of 2004. Excessive usage of agrochemicals, large-scale sand mining from the rivers and decline in monsoon were identified as the causal factors of the drought. Ground water depletion is high in Wayanad due to over exploitation the ground

water (Gopakumar, 2011 as cited in Sebastian and Azeez, 2014). An irrecoverable loss of agrobiodiversity is discovered by comparing the biodiversity existing in rice paddies and in those converted for other purposes (Sebastian and Azeez, 2014). These studies bring attention to biodiversity harboured by wetlands, and ecosystem services provided by this managed ecosystem gave a reason to cultivate traditional crops in the wetland paddies. The importance of conserving paddy fields in Kerala is a necessity, considering that the state has largest proportion of land under wetlands among Indian states (Azeez and Raj, 2009) which further strengthen the need of conserving this important landscape for the wellbeing of society.

Agrobiodiversity conservation earned importance in the context of accelerated erosion of on-farm diversity. Loss of agrobiodiversity and various dimensions of it have been well explored by scholars. Dietary changes are widely used to measure the loss of agrobiodiversity. Change in food habits associated with globalization had an impact on the agrobiodiversity of developing countries. Globalization created a situation where the dietary diversity became broadened by including the energy-dense foods. (Kearney, 2010; Pingali, 2007 as cited in Khoury et al, 2014). The diversification of diet happened as a result of the spread of certain crops across the globe, this diversification happened at the cost of diversity of cultivars. This trend of homogenization poses a threat to the geographically restricted food plants (Khoury et al., 2014). This enhancement of dietary diversity no ways helped the conservation of agrobiodiversity; rather it is linked to the homogenization of food supply globally. According to Khoury et al, human diet across the world has become strikingly homogenous over last fifty years. It resulted in cultivation of few major crops over the regionally and locally important varieties (Ibid). FAO and Biodiversity International gave an account of the number of identified food crops and their skewed utilization. According to this accounts, 7000 species of plants were used for food from the origin of agriculture. Out of that, the major food source had diminished into 12 crop and 5 animal species, which provide three- quarter of the world food (FAO 1997; Biodiversity International 2014 as cited in De Wit, 2016).

Understanding the seriousness of agrobiodiversity loss, various conservation strategies are adopted to tackle hasty loss of agrobiodiversity. Agrobiodiversity

conservation is considered as an important mission, which needs to be accomplished considering the accelerated erosion of agrobiodiversity, and the ecosystem services forgone. In this context Indian Government came up with two important legislations, Protection of Plant Varieties and Farmer's Right Act, 2001 (PPVFRA) and Biodiversity Act, 2002 (BDA). PPVFRA (2001) ensures the farmers' right over the crop varieties developed by them. BDA (2002) was framed in order to conserve biodiversity. It mandates the presence of biodiversity board in the state level, and biodiversity management committees at the village level. Kerala was the pioneer state which formed biodiversity board by the year of 2006. It also formed biodiversity management committee in every panchayaths. The efforts of farming community is relevant, when we consider the potential of ecological agriculture in ensuring the ecosystem services from agriculture field to a managed ecosystem. Here conservation of agrobiodiversity *in situ* became more than conserving diversity of crops in the field and it became an intriguing case to enquire, because it is no more solely about the conservation of crop varieties, rather it grew into understanding landscape, role of people and modern practices in the conservation.

To understand the role played by legislations, institutions, and NGOs in *in situ* agrobiodiversity conservation and in the development of a place. And also to identify the prevailing conservation practices is crucial to fulfil this enquiry. The following research questions are posed for the same.

i. What are farmers' perceptions on cultivating traditional varieties and in contributing towards *in situ* conservation?
ii. Which conservation practices have been introduced since the passage of legislations- PPVFRA, 2001and BDA, 2002?
iii. How farmers are engaging with BMC at the panchayath level and respond to the measures instituted by new institutions?
iv. How farmers' engage among themselves to conserve agrobiodiversity?

1.1 Literature Review

There is a growing body of literature from diverse disciplines on agrobiodiversity conservation. Literatures surveyed document diverse conservation strategies along with their drawbacks. Furthermore, the literature provided insights on how *ex situ* and *in situ* conservation are complementary to each other, and how *in situ* conservation allows to overcome shortfalls of *ex situ* conservation measures. In other words, conservation interventions bring about interplay of power, knowledge, governance, and capital. Discussions in the literature also refer to indigenous knowledge (IK) and seed systems as a part of traditional conservation practices, especially highlighting a coercive relationship between IK and developmental approach. A dichotomous understanding of *in situ* conservation strategy is envisaged- the parallel co-existence of traditional and modern practices. I realised a need to problematise these categories occurring at the field. In line with the coercive relationship between IK and developmental approach, the epistemological merit assumed by the development agents challenges understanding of *in situ* conservation as a participatory one. The essentialisation of local knowledge as a part of the site of conservation contributes towards the creation of a bounded place. The power imbalance between actors and playing out in the construction of knowledge is found to have significance at site of conservation. While a detailed review of literature is undertaken in the chapters 2 and 3.

Often, modern institutions and practices are pitched as a threat to conservation of agrobiodiversity. For example, Guntara Aistara is describing the role of market and regulation of European Union in the erosion of agrobiodiversity in Latvia (Aistara, 2011). Inspired by such findings, my enquiry is at a site where, both traditional conservation measures and modern institutional measures mandated by the legislations, namely, BDA,2002 and PPVFRA,2001, are operating. Such study sites offer an opportunity to introspect on the thesis that markets and regulations are powerful forces that replace traditional agrobiodiversity measures (as observed for Lativia).

1.2 Site Description

Wayanad is rich in its diverse flora and fauna. This district is home to 49% of the flora in the state of Kerala and 10% of flora in India, and high degree of endemism is observed in Wayanad. Out of 596 endemic taxa reported from Wayanad, 15 are exclusive to the district (Narayanan, 2009). Another study reported 2100 flowering plants from Wayanad, 52 species out of that are red date species (Kumar and Prajeesh, n.d, 2016). Similar to this Wayanad had a huge diversity of crop plants. As per a study carried out by M S Swaminathan Research Foundation, 650 medicinal plants, 343 wild food species, 140 vegetables and 14 traditional rice varieties are present in Wayanad (MSSRF, n.d). Rice and millet varieties made the staple food of Wayanad. Millets such as *Muthari* (finger millet), *Chama* (Little millet), *Thina* (Italian millet) were the widely cultivated in Wayanad (MSSRF, n.d).

A report issued by the State Biodiversity Board (SBB) stated that, there occurred a loss of 160 rice varieties, 12 varieties of pepper and 13 types of banana (Government of Kerala, 2011 as cited in Suma, 2014). There decline in agrobiodiversity is brought into discussion by few other studies as well. Rice cultivation in Wayanad dropped in the last few decades. Drastic reduction in the area under cultivation is observed. Area under cultivation of paddy dropped by 37.34% in 2009-10 area compared with the area under cultivation of paddy during1960-61 (Karunakaran, 2013). The reduction in area under cultivation of paddy happened in relation to the increased spread of cash crops. Besides the change in preference of crops, there are other factors plays in the reduction of area under cultivation of rice. Change in land ownership is also a reason for the reduction of paddy cultivation. Land fragmentation and decrease in the availability of workforce as a result of shifting of traditional farming communities from joint families and joint ownership had their role in decline of area under paddy cultivation (Resilience in Transformation-A study into the capacity for resilience in indigenous communities in Wayanad, 2013). In case of a single crop, modern and traditional varieties shares a competitive interaction i.e., the expansion of area under modern varieties will lead to the drop in area under cultivation of traditional varieties (Rice seed systems in Wayanad,

2013). Choice of cash crops and tedious nature of cultivation of paddy accelerated the fall in area under paddy (Kumar et al, 2010).

There are studies that illustrated the drop in cultivation of traditional varieties. A slump in the diversity of paddy varieties under cultivation is noticed. By the year of 2012, a vast diversity of traditional varieties went out of use. Varieties like *Chempathi, Palthondi, Marathondi,* and *Thonnooramthondi* are found to be out of use (Rice seed systems in Wayanad, 2013). State government intervened to safeguard agrobiodiversity. Government introduced a scheme to support the cultivation of scented rice varieties through Padasekhara Samithy (Paddy growing farmers association of a paddy collective) (Ibid).

The reference about how traditional communities changed and how it affected the agrobiodiversity brought the role of community in conservation as a part of the discussion about agrobiodiversity conservation. Wayanad is the home for more than 12 ethnicities. Kurichya, Kuruma, Adiya, Paniya and Kattunaikka are the five major tribal groups in Wayanad (A report on agriculture export zone: prospects of Wayanad district, n.d). Two among these major tribal communities are cultivators. These communities were engaged in shifting cultivation and they took up settled cultivation lately (Nair, 1911). Other communities those settled in Wayanad at different junctures of history are also actively engaged in farming. These communities got settled down at Wayanad at different junctures of history. Jain farmers migrated to Wayanad from Karnataka (Panikker, 1900). Nair soldiers were appointed as landlords and chieftains by the Kottayam dynasty (Nair, 1911). Grow more food campaign resulted in huge migration of people into Wayanad (Prasad, 2003). Down the time line, Kurichya and Kuruma communities of Wayanad were awarded with the Second Plant Genome Saviour Community Recognition and Award during 2009–2010 (Kumar et al, 2015). It is evident that a number of communities are involved in agriculture in Wayanad and there are efforts happening to combat the ongoing agrobiodiversity.

Traditional Knowledge (TK) found to be important in cultivating traditional crop varieties. TK of Kurichya community is identified as one dealing with the natural resources around them (Suma, 2014). Studies also acknowledge the knowledge and expertise of Kurichyas on agriculture and biodiversity (Vedavalli& Anilkumar, 1998).

Some studies also unwind the deep connection between Kurichyas and the landscape. Kurichyas managed to classify paddy fields based of the elevation of soil type, which is found to have a great role in the selection of appropriate crops (Girijan et al, 2004). Usage of TK and cultivation of traditional varieties are getting limited owing to the erratic rainfall and water scarcity (Kunze, 2016). Here cultivation of traditional crop varieties by drawing from the existing knowledge system became difficult with the changes happened. Wayanad, inhabitants of this place, crops they grow and the associated knowledge system are so far understood as a place ideal to carry out a conservation effort.

1.3 Methods of Data Collection and Analysis

Having discussed the context which made this study important, what is the objective of the study, and why is it relevant to enquire about this in Wayanad, it is also important to discuss how these research questions are addressed in this work. Much of the body of literature is drawing on experiences in North American, European, Latin American, Sub-Saharan African and other countries. Other examples cited are from South- East Asian countries and from the terrains of Himalayas. Very few studies are addressing the contemporary agrobiodiversity conservation of Wayanad. I therefore chose to rely on direct personal experience as a starting point of this research and hearken back to literature as and when needed. Modern institutions along with the expansion of market and free trade treaties are often viewed as threats to the conservation of agrobiodiversity. This view essentially locate agrobiodiversity as a component of traditional way of life or as an essential part of cultural heritage. My enquiry is at the interfaces of the traditional conservation measures and modern institutions mandated by the legislations. As noted in chapter 3, there are a vast number of legislations which in turn seem to affect or facilitate *in situ* conservation. However, this research will examine the legislations directly address the agrobiodiversity conservation. To better understand impact of these two legislations on the agrobiodiversity conservation of Wayanad, below I have detailed the past and continuing practices of conserving agrobiodiversity.

1.3.1 Understanding Diversity and Region

The term diversity and region have considerately been discussed in the literature. However, my Master's thesis titled "Traditional Knowledge and Intellectual Property

Rights in Conservation of Traditional Crop Varieties: A Case Study of Wayanad" helped me to have basic understanding about agrobiodiversity and how new intellectual property regime and traditional knowledge served as tools in the conservation of agrobiodiversity. This research work led me to reconsider the way I see diversity and regions. As a Master's student of Environmental Studies I understood place as a bounded entity. Later on owing to the training I received from Centre for Regional Studies, fashioned me to understand better perceptions on place. Similarly, a few of my interlocutors including farmers turned into activists and Mr. Lineesh, Project officer at the Agrobiodiversity Centre of Thanal, alerted me to the role of intellectual property rights in conservation and property right regime in dividing the farming community and subsequently weakens efforts to conserve agrobiodiversity. Further they strongly suggested viewing Wayanad as a part of Nilgiri Biosphere Reserve. A few farmers brought my attention the need of understanding the practice of exchanging seeds, and in particular observe how seeds from the plains were carried to Wayanad by migrants at different historical junctures. Wayanad therefore being field of my enquiry is, not understood or taken into consideration as bounded with administrative boundaries. Inflows and outflows of people and seeds are viewed crucial to the traditional practices, which harboured the crop varieties for years.

1.3.2 Note on Field Work and Interview Questions

This research is to understand the role of farmers, including their motives, in carrying out *in-situ* conservation, and how farmers are engaging with new institutions that are working towards conserving agrobiodiversity. A number of methods were applied for data gathering, which includes: participant observation and qualitative interview to obtain first hand data from the field. Qualitative interview and participant observation are employed to obtain first hand data from the field. Fieldwork was conducted in three phases. The first phase of fieldwork was carried out in November to December, 2017. This is the harvest season of paddy in Wayanad.

Primary step for entering into the field was to contact the individuals working with NGOs which are working towards the conservation of agrobiodiversity. Ms. Suma Vishnudas working with M S Swaminathan Foundation as social scientists was one of the interlocutor, and she also facilitated attending farmers meetings held in the campus of

their organization. Attending these meetings helped me to build rapport with the farmers. The meetings also helped me to befriend many, who became my interlocutors with the farming community. I was mostly an observer in those meetings, as it was on pertinent issues at the same time the group let me as a participant when they thought I can also contribute like suggesting a name and tag line for their weekly market. The number of participants was very less in the meetings organised by Wayanad Agri-producers Company in the campus of M S Swaminathan Research Foundation. So it was not feasible to stick with the interlocutors I had met and befriended at the farmers gatherings. At this point Ms. Suma shared contact list of farmers and the ones who decided to form a producer marketing company. This helped me to get information about the crops and crop varieties cultivated along with their contact details. Mr. Lineesh, project co-coordinator with the Agro-biodiversity Centre of Thanal at Panavalli, also helped me to contact few farmers. I also interviewed Mr. Pratheesh, a staff in Elements, an organic marketing firm. He is working along with a farmers' collective to export organic products. From all the contacts I obtained from Pratheesh, Lineesh, Suma and also from the farmers contact list of MSSRF, I chose to meet and have dialogues with farmers engaged in the paddy cultivation, since that is the major food crop of this region. And also because of the role of wetland paddies in rendering ecosystem services as an important managed ecosystem. I narrowed my focused on farmers who cultivate traditional varieties of paddy, but it also paid attention towards crops like tuber and pepper given that they are important traditional crops and constitute important component of home garden in Kerala.

While I didn't stick on the list I obtained from MSSRF or to farmers associating with Thanal, I employed snowball sampling method to interview other farmers, those who are the relatives and allies of the farmers whom I identified from the list. To avoid skewed sampling, by sticking into the list provided by MSSRF, I identified few prominent farmers (from the fellow farmers account about them) and independent farmers associations (those farmers association which are not backed by any NGOs) as well. The member directory of Wayanad Holistic and Natural Farmers Association is also used to identify the respondents. Prominent farmers who are leading the conservation efforts and also associated with organizations like *Kerala Jaiva Karshaka Samithy (KJKS)* served as a bridge to contact a number of farmers. Mr. M J Manuel from Edavaka

Panchayat, a member in the Biodiversity Management Committee and KJKS, assisted me to identify/ connect with numerous farmers. Participating in the meetings, markets and seed fests and spending time with farmers helped me to build credibility. Familiarity was no great issue as I did my master's thesis also on agrobiodiversity conservation of Wayanad. Farmers turn-up for the meetings and seed festivals are regularly done by the people. It was no huge task to befriend them, as many of them knew me and my identity as someone from the district made them feel connected with me. Many of them knew my school, my parents, my classmates gaining familiarity became easy this manner.

Combination of stratified sampling and snowball sampling ensured the representation of farmers from different communities in the respondents. In other words these methods of sampling helped to ensure that the sample represent the heterogeneous nature of farming community engaged in conservation effort in Wayanad. The months chosen for fieldwork cover both the harvest and the sowing seasons. Couldn't observe much on the sowing and associated rituals since Wayanad witnessed heavy rainfall in the year, and affected the agriculture activities.

Table-1

List of respondents from Farming Community

Sl.No	Category of Respondent	Number of Respodents
1	Kuruma	10
2	Kurichya	7
3	Christian	10
4	Muslim	7
5	Hindu	8
6	Paniya	1
	Total	43

Apart from the participation in farmers meetings and interviews with farmers, I also attended seed festival organized by MSSRF with the support from Kerala State Biodiversity Board, Kudumbasree Mission and District Panchayath. The Seed fest is usually held for three days, from 23rd to 25th February, on the campus of MSSRF, every year before the beginning of agriculture season and soon after the harvest of the paddy. Participation in the Seed fest helped me to have an idea about the nature of intervention

of MSSRF in the field, and how MSSRF is PPVFRA and BDA for the conservation of agrobiodiversity, and also how this NGOS is drawing governmental support. Seed fest also helped me to build rapport with farmers, acquaint myself with their idea of biodiversity, identify specific farmers who are participating in the seed fest, and also to understand how farmers are selected or invited to be a part of seed fest.

Like Seed fest, a weekly vegetable market was launched by the producer company. WAMP (Wayanad Agri Marketing Producers Company), which is backed by MSSRF. The idea of forming producer company came from MSSRF to gradually withdraw from the support extend to farmers to market their produce. MSSRF will be freed from facilitating market once the company start working in full swing. I attended the first weekly market held in January, 2017.

Semi-structured interviews with farmers, NGO employees conducted to collect details about the nature of farming and how these practices safeguarded crop diversity in field. Questions were framed to get details of the cultivars, cultivation practices, and farmer's participation in farmers' organizations, NGOs and BMCs. It is formed to get the nature of their farming, whether its subsistence or commercial farming, and also get details about their markets and marketing strategies. Answers to questions on market and marketing channels revealed another wide network of market that is facilitating agrobiodiversity conservation in Wayanad by drawing consumers in distant cities like Chennai. Forty seven people were interviewed including four people working with NGOs and facilitators of farmers organisations, and I also observed farmers meeting, weekly market, and seed fest.

The second phase of fieldwork was in June, 2018. June is the month of sowing paddy in Wayanad. Observed shortfalls of the first phase of field work urged me to go for another field work. The lack of details of how the traditional crop varieties were conserved conventionally and also about the vacuum on the intervention of BMCs made me consider a second round of field work. This time I not only contacted a number of farmers that I interviewed previously in the first phase of field work, but increased the number of respondents. The third phase of episode of fieldwork was taken up as Fair Trade Alliance of Kerala held their eight annual seed fest in Sulthans' Bathery on 28th

January, 2019. This seed fest, unlike the one organised by MSSRF, is not focusing only on the conservation of agrobiodiversity of Wayanad, but is looking into the hilly tracts of Wayanad, Kozhikode, Kannur and Malapuram districts of Kerala and this made participating in this particular seed fests became important. The seed fest is assisting in constitutes a new landscape for cultivation and conservation, that is not going by the given jurisdictionary boundaries. And it is facilitating spatial imaginary of agricultural region constituted by the farmers and their decisions to come together and constituting a fair trade organisation.

These interviews helped to gain an insight about the agricultural heritage, claims made by different group of farmers, and most importantly on the efforts to conserve traditional crop varieties in the field. The sample size is determined by taking data saturation as a measure. The data was looked for having comprehensive narrative for the research questions posed. Once the field work is wrapped up as the data was sufficient enough to address research questions. All interviews were audio recorded with the consent of the respondent and transcribed. Transcription is carried out in one step. I directly transcribed the interviews in Malayalam to English, and it was a tedious process. A few phrases we used in the interview, whose literal translation into English doesn't capture the essence of what is available when the meaning of phrases are more accounted in the cultural context of Wayanad. Apart from being an observer in the markets, farmers meetings and seed fests and interviewing the farmers, I also gained an understanding of farmers' attitude towards agrobiodiversity through the books they have authored on the subject. So far I have described the methods used for the data gathering and how it was carried out. Analysis of the data will be discussed as follows.

1.3.3 Data Analysis

Data is analysed by using the method-content analysis. Interview transcripts are tagged with codes that were identified, which were further clustered and aligned as major themes and sub-themes. This method is useful derive the message from the transcript by get away with the subjectivity of the researcher to a great extend. Sociological constructs were employed over *in vivo* codes. Codes were formulated by the researches rather than deriving from the literal terms used by the respondents. They are developed inductively

by coding few transcripts and later using those codes to categorise the contents in the entire transcripts. New codes were formed when it was needed while coding the entire transcript. Themes are considered for assigning codes in this work.

Coding helped to trace the frequency of certain responses from the transcript (Berg, 1995). And it was also useful in identifying objectives of the message systematically and objectively (Holsti, 1968 as cited in Berg, 1995). After coding the entire transcript the codes were clustered. In this study, a number of major themes emerged as a result of clustering of themes. Resource, land, governmental agencies, climate change, preference to traditional varieties, organic and zero budget farming, indigenous knowledge, traditional practices, mechanisation, festivals and rituals associated with farming, communities in conservation, memory, market channel and producer companies, migration and bringing seeds into Wayanad, and moral economy are few of the major themes emerged. As mentioned earlier, the codes employed here are sociological construct and it is manifested in the themes emerged out of the codes.

1.3.4 Limitations and Challenges of Data Gathering

Wayanad and Kerala as a whole witnessed intense rainfall during the 2018 monsoon season, which coincided with the time of my second phase of fieldwork. There was hardly any agriculture activity that was underway, since most of the farmers couldn't prepare paddy seedling in nursery for transplantation. Apart from the seed fest held by MSSRF and FTAK I couldn't attend the seed festival organised by BMCs of Thirunelli and Edavaka. Apart from my respondents from Kuruma community, most of my respondents are men. Most of the directories carry the name of man even though the entire family is actively engaged in farming. At the same time, it cannot be said that using directories led to the gender skewed sampling since, very few female farmers are referred even in snowball sampling. Additions to that many women actively engaged in farming tend to not claim themselves are farmers. This tendency is similar to what Kunze observed in her work (Kunze, 2017), that female from agriculture families don't see themselves as farmers. At the same time women in the family actively engaged in the dialogue in few households and their knowledge about crop varieties and Relying on the registers reproduced the gender skewed nature in my work as well.

A few of my elderly respondents hardly cared for the questions I asked them, they were keen to tell me about the stories they cherish about past and food sovereignty. Apart from I haven't come across any sort of non-cooperation of farmers. Some respondents very briefly as they felt what is there to talk about cultivating paddy in a small plot for subsistence needs. Even though this research is problematising the exclusive nature of identifying stakeholders, none among the respondents are agriculture labourers except one person I had a conversation during the seed festival.

1.4 Findings and Conclusions of the Research

This study concludes that the BMCs primarily organize/promote seed festivals, and conduct landscape level management; however, is not playing direct role *in situ* conservation of biodiversity. Farmers on the other hand are forming SHGs and producer companies to ensure a decent earning and sense of belongingness. Notably, landless labourers are excluded as stakeholders of agrobiodiversity by all organisations; be it MSSRF, FTAK or BMC. The transition has brought many changes such as creation of new platforms for farmers, occasion to gather and most importantly a new market. These also contributed to the agrobiodiversity conservation and brought in many new stakeholders as well. But, exclusionary nature of previously existed practices translated into the new spaces and practices as well, whereas the impact of this change is not in the scope of this study.

Wayanad and its people are constituted and reconstituted as a place and people for *in situ* conservation effort. The interest of this constitution being the *in situ* conservation of agrobiodiversity it ignored the contribution of a vast population of Adivasi and non-Adivasi communities of Wayanad who sweat in the paddy fields for generations. The exclusion of labour communities in the creation of an organisation named after Adivasis are not doing justice to the use of the umbrella. When a NGO is organising certain section of Adivasis (Landowning cultivators here) for agrobiodiversity conservation, it is not similar or cannot be compared with the indigeneity assertion of Campesinos in Andes. Asserting indigeneity has political connotation when Campesinos are doing it in Andes, and is not confined to any particular arena. More than it, this organisation is relying on the modern idea of property rights to recruit members of the organisation.

The constitution of Wayanad for the conservation effort is giving a flawed picture of farming by illustrating it as peasantry by not mentioning about the presence or role of agriculture labourers. Place and people for conservation are constituted by academia and NGOs actively involved in conservation efforts in Wayanad. They are creating a Wayanad, which can serve as the best backdrop of their conservation intervention. Wayanad and its people are not seriously looked at as a part of conservation of agrobiodiversity. This led to ignoring the labourer communities. At the same time, the NGOs and other actors involved constitute Wayanad as place which is different from what they portray in their publications. Wayanad is a place with porous boundaries and it is not a place up in the hill which holds diversity of livelihood. *In situ* agrobiodiversity conservation efforts are constituting and reconstituting place

Intellectual Property Rights and market tools are successfully complemented with the cultivation of traditional crop varieties. Farmers have sharp criticism about the registration of crop varieties as farmers' variety by a group of farmer and the GI tag of two scented rice varieties are not the ones dismissing opportunities opened by market, and IPR. Farmers' engagement with IK and traditional practices cannot be seen as romanticism with the past. They are forming farmers companies and using IPRs like brand name to get better price for their product by eliminating the middleman. Fair trade is also helping the farmers to get a price they deserve by organically cultivating crops and by this harbouring an agrobiodiversity. Here without glorifying past or looking at modern practice with scepticism, farmers are mastering both traditional and modern practices for profitable cultivation of traditional crop varieties. The complementarities they found between modern and traditional practices is opening a new possibility in the *in situ* conservation of agrobiodiversity, where a farmer is not making a trade off by choosing traditional crop variety and the collective efforts of farmers are likely to place them in a position to command the price for their organically grown produce.

1.5 Chapter Outline

The second chapter is an attempt to introduce the terminologies and the ongoing debates on *in situ* conservation of agrobiodiversity. Traditional and modern has to be dealt, while attempting to understand the agrobiodiversity conservation with a special

reference to the *in situ* agrobiodiversity conservation. A diversity of conservation strategies are employed to conserve agrobiodiversity, and those can be widely categorised under two broad categories *ex situ* and *in situ* conservation. *In situ* conservation is praised as the conservation measure which can be complementary to the *ex situ* conservation effort as it free from many drawbacks of *ex situ* conservation. *In situ* is a dynamic conservation effort as it is rooted in the field. It is seen as a continuity of traditional practices to conserve agrobiodiversity, or *in situ* agrobiodiversity conservation is seen as a part of traditional way of living. The dichotomous understanding of traditional and modern, Indigenous Knowledge (IK) and Western Scientific Knowledge is crucial in shaping the *in situ* conservation efforts. This chapter will discuss about the tensions in *in situ* agrobiodiversity conservation and how it constitutes place as this work is trying to understand place in relation to conservation of agrobiodiversity.

Third chapter is a discussion on national legislations dealing with conservation of biodiversity and agrobiodiversity. To understand the context of enactment of several legislations dealing with biodiversity conservation, it is indispensable to trace the changes happened in International arena on conservation. How sovereignty over resources, benefit sharing, prior informed consent and usage of intellectual property rights are introduced to the realm of biodiversity and how those are shaping conservation in Indian context with special reference to Wayanad, and in accordance to that how modern tools and practices are interacting with traditional practices in the field will be discussed in this chapter. Legislations, conventions and treaties as such and the available scholarly works on those are reviewed to as a first hand idea of the legislations. The ongoing academic discussions deal with the merits and demerits of the legislations in detail are brought in to this chapter to have a deeper understanding of the international treaties, conventions and national legislations. Modern tool and practices are backed by the legislations as a measure to conserve agrobiodiversity, this chapter will throw light into the manner in which modern practices and tools are introduced into the field and how they are acting in the field.

Fourth chapter draws a map of the erosion of agrobiodiversity happened by introducing the present varieties which have made the way to the fields. A small number of farmers cultivate the traditional varieties; I discuss on the factors that shape the

selection of traditional varieties over the modern varieties, and to an extent to this knowledge and practices the stories on agrobiodiversity are not far removed from the cultural ethos that may be associated with them. Changes in the social structure and its impact on the conservation of agrobiodiversity are also elucidated in this chapter. Memories are important in the context of agrobiodiversity conservation in Wayanad. They anchor diverse crop varieties which are currently out of cultivation. It is more than a record of loss; rather it is something actively engaged in the everyday decision making and farm level management. In other words, memories are shaping the conservation priorities and cultivation strategies. Several crops and their varieties are currently out of cultivation in Wayanad, and at present memories of elders are the only ground they are rooted in. The intertwined narratives of past is important to understand the factors that affect the loss of agrobiodiversity, and the pace at which it occurred.

Fifth chapter deals with agrobiodiversity conservation beyond as an on farm activity, since farming community is keen to learn knew practices which will add on to their efforts of field level agrobiodiversity conservation. As discussed in the third chapter there were efforts to frame the nation's legislations in accordance with the changes happening in the international. The introduction of new legislations happened as a result of India's obligation made to a number of international agreements in which India is a signatory. In this context, CBD is an important international convention which reshaped the legal understanding of biodiversity as a resource to be conserved in India. Numerous NGOs also picked up this changing momentum and designed their conservation interventions in accordance with the changes brought in the legal sphere. Consequently several new actors found their way into Wayanad in this changing context. These new actors include the state institutions formed as mandated by the new laws and acts, NGOs, trade organisations and farmer's organisations.

The sixth chapter discusses about how meanings and values are constituted and re-constituted for agrobiodiversity in the field, by drawing from various knowledge systems. The existing value and meaning of traditional crop varieties that are developed as a result of long time engagement with those varieties are pivotal in the conservation. New meanings are added later, with the entry of new stakeholders, NGOs, legislations,

and institutions. These actors and their interplay also developed Wayanad as a place apart from their contribution in the conservation of agrobiodiversity. And this chapter discusses and concludes on the role played by legislations, institutions, and NGOs in *in situ* agrobiodiversity conservation and in the development of a place.

Chapter 2

Agrobiodiversity Conservation: Locating the interface between Traditional and Modern Practices

Traditional and Modern has to be dealt with while attempting to understand the agrobiodiversity conservation with a special reference to the *in situ* agrobiodiversity conservation. A diversity of conservation strategies are employed to conserve agrobiodiversity, and those can be widely categorised under two broad categories *ex situ* and *in situ* conservation. *In situ* conservation is praised as the measure that can be complementary to the *ex situ* conservation effort as it is free from many drawbacks of the latter. *In situ* is a dynamic conservation effort as it is rooted in the field. It is seen as a continuity of traditional practices to conserve agrobiodiversity, or *in situ* agrobiodiversity conservation is seen as a part of traditional way of living. The dichotomous understanding of traditional and modern, Indigenous Knowledge (IK) and Western Scientific Knowledge is crucial in shaping the *in situ* conservation efforts. This chapter will discuss about the tensions in *in situ* agrobiodiversity conservation and how it constitutes place as this work is trying to understand place in relation to conservation of agrobiodiversity.

2.1 Understanding Agrobiodiversity

In a work dealing with *in situ* conservation of agrobiodiversity, conceptualising the term agrobiodiversity is important. Various scholars from different disciplines understood and conceptualised agrobiodiversity in different ways. Agrobiodiversity is understood as a biological term to denote the variety and variability of life forms that are part of agriculture and support the food requirement (Qualset et al,1995 as cited in Jackson et al, 2007). There are other scholars who also share similar views. According to Wit, agrobiodiversity comprises of biological diversity and the knowledge associated with the living organisms (De Wit, 2016). The major difference between the account of Qualset et al and that of Wit is the way the latter considered the role of humans in creating and conserving agrobiodiversity. Wit considers the engagement of humans and agrobiodiversity, and the knowledge created from that engagement as components of agrobiodiversity. Identifying knowledge as an essential part of agrobiodiversity is a

gesture of taking the role of human's in constitution and conservation of agrobiodiversity into account. Wit's conceptualisation of agrobiodiversity opened up new manner of understanding agrobiodiversity beyond something 'exists' and also urged to understand it by taking its creation and sustenance into account. His account draws attention to the use of passive language to understand and conceptualise agrobiodiversity and also emphasised the need for acknowledging agrobiodiversity beyond its mere existence as biological diversity.

The role of farmers is taken into consideration to classify agrobiodiversity as well. The crops and livestock selected by the farmer fall under the category of planned biodiversity, and soil microbes, fauna, and weeds will fall into the category of associated agrobiodiversity (Vandermeer and Perfecto, 1995 as cited in Jackson et al, 2007). This way of understanding and classifying agrobiodiversity is considering the active role played by farmer in the creation of agrobiodiversity and it is also looking into the existing diversity beyond the diversity of crops and livestock in the field.

In this work, agrobiodiversity is not understood as biological diversity 'exist' out there in the field and it draws from Wit's understanding of agrobiodiversity. In this work, agrobiodiversity is conceptualised as the biological diversity that is created and conserved along with the knowledge system associated with it. After clarifying how agrobiodiversity is initially conceptualised in this work, it is important to illustrate the importance or immediacy associated with the conservation of agrobiodiversity.

2.2 Dietary Habits and Decline of Agrobiodiversity

Loss of agrobiodiversity and its different facets have been well explored by various scholars. Much of these efforts were directed towards pointing out the alarming loss of agrobiodiversity with the help of available statistics and information. The dietary changes are widely used as a measure of loss of agrobiodiversity. The change in food habits associated with globalisation had an impact on the agrobiodiversity of developing countries. Globalisation created a situation where the dietary diversity became broadened by including energy-dense foods. (Kearney, 2010; Pingali , 2007 as cited in Khoury et al, 2014). This enhancement of dietary diversity no ways helped the conservation of

agrobiodiversity; rather it is linked to the homogenisation of food supply at a global level. The diversification of diet happened as a result of the spread of certain crops across the globe, this diversification happened at the cost of diversity of cultivars. This trend of homogenisation poses a threat to the geographically restricted food plants (Khoury et al., 2014). The human diet across the world has become markedly homogenous over the last fifty years. It resulted in the cultivation of few major crops over the regionally and locally important varieties (Ibid). Food and Agriculture Organisation and Biodiversity International gave an account of the number of identified food crops and their skewed utilisation. According to their accounts, 7,000 species of plants were used for food since the origin of agriculture. Out of these, the major food source had shrunk into just 12 crops and 5 animal species which provide three-quarter of the global diet (FAO 1997; Biodiversity International 2014 as cited in De Wit, 2016). Besides looking into the loss of agrobiodiversity from dietary diversity, it is also important to have a glance at the loss of agrobiodiversity.

2.3 Understanding Different Dimension of Agrobiodiversity Loss

Production of cereals doubled in the past forty years, and this escalation of cereal production happened as a result of the cultivation of improved crop varieties with inputs like fertilizer, pesticides and more water (Runge and Runge, 2010 as cited in Hellin et al, 2010). The substitution of landraces with scientifically bred varieties dramatically increased food production. And here arises a fear that genetic diversity contained in landraces may be lost forever, in a process known as crop genetic erosion (Harlan 1975 as cited in Hellin et al, 2010). Modern varieties have had a role in genetic erosion. Among all the agricultural innovations, introduction and spread of modern "miracle" varieties had a considerable role in the erosion of a wide variety of domesticated species of crop and livestock used traditionally by farming communities (Kothari, 1992). The spread of modern varieties at times went into a gross level, where any genetic diversity is left untouched. A research station of Indian Agriculture Research Institute was shut down since there is no native diversity of germplasm left untouched and this point finger at the gloomy state of affairs of genetic erosion.

The spread of modern varieties and abandonment of traditional varieties cannot be seen as the impact of the spread of agricultural innovations alone. There are other factors that also had a role in the erosion of genetic diversity. Loss of diversity cannot be understood or reduced to the loss of diversity at the food table or in the farmer's holdings. Agrobiodiversity has to be understood in the broader backdrop of landscape and social-economic system. The transition of the mosaic rural landscape into a monotonous one triggered by mechanisation and chemical farming (Thrupp, 2000) had an impact in the loss of agrobiodiversity. Land fragmentation along with climate change, replacement of traditional crops with high-yielding cash crops and other factors also had a role in the loss of agrobiodiversity (Ibid). These changes happened in the landscape level is not an impact of innovations in the field of agriculture alone. To bring it in the right manner, technology or innovations did not shape landscape and diversity as a single agent. Farm-level decision making, and the economic underpinnings of decision making has to be taken into consideration, in the enquiry about the conservation of agrobiodiversity.

Agency of the individual farmer is crucial in the decision to cultivate modern varieties. The meso-economic environment is considered as a determining factor in the farm level decision making (Pascul&Perring, 2007). The spread of High yielding varieties and the decentralized decision making of farmers acted complementary to each other in the accelerated loss of agrobiodiversity in the landscape level. All the above-cited works cautioned about the swift erosion of agrobiodiversity by pointing out various dimension of agrobiodiversity loss, which substantiate the need of intervention in conservation in order to conserve agrobiodiversity. Few of the works brought the perilous side of agrobiodiversity loss, the irreversibility of loss of agrobiodiversity. These works bring about the complex location of agrobiodiversity and substantiates the need for a conservation measure by elucidating the complexity and dynamics of different systems to which agrobiodiversity are linked to.

2.4 Drawing Parallels between Ecosystem Services and Ecological Agriculture

A vast area of land, namely 30 per cent of the global land area available, is under cultivation of Agriculture and planted pasture and another 10-20 per cent land is under

extensive grassing (Scherr and Mc Neely 2008). This dominance of human activity over large stretch of land itself implies the need of managing the ecological balance. The allocation of area under protected zones alone cannot help to stabilise the ecosystems in an extensive mosaic landscape. Here arises the importance of managing the man made ecosystems to ensure ecosystem services from those. Agricultural fields offer a number of ecosystem services, those are provisional services (food, timber), Regulatory services (Climate stabilisation), Supporting services (Pollination), and Cultural services (Aesthetic and recreational assets). Food and fibre are the provisional services derived from the agro-ecosystem and it was historically given with great priority over other ecosystem services (Kermen, Ostfeld, 2005). This priority coupled with increased demand for provisional services, which is a result of the growth of population-created deterioration of the quality of agro-ecosystems as well as adjoining ecosystems. Improper management of agro-ecosystem is not only a threat to the stability of that particular ecosystem but it will also affect wild species and watershed which the agriculture field is a part of. To make agriculture more sustainable and environmental friendly by deriving benefit from the available interactions in the field level became an urgency of our time.

There happened a divorce of agricultural ecology by controlling ecological factors internally and also with external control (Robertson and Swinton, 2005). Green revolution had a simplistic approach to increase the yield at the field level, and it created unidentified environmental cost associated with the effort (Conway, 1997, Cassman et al 2005 as cited in Shenan, 2008). For example, the application of fertilisers and crop protection chemicals to obtain better yield from High Yielding Varieties resulted in leakage of chemicals from fields to adjoining ecosystems, and this had deadly impacts in the ecosystem into which the chemicals are leached out. A dead zone is developed in Gulf of Mexico as a result of the excessive use of agro-chemicals (Scherr and Mc Neely, 2008). There are instances where the drop in the prioritised service itself was a result of decline in agrobiodiversity. The decline in yield in the intense mono-cropped regions like Punjab, US Mid-west and Mekong Delta (Rosegrant & Cline, 2003) illustrates the relationship between on-farm biodiversity and stabilised output from the field. These evidences of damaged ecosystems associated with conventional crop cultivation raised the need for a new approach in farming.

Maintaining a healthy ecosystem emerged as a solution to the multitude of issues that emerged out of poor agro-ecosystems. Emphasis is given to the minimisation of agriculture waste and pollution and conservation of soil, water and wild flora and fauna. Maintenance of resource base of the agriculture is important in ecological agriculture since the efforts are directed towards the reduction on reliance on external inputs (Sherr and Mc Neely, 2008). Shennan also shares similar view about ecological agriculture that aims at reducing the negative impacts from the biotic interactions at the same time by encouraging the positive inputs from the biotic interactions (Shennan, 2008). Importance given to the field level diversity was not only limited to crop diversity. Insectary plants, hedge crops and wind breaks found their space in the field. (Shennan et al, 2004 as cited in Shennan, 2008). Agro-ecosystem diversification has to be a priority in agriculture development due to greater stability and reduced risk to the resource poor farmers (Conway, 1998 as cited in Shennan, 2008). Diversity and stability are closely associated with each other. It will help to reduce soil erosion, efficient nutrient cycle and ensuring community stability (Shennan, 2008). The management strategies to control the pest and conserve resources go hand in hand. The holistic approach of management makes the system stable and will tend to reduce the reliance on external inputs like fertilisers and fossil fuels.

There is a change in attitude towards the management of agro-ecosystems; this can be illustrated with the help of a handful of examples drawn from various part of the globe. *Systemic Rice Intensification* is an emerging method of rice cultivation and it aligns in line with ecological agriculture. This method of cultivation ensures high yield by managing the on farm resources and conditions rather than relying on increased external input application, where the planting geometry is modified in order to give the optimum growth condition to the crop and usage of manually operated cono-weeder (Sherr and Mc Neely, 2008). This is not limited to *Systemic Rice Intensification;* in a recent UN study, in-depth analysis of 15 organic farming examples in Africa have shown increases in per-hectare productivity for food crops, increased farmer incomes, environmental benefits, strengthened communities and enhanced human capital. Organic agriculture can increase agricultural productivity and can raise incomes with low-cost, locally available and appropriate technologies, without causing environmental damage

(UNEP and UNCTAD, 2008). An example of economic benefits of ecological farming is the success of the Non-Pesticide Management program is from Andhra Pradesh, where the costs of cultivation reduced and it led to increased net incomes for farmers. It is observed that, 600 and 6,000 Indian Rupees per hectare is saved without affecting yields (Ramanjaneyulu et al., 2009). From the studies discussed so far, the viability and profitability of ecological agriculture is evident. Whereas, the South-Asian attempts on ecological agriculture went beyond managing the resources to get the continued provisional service.

Paddy fields are one of the important agro-ecosystem in South and South-East Asia. Proper management of agro-ecosystem is crucial to manage landscape level resources. Land, soil and vegetation management plays significant role in managing the hydrological cycle (de Vries et al, 2003). In China, the damages caused by intense monoculture laid path to the measures to promote Integrated Farming Systems, that support the on-farm diversity which is viewed as a measure to stabilise the agro-ecosystem and to ensure sustainable yield over years by utilising the synergy of biotic relationship by reducing the use of external inputs (Wenhua and Qingwen, 1999). Japan and Korea took initiatives in similar lines to save the paddy field ecosystem for retaining the services they provide. In Korea Wetlands hold water during winter and ensure the water retention in soil and avoid chances for flood. The paddy field also supports a number of wild and threatened species of amphibians, fishes and birds. Fishway and pools were established in Korea in order to conserve the paddy field associated biodiversity. The internationally accepted principles of Ramsar Convention were also a reason behind this shift (Kim et al, 2011). Japan came up with a programme to ensure services like water purification, supporting fishes, birds and indigenous amphibians in the paddy field (Nathuhara, 2013). These efforts marked a trade off between provisional service and other ecosystem services. All these examples are testimonies of how agro-ecosystem as a managed ecosystem is much more than a place to grow food and what is its potential to provide various ecosystem services and how new ventures are taken up across the globe to ensure a continuity to the ecosystem services offered by agro-ecosystem.

Ecological agriculture is the culmination of learning about the ecosystem services provided by agriculture landscapes. This offers us a new way to look at *in situ* agrobiodiversity conservation, where the key aspect of conservation is not to conserve the crops diversity, but also to ensure the ecosystem services. Conservation of agrobiodiversity is justified by the ecosystem services offered by traditional landscape anchoring traditional varieties. A study carried out in Tamil Nadu and Pondicherry categorised ecological agriculture as a system of agriculture different from traditional and conventional agriculture. One among the major difference this study drawn between traditional farming and ecological farming is the better market access of the later against the subsistence nature of the former (Van der Werf and Jager, 1992). A compilation on ecological agriculture in India raised a different opinion. It observed that, organic agriculture, natural farming and bio-dynamic farming are working on the principle of ecological farming. These farming practices are adopted often as a response to agrarian crisis, environmental degradation and environment and health problems. This compilation also attempts to take out ecological farming from the realm of traditional farming. Compatibility with scientific management is identified as a marker, which distinguishes ecological farming from traditional farming (Kavitha, 2015). Green Peace celebrates the example of village Kedia of Jamui district of Bihar for taking of ecological farming. It was the site of intervention as a part of their 'Bihar Living Soils' programme. In Kedia, a huge reduction in the cost of production is observed. The cost of production is dipped up to 60% (Green peace, 2018). Other NGOs (Non-Governemntal Organisations) are also active in popularising ecological agriculture in India. Navadanya, an organization standing for seed conservation and seed sovereignty claim that they conducted trainings on agroecology (Navadanya, n.d). There are anecdote of farmer turning into ecological farming and how it was helpful in circulation. One among elucidates how MYRADA, an NGO is facilitated adoption of ecological agriculture and how farmers are drawn towards ecological agriculture. This context one of the reasons behind adoption of ecological agriculture was the concern about good environment (LEISA INDIA, n.d). These cases show the growing interest on ecological agriculture in India, where the concern of the activity revolve around quality of environment, soil and better price for produce.

A study carried out by Sebastian and Azeez gave an account of locally adapted traditional paddy cultivation practices adopted across Kerala, including Kaipad of Kannur and Kasargod districts, Kole fields of Thrissur and Ponnani, Pokkali fields of Eranakulam and Kuttnandu. This study highlighted the importance of Paddy fields in the environmental and ecological regime of Kerala. They are pertinent for preserving rich diversity of flora and fauna and also in the conservation of ground water (Sebastian and Azeez, 2014). Rain falling in the upper reaches of Kerala is estimated to end up in Arabian Sea within twenty four hours. Here Rice paddies serve as a depository by enhancing the ground water recharge and it is very important for a State like Kerala, which is heavily depended on ground water (Shaji, 2011, Shaji et al, 2009 as cited in Sebastian and Azeez, 2014). Apart from the important ecosystem services offered, huge diversity of flora and fauna are reported from rice paddies across Kerala. Jayson and Sivaperuman reported 182 bird species belonging to 47 families from Kole wetlands of Thrissur district (Jayson, 2002; Sivaperuman and Jayson, 2010 as cited in Sebastian and Azeez, 2014). Narayanan et al reported 225 bird species belonging to 59 families from Kuttanadu paddy fields (Narayanan et al, 2011 as cited in Sebastian and Azeez, 2014). One forty nine species of plants belonging to 26 families are reported from the paddy fields of Kerala. This further added on the importance of conserving wetland paddies.

Paddy cultivation has been going through a phase of decline in Kerala from 1980s. Diminishing returns, conversion of paddy fields for other crops, land as a speculative asset given the less geographical area of Kerala, scarcity of labour, detachment of new generation, unpredictable climate and development projects are cited as reasons behind the steady decline of land under paddy cultivation in Kerala (Sebastian and Azeez, 2014). Conversion of paddy fields resulted in an overall ecological degradation from hilltop to riverside of the watershed. Reduced humus formation and intense soil erosion exhausted soil fertility. Water percolation is hindered by the speedy surface runoff of, and as a result of it the perennial streams originating from the upper reaches of the watershed began to subside (Gopikuttan and Kurup, 2004). Among the districts of Kerala, the rate of conversion of wetland was high in Wayanad, where a large chunk of paddy fields have been converted into banana gardens. The district witnessed a severe drought in the year of 2004. Excessive usage of agrochemicals, large-scale sand

mining from the rivers and decline in monsoon were identified as the causal factors of the drought. Ground water depletion is high in Wayanad due to over exploitation the ground water (Gopakumar, 2011 as cited in Sebastian and Azeez, 2014). An irrecoverable loss of agrobiodiversity is discovered by comparing the biodiversity existing in rice paddies and in those converted for other purposes (Sebastian and Azeez, 2014). These studies bring attention to biodiversity harboured by wetlands, and ecosystem services provided by this managed ecosystem gave a reason to cultivate traditional crops in the wetland paddies. The importance of conserving paddy field in Kerala is a necessity, considering that the state has largest proportion of land under wetlands among Indian states (Azeez and Raj, 2009) which further strengthen the need of conserving this important landscape for the wellbeing of society. This empahasise the need for conserving wetland paddies as managed ecosystem to ensure the ecosystem service rendered by this managed ecosystem, as a response to the loss of agrobiodiversity, This add on the importance of agrobiodiversity more than diversity of life forms, rather as a part of an ecosystem that has to be conserved to ensure the vital ecosystem services that provide. As the importance of agrobiodiversity conservation is well stated, the next endeavour is to understand various conservation strategies adopted for conserving agrobiodiversity.

2.5 Diverse Strategies and One Goal: Conservation of Agrobiodiversity

The widely employed conservation strategies are broadly categorised under *ex situ* and *in situ* conservation. *In situ* and *ex situ* can be seen as complementary conservation strategies. *Ex situ* conservation is the collection and conservation of germplasm in gene banks around the world, and here seed banks are the 'back up' for endangered species. It is a protected store that can support crop improvement programs in the future (De Wit, 2015). Landraces and wild-relatives of major crops are collected from their native habitats, and the collected seeds or vegetative material are stored and preserved in gene banks (Frankel and Bennett 1970 as cited in Altieri and Merrick, 1987). *Ex situ* conservation played a vital role in crop improvement by supplementing germplasm (Frankel and Bennett 1970; Frankel and Hawkes 1975; Wilkes 1983 as cited Altieri and Merrick, 1987). This conservation strategy earned importance in the present world owing to political and economic reasons. In the post-liberalization world, networks connecting each node have been multiplied, and international governance gained

importance parallel to the expansion of markets, which also became significant in National governance (Plucknett et al 1983 as cited in Altieri and Merrick, 1987). Conservation efforts are planned and implemented at different scales. Few international initiatives are of utmost importance with regard to the conservation of agrobiodiversity. Loss of agrobiodiversity and associated crop vulnerabilities urged the international community to act on this issue. International Board for Plant Genetic Resources was formed to coordinate the network of gene banks globally. These genebanks were developed for supporting plant breeders with necessary genetic resources to develope varieties resistant to diseases, insect pests, poor soils and harsh weather to help the farmer to obtain high yield (Plucknett et al 1983 as cited in Altieri and Merrick, 1987). Despite its acceptance in the international conservation interventions and compatibility with present day's economic and political situation *ex situ* conservation has serious drawbacks as a conservation strategy, and it is not seen as the solution or strategy to conserve the natural sources of crop genetic resources (Oldfield 1984 as cited in Altieri and Merrick, 1987).

Isolation from the field or place of origin is pointed out as one of the shortfalls of *ex situ* conservation. After obtaining germplasm from the field, collections in gene banks are devoid of the diversity of resources (Soleri and Smith 1995 as cited in Hellin et al, 2010). *Ex situ* conservation effort is seen as locking up of seeds in the gene bank and it can't be employed to conserve the agrobiodiversity in its completeness due to the inadequate sampling associated with. Constraints of *ex situ* conservation are not associated with sampling stage alone, and are associated with the storage and grow out procedures as well. Apart from all these, minor crops and wild species with future value are treated with least importance in this conservation effort (Frankel and Bennett 1970; Frankel and Hawkes 1975; Frankel and Soule 1981; Prescott Allen and Prescott-Allen 1981, 1094; Wikes 1983 as cited in Altieri and Merrick, 1987). Evolutionary process is absent in this conservation strategy, and it prevented the evolution of new types or levels of resistance (Simmonds 1962 as cited in Altieri and Merrick, 1987). Apart from internal drawbacks associated with *ex situ* as a conservation strategy, there are political aspects those can also be highlighted as drawbacks of *ex situ* conservation strategies. Centralised *ex situ* conservation institutions facilitate infiltration of the industrial production systems.

And this in turn will erode agrobiodiversity (De Wit, 2016). Shortfalls of *ex situ* conservation strategy can be classified into two. One is the internal drawbacks it inherits as a scientific conservation strategy, like the constraints associated with different stages of *ex situ* conservation, namely, the collection, storage and growing out of collected germplasm at given intervals. At the same time, collection and other decision making need not be treated as immune to the existing power imbalance seated in political and economic system, for example how the crops are selected for preservation and how the decision about conservation are made in a very centralised manner. Drawbacks and complexities associated with decision making in *ex situ* conservation made *in situ* conservation as an alternative to conserve agrobiodiversity in par with the dynamics of the environment.

According to Brush, conservation of crop diversity on farms and in the systems that breed this diversity is termed as *in situ* conservation (Brush 1995 as cited in Hellin et al, 2010). *In situ* conservation is an effort to conserve traditional farming systems, safeguarding diversity. In conservation interventions, centre of diversity is selected as the place of intervention (Brush 2000; Maxted et al. 2002 as cited in Thomas et al, 2011). Since, conservation intervention happens in the field, farmers' participation is essential to the *in situ* conservation (Maxted et al., 2002; Cromwell and van Oosterhout, 2000; Brush, 1999 as cited in Love and Spanner, 2008). *In situ* conservation has been viewed with scepticism by considering economic benefits, which farmers forgo by selecting traditional varieties over modern varieties. It was thought that modern varieties will replace existing varieties as a part of the agriculture development. And monetary compensation is considered as an essential incentive for on-farm conservation (Brush, 1999 as cited in Love&Spanner, 2008). Since farmers are making a trade off in conservation of agrobiodiversity, it was concluded that farmers shouldn't be trusted for protection of this resource (Brush, 1991). *In situ* conservation is looked at considering potential damage it can bring to farmers. These suggestions stem from the notion that conservation of agrobiodiversity will push the farmers into poverty.

Millennium Ecosystem Assessment holds a different view on *in situ* conservation, instead of looking into the role of farmers in conservation agrobiodiversity;

it traced the importance of agrobiodiversity for farmers. Biodiversity is considered as one of the important coping mechanisms against uncertain future risk (MEA, 2005 as cited in Jackson et al, 2007). Conservation is considered as a part of coping mechanism for farmers cultivating in marginal environments. Farmers from marginal environments tend to manage extensive agrobiodiversity (Maxted et al., 2002; Wood and Lenne, 1997; Bellon, 1996 as cited in Love&Spanner, 2007). These accounts share another point of view that, the farmers are conserving the crops by cultivation for various reasons and *in situ* conservation need not lead them into a situation where they have to incur monetary loss by making that choice. Apart from the likely loss of profit incurred by the farmers, there are other criticisms raised against *in situ* conservation. One among that is the lack of any concrete framework for conservation intervention (Meng et al., 1998a; Brush, 1991 as cited in Love&Spanner, 2007). This characteristic pointed out as the drawback of *in situ* conservation is seen as its strength by some scholars. For the researchers who attempted to draw broad methodological outlines for *in situ* conservation, the flexibility of the projects is considered as the trait that keeps the intervention active in the specific circumstances of the field (Maxted et al., 2000). Considering conflicting arguments about the flexibility of the *in situ* conservation effort, generalising the mentioned shortfalls for all *in situ* conservation efforts may not hold true.

It has been observed that, a number of initiatives with incentives can help to surpass the disadvantages associated with *in situ* conservation (Love and Spanner, 2007). Most of the shortcomings associated with *in situ* conservation are not regarding its efficiency, rather about the cost that might be incurred by the farmer. The importance of incentives is emphasised often to save the farmers from the losing end. This point of view is problematic as it is alienating *in situ* conservation from the field or it is essentially associating *in situ* conservation as a part of an 'implemented' conservation effort. There are other works which see *in situ* conservation (on farm cultivation of traditional crop varieties) as an ongoing activity in the field. *In situ* conservation is *de facto* present in centres of origin (Qualset et al., 1997; Brush, 1991 as cited in Love and Spanner, 2007). The importance of centres of origin in *de facto* conservation brought 'place' into the locus of *in situ* conservation and enquiries made regarding *de facto* conservation uncovered the mutualistic connection between biological diversity and cultural diversity.

This connection is regarded as one of the seminal factors, which ensure sustainable human development (Negi et al., 2002 as cited in Nautiyal, 2008). Traditional knowledge as well as local culture developed hand in hand with local landraces. Landraces are passed through generations, as community heritage. The inheritance of landraces over generations is associated with the passing of traditions and uses that were associated with them (Negria, 2004). *In situ* conservation of agrobiodiversity is seen as a situated effort (Haraway 1991). To understand the importance and advantages of *in situ* as a conservation strategy, knowledge about traditional conservation, social system, and associated factors act in favour of the conservation effort has to be taken into consideration. *In situ* conservation is often not a conservation intervention, rather it is the ongoing cultivation practice which ensured the cultivation of traditional crop varieties in the field. Traditional Knowledge System and traditional practices constitute important components of *in situ* conservation of agrobiodiversity.

2.6 Conserving Agrobiodiversity in *in situ:* Role of Traditional Practices

Farmers developed crops that will support the self-reliant subsistence agriculture production by drawing from their knowledge accumulated through experiences. The crops which can produce sustained yield are selected by the farmer (Wilken 1987; Denevan 1995 as cited in Altieri, 2004). The role of traditional crops in ensuring sustained yield in traditional farming systems made farmers take a decision at holder's level, which favours traditional crop varieties. Traditional farming systems are linked with the conservation of a number of crop varieties (Vandermeer 2003 as cited in Altieri, 2004). Farmer's rationale and agency have a central role in agrobiodiversity conservation by cultivating traditional varieties, but it is not enough to give a complete portrayal of traditional farming, which *de facto* ensures the agrobiodiversity conservation. Seed exchange and the traditional knowledge, two of the important components in the traditional social setting enabled the on-farm cultivation and conservation of agrobiodiversity. Both these as components of traditional farming and their role and importance in ensuring *in situ* conservation of agrobiodiversity has to be described in detail to illustrate how traditional practices can harbour agrobiodiversity.

2.6.1 Seed Exchange Systems and Conservation of Agrobiodiversity

Farmers depend on seed exchange to obtain seeds i.e., usage of seeds is guiding seed exchange in many agrarian communities over the concerns of conservation. Conservation and use of seeds are interdependent (Pautasso et al, 2013). In understanding the interdependent nature of 'conservation' and 'use' in case of seed exchange, it is important to look into the prevalence and nature of seed exchange in the farming community to understand its potential in the conservation of agrobiodiversity. In most of the farming communities' seed requirement is met by informal seed supply systems, which include the exchange of varieties, barter, gift, and purchase. In developing countries, the local or informal seed systems are the major source of seeds for various crops. Badauste et al draw from various scholars' and claim that, even with modest understanding about the function of the seed system, various studies have accentuated about the importance of the seed system (Cormwell, 1990; Almekinders et.al.1994; Wierema et.al.1994;Sperling et. al. 1995; Friis-Hansen, 1999; Thiele, 1999; Almekinders & Lauwaars, 2000; Seboka & Deressa, 2000; Tripp, 2001) and there is an urgent need to understand them in greater detail (Seboka & Deressa, 2000 as cited in Badauste et al, 2006). The network of neighbours, kin, and friends help the farmer to replace poor quality seeds, to try new varieties, and also to manage pest and disease infestation (Subedi et al. 2003; Hodgkin et al. 2007; Poudel et al. 2015 as cited in De Wit, 2016). Local seed exchange also provides scope for maintaining agrobiodiversity against uniform seeds from formal or commercial seed system. The informal system lets farmers' access seeds and it contributes towards conservation of landraces in different agro-ecosystems around the globe (Pautasso et al, 2013). Seed exchange system has a pivotal role in conservation of agrobiodiversity, it is unavoidable to explore the complex nature of seed exchange system or seed exchange channel.

Seed exchange is an activity with different layers. Exchange of seeds is a bio-cultural activity and that cannot be reduced to any single dimension, be it biological or economical. Exchange of seeds emerged as an activity from a group of socially connected individuals. The exchange activity safeguards existence of both socio-systems and agro-ecosystems (Emperaire et al, 2008 as cited by Thomas et al, 2011). Emperaire observes

that the ‘‘seed flow is based on the collective ethos of solidarity and common good maintenance" (Emperaire et al. 2008 as cited in Thomas et al, 2011). Badauste et al came up with the economics associated with seed management, which is not in tune with the argument raised by Emperaire. Transaction cost associated with seed management is one of the fundamental factors shaping seed management in farming society. Lower transaction cost and seed availability through existing social relations are sufficient enough to avoid seed loss. Potential of collective action is enquired in the context of seed exchange system. Collective actions can bring about substantial benefits to improve this system (Badauste et al, 2006). Efforts to understand seed exchange in terms of seed flow other than the seed exchange network brought the temporal and spatial dynamics of seed flows into discussion.

Temporal and spatial seed flows emerged as a result of farmers efforts to obtain seeds. Seed flows are mediated by social relations and rules. Rules, relations and associated knowledge base compose the real seed systems, which are often referred to as local, informal or farmers' seed systems (Stromberg et al, 2010). Informal seed systems are organised on an *ad hoc* basis since the farmers renew their seeds in long temporal intervals. Seed systems were constructed over the existing social networks, which are not directly related to seed exchanges¸ like community labour sharing institutions. According to Badastue et al, the temporal nature of informal seed system made it difficult to create collective action as a part of informal seed systems (Badastue et al, 2006 as cited in Stromberg et al, 2010). Few researchers have disagreement with the view of Badastue et al, they argue that the scope of a collective action is yet to be explored apart from some interventions made in order to conserve the on-farm diversity, despite the fact that some of the interventions to conserve on-farm conservation like community seed banks, seed networks are partially based on the idea of collective action. (Lewis & Mulvany 1997; Feyissa 2000;Jarviset.al. 2000; Mazhar 2000 as cited Badauste et al, 2006). The observation of Bezabih about knowledge, experience, and biodiversity has a lot to convey when we look into the seed exchange through his point of view. Since knowledge and experience in managing biodiversity are also directly related to the level of diversity, it is implied that diversity is a determinant of participation (Bezabih, 2008). Participation is an important aspect of keeping the seed exchange system alive and active.

The social distance between the supplier and recipient have a determining role in shaping the nature and frequency of exchange. As the social distance increases, frequency purchase increases along with the decrease in frequency of gifts and inheritance. The networks are the first step to perceive and maintain agrobiodiversity in the struggle to conserve local varieties in the context of globalization (Serpolay et al. 2011 as cited in Pautasso et al, 2013). Realising the crucial role of seed exchange in conserving agrobiodiversity, it is employed as a part of *in situ* agrobiodiversity program. NGOs and grassroot organizations formed by farmers organize seed exchanges, which are planned and carried out for conserving agrobiodiversity (Hammer et al. 2003; Bardsley and Thomas 2004; Arndorfer et al. 2009; Thomas et al. 2012 as cited in Pautasso et al, 2012). At the same time, the scale of intervention also became an important aspect of the discussion. There is an opinion challenging the importance of seed exchange, where the scale of intervention is taken into consideration to illustrate the negligible impact it is likely to have on the conservation of agrobiodiversity. The scale of re-emergence of various seed networks is a serious concern and it may 'cancel out' against the effects of monoculture (De Wit, 2016). All the above accounts emphasise the importance of seed exchange network and how it is facilitating the farming community by providing an interface between natural and cultural systems.

Seed exchange systems are heterogeneous and functions differently in different places by ensuring access to the planting material as its major concern. The scale of phenomena or action like seed exchange and how it will stand against the changes happening as a part of globalisation and penetration of market and homogenization of the field has to be enquired. Besides seed exchange system, the knowledge held by the community has a pivotal role in the conservation of agrobiodiversity. Traditional/indigenous/local knowledge has to be explored owing to its importance in agrobiodiversity conservation like seed exchange.

2.6.2 Indigenous Knowledge and *In situ* Conservation

Scholars have diverse opinions about the IK on understanding it as an independent knowledge system, management and use of it as a knowledge system. It has been argued that "No separation of science, art, religion, philosophy or aesthetics exists in Indigenous thought; such categories do not exist" (Battiste and Henderson, 2000).

According to Winona LaDuke an indigenous environmental activist from Canada, "Traditional Ecological Knowledge (TEK) as a culturally and spiritually based way in which indigenous people relate to their ecosystems. This knowledge is constructed on spiritual-cultural directives from time immemorial and on generations of vigilant observation within an ecosystem." (LaDuke, 1995). The aboriginal way of looking at TEK doesn't see it as a body of knowledge alone, rather it is where the connections of this knowledge system in their everyday and how it is conserved by them and how it is grounded to their living in certain ecosystems are articulated by Friesen and LaDuke. There is a glaring difference between the aboriginal and non-aboriginal way of understanding IK. In the non-aboriginal way of understanding, IK is considered as a knowledge system that can be transferred and used outside the ecosystem of its origin (McGregor, 2005). IK has been seen as an alternative knowledge system which emanates from the interaction of human beings with nature, which can be generalized but the few features of it are tightly knitted to the ecosystem from which it emerged and it limits the possibility of generalization. This pinpoints the heterogeneous nature of IK and its importance. There are other accounts which brought in the furthermore diverse nature of IK and also explained how it is not homogenous even at the local level. Gender, class, age, occupation etc. influence the IK held by an individual (Scoones and Thomps, 1994). There are ongoing debates on IK that is parallel to the debate on conservation of agrobiodiversity. It is important to look beyond the construction of IK and also explore about the exchange of this knowledge across generations is also pertinent in the conservation of agrobiodiversity.

Ethnographic studies immensely contributed towards understanding the role of IK in the conservation of seeds and in elucidating how these are changes are taking place in line with globalization and penetration of market. Nazarea depicts the importance of memory in the conservation of knowledge and these both are significant in conserving agrobiodiversity. 'Remembering' is the means to know their crop for men and women in Cotacachi, Ecuador. In order to enhance and regenerate their crops they 'walk with their seeds', by exhibiting them along the way (Nazarea, 2006). McGregor also emphasise the importance of remembering and re-knowing. Remembering is the means of re-know and regain a part of life (McGregor, 2006). These arguments provide a context to think about

the conservation subjects and their relevance in the past or the traditional way of like and by doing so an essential connection is being established with IK, seeds and the past. Scholars like Vandana Shiva also highlighted the importance of skills and associated knowledge in conserving the seeds. The knowledge about germination and soil choice are essential with seed visual acumen, fine motor coordination, understanding of weather conditions for multiplying seeds (Shiva, 1992). A multi-sited ethnographic study carried out in Latvia and Costa Rica elucidates the impacts of globalization on traditional seed saving practices. In doing so, the work also illustrated the function of political, historical factors in shaping the traditional seed saving system and how it also aided in altering the social structure. European Union's directive on seed certification for organic production guideline made the farm-saved seeds of Latvian organic farmers as 'germinating grains', this undervalued expertise and knowledge of the organic farmers. In Costa Rica, seed exchanges constitute the farmers' identity, farming practices, and social relations. If the seed exchange stops, so will the protection and potential of the seeds' variety, due to the arrest of genetic integration. The processes of seed purification and harmonization of laws lead to genetic erosion along with the loss of distinct socio-cultural set-up which hosted the diversity of seeds (Aistara, 2011). Aistara's work illustrated how the dichotomous and hierarchical understanding of knowledge is playing out in these policies when farm saved seeds are termed as germinating grain. It is also reflected in the implementation of seed purification and harmonisation laws which are essentially taking the scientific knowledge into consideration. The dynamic interactions between the local people and their environment shall be given significance in any conservational efforts along with the IK.

Along with the institutionalisation of *in situ* conservation projects, conservation actors tend to acknowledge the role of traditional knowledge as an instrument for conserving agrobiodiversity. It is argued that local knowledge can bridge the "disconnect" between development/conservation and local realities (Sayer and Wells 2004; Scott 1998 as cited in Shepherd, 2010). Shepherd's take on local knowledge is in conflict with the argument that local knowledge can bridge the "disconnect". "The disconnect" between the programmatic intervention and the "local realities" cannot be rectified by the use of local knowledge. Local knowledge will re-constitute "the

disconnect" constructively, by connecting the disconnects in political sphere where agency is distributed over unequal power relations. The specific inequalities will be altered according to the value assigned to one's knowledge (Shepherd, 2010). This was earlier problematised by Arun Agrawal, by interrogating the claims and acts of development personals. The importance of IK is introduced by flagging certain criticism on western scientific knowledge but the same actors by their efforts tried to attribute the same values to IK. Their attempts to archive IK are in turn freezing the time and space against the dynamic changes happening in the societies hold that knowledge. They are emphasising the local nature of IK, but their acts are directed towards finding use for IK in some other place other than its place of origin. IK, which is seen as a step in making the development bottom-up eventually followed the very centralised development pattern even in their attempt to preserve IK (Agrawal, 1995). The role of IK in conservation intervention per se is one thing which needs to be closely examined.

So it is pertinent to enquire about the role assigned and played by IK in *in situ* conservation, how it finds a place in the implemented conservation efforts and to what extent the policies are considered IK and this work engage with these questions. After looking at how development and power relations are interacting with local knowledge or how these actors and or redefining the role of local knowledge in the conservation effort; the interplay of developmental approach and power inequalities in placing the local knowledge in the conservation effort act as a vantage point to think about how governance, power, knowledge are engaging with or shaping the *in situ* conservation effort.

2.7 *In situ* conservation: Governance, Capital, Power, Knowledge, and Constitution of Space

The role of traditional practices in the conservation of agrobiodiversity has been discussed previously in this chapter and here the focus will be on the facilitated conservation effort by attempting to bring the ongoing discussions and scholarly enquiries about governance, power, knowledge, development approach and how the interplay of these factors shaped and still shaping the *in situ* conservation effort and also in the selection or construction of site for *in situ* conservation. The interfaces of modern and traditional practices in *in situ* conservation and how they are constructing a

place or site of intervention will be discussed followingly. According to Brush, *in situ* conservation efforts fall into two categories, on farm conservation as a result of farmers' effort to conserve agrobiodiversity by following traditional farming practices and crops and the other one is the *in situ* conservation which is facilitated by the national and international conservation programs (Brush, 2000a as cited in Shepherd, 2010). *In situ* conservation approach tend to categorize the world conceptually into two, modern and pre-modern –or traditional and modern societies (Saad, 2009). There are others who shared similar views with Saad, (Gupta and Ferguson (1997), Braun (2002, 261 as cited in Saad, 2009) and they reflected on this discursive practice of branding communities and indigenous, as the conflation of local communities with nature. Even though the word indigenous doesn't convey a negative impression, it still subscribes to the binary logic of temporally divided societies, as some societies frozen in the past and others in the actual time. The binary approach is deeply engrained in the i*n situ* conservation, where the "traditional societies" are in the focus of intervention (Saad, 2009). The binary understanding is observed to be an active factor working in the *in situ* conservation efforts being carried out in South America, where a combination of values was found to be associated with the *in situ* conservation.

Various stakeholders involved in conservation have diverse set of values. Among those, the value of "tradition" and "local knowledge" varied culturally, economically, aesthetically and epistemologically. From the studies conducted in Peruvian Andes elucidate the varying values. This variation stems from the manner in which different actors assign meaning to "the Andean" and "the non-Andean" in line with the traditional/modern and non-Western/Western binaries (Shepherd,2010). From the accounts of Shepherd and Saad, it can be concluded that *in situ* conservation effort takes the division of society into consideration and it also tends to reinforce that division through conservation efforts. Shepherd saw the spatial coexistence of traditional/ modern and Non-Western/ Western society as parallel (Shepherd, 2010). This, in turn, is negating any possible exchanges or interaction between both and also negates the imaginary of a society which harbours both modernity and tradition at the same time. It is important to raise the question that how this knowledge systems are interacting with each other in *in situ* conservation efforts.

Governance in *in situ* conservation has to be understood in connection with knowledge, power and also with reference to its impact on place/ site of intervention. To understand *in situ* conservation as governance, scholars like Saad heavily draw from Scott and Michel Foucault. According to Scott, Modern governance depends on the expert knowledge about the nature of society (Scott 1998 as cited in Saad, 2009). And all knowledge is found to be depending on the identities and location of those who create it. Power is considered as the constructive force since the knowledge and discourses construct the realities as described by the power (Foucault, 1980 as cited in Saad, 2009). The ongoing conservation efforts and studies carried out about them support this argument. For example, in the Andean context the "geography of race" and education-based markers constructed an upper hand to the urban-mestizo(mainstream population of Latin speaking America) professionals over campesinos, who are the rural farmers. Campesinos, are degraded for inexpertise, indigeneity, and their occupation as farmers along with their rural residence (De la Cadena 2000; Weismantel 2001 as cited in Shepherd, 2010). Development actors presume epistemological merit, which stems from the factual and objective developmental discourse. This is reflected in the everyday implementation of projects, where knowledge relations are skewed in favour of the promoters who are the knowers. Campesinos, who are not knowers are placed inferior to the promoters (Shepherd 2004 as cited in Shepherd, 2010) despite the portrayal of, *in situ* conservation as an intervention where campesinos themselves identify the problems using participatory experiments. Experiments to evaluate the efficiency of traditional technologies were carried as a part of *in situ* interventions. In these experiments, agronomists control and manage the campesinos who are involved as "technical assistants". In these efforts, the conventional *ex situ* conservation practices get merged with the *in situ* conservation practices and sites (Shepherd, 2010). According to Saad, the regionalized conservation which is considered as complementary and superior with *ex situ* conservation share the same ideological underpinning as that of modern development initiatives like Green Revolution.

As previously discussed the on farm conservation allows the crops to evolve and adapt, unlike *ex situ* conservation measure (Saad,2009). This echoes what Agrawal pointed out earlier on the usage of IK in the field of development. Gathering and

documentation of IK like scientific knowledge archiving that in National and International archives again reproduce the centralised planning and development, to the opposite of that IK is projected as a means to bottom-up approach in development (Agrawal, 1995). It is also observed that the agents involved in the projects implemented for the conservation of agrobiodiversity didn't alter routine developmentalist schema while interacting with Campesinos (De la Candena, 2004 as cited in Shepherd, 2010). The developmentality created a conservation mentality which revolves around the discourse that defined the interests, needs, preference, and ignorance of campesinos from a position of professionalism (Shepherd, 2010). From the accounts of Saad and Shepherd, the role of power in validating knowledge and its influence in decision making is evident. Apart from that the location of the actors and how it is lending more importance to the knower over the one holds knowledge in the local context challenge the claims made over the *in situ* conservation interventions as participatory efforts. In line with this, it is important to look at how the local knowledge is understood and used in *in situ* conservation effort. Local knowledge became "essentialised," in the very similar fashion how the idea of cultural essence earned legitimacy as a way to represent it as visible and useful (Ibid). From a study carried out in Andes it is observed, that "the Andean" is the site which is the means through which identity, race, development, and as a later addition local knowledge are performed (De la Cadena 2000; Garcı´a 2005; Weismantel 2001 as cited in Shepherd, 2010). Local knowledge and indigenous culture were structured as vital components of *in situ* conservation. The pro-Andean actors managed to associate "the local" with "Andeanism", which made the "Andean" influential (Shepherd,2010). Local knowledge made as an essential part of broader Andean and assigned with wider application across the Andean. Along with the *in situ* conservation efforts, there was an effort to create and recreate "the Andean", this went beyond the construction of it as a geographic space but also as a bounded cultural space (Shepherd, 2010). Shepherd's view on the construction of Andean and how it acted upon the local knowledge illustrates how conservation efforts constitute place and assign meanings to it.

It is important to look into the constitution of place and how power and knowledge shape this process of assigning values and constructing a place. There are scholarly attempts made to unravel the constitution and reconstitution of territories and

societies and this throw light into the enquiry about how the interplay of knowledge and power constitutes it. Conservation reconstitutes the territories and societies as it is chosen to perceive. This reconstitution of bodies support and validate the knowledge and discourses that created them. It is argued that a conservation or restoration model is not a given reality rather a partial truth and one has to have the understanding of power/knowledge and the impact of this important discourse in conservation (Castree 2001; Braun 2002, 25-28; Katz 1998 as cited in Saad, 2009). Enquiries made elucidated how the "Andean" is constructed and how that essentialised the local knowledge and the conservation efforts acted behind in the construction of the "Andean" which followed the conventional developmental trajectory that produced the power imbalance between the participants and facilitators by assuming an epistemological superiority for the knower who is a facilitator in the conservation effort.

It is important to discuss the territorial nature of *in situ* conservation, a number of scholars emphasised the importance of territory in the conservation effort. This territory doesn't align with place constituted as a result of actors in conservation effort and it is considered as a given terrain. The implementation of biodiversity conservation programs stands by this argument. The biodiversity conservation programmes are implemented in conservation territories like biosphere reserve, extractive reserves, conservation reserves etc. (Zimmerer 2000, 358, as cited in Saad,2009), which are essentially given bounded territories. In case of *in situ* conservation activity, the site of conservation efforts is considered as a bounded one. *In situ* conservation activities usually spins around genetic reserves or "micro-centres of diversity", which are identified and established for conservation. Conservation thus strategically draws its jurisdictions and designates its subjects (Keleman and Hellin, 2009). In their work, Keleman and Hellen kept place as the focus of their enquiry about the maize diversity in Mexico. The evolution of maize in Mexico is closely knitted into the cultural traditions, farmers' knowledge, choices, and management practices (Brush and Chauvet 2004; Pressoir and Berthaud, 2004 as cited in Keleman and Hellin, 2009). Keleman and Hellen looked into the activities at a regional scale by considering the activities linked to the supply chain and spanning from rural producers to urban consumers through a value-addition process (Keleman and Hellin, 2009). They consider the region as a bounded entity and place also

gained importance in the context of *in situ* conservation. Departing from the governmentality and associated factors constituting a space or finding an already existing place for conservation intervention, Escobar made an attempt to look into the conservation interventions in a different fashion. He analyzed the historical shifts happened in the milieu of conservation in connection with capital (Escobar, 1996). He also observed the fashion in which changes happened and how the conservation efforts were imagined. The conservation efforts got reshaped by the influence of capital. Capital, which earlier devastated nature is currently showing an interest in conservation. Capital step into an “ecological” and conservation stage. This approach directed towards protecting nature by enclosing it for assuring continuity of economic growth (Ibid). The interest of capital in conservation is a sign of its entry to the "post-modern" phase, where it is trying to gain economic benefit from a broad range of biological materials. According to him the conservation effort has to be seen as a part of it. In the "postmodern phase of ecological capital", nature is considered as a "reservoir of capital", so every part of nature and the knowledge and cultural practice linked to it is considered as valuable and to be conserved (Katz 1998; McAfee 1999; Escobar 1996 as cited in Saad, 2009). In this context, the conservation has to be understood beyond the interest to protect the environment. In this process, capital transformed the place into "resource" and "reservoirs of value" and doing so it manages to inculcate new places into its domain (Escobar, 1996). This intrusion of capital changed the meanings assigned to nature and to people. He coined the term "symbolic conquest" to denote the discursive impact of capital on nature and culture (Ibid). Values and imaginaries associated with the place are reconstructed and this act as the beginning point of making a place of origin of diversity also as the place need to be conserved (Gregory 2001; Braun 2002; Saad 2008 as cited in Saad, 2009). After considering the accounts of Saad, Escobar and Shepherded it can be concluded that modern and traditional or Western and Non-western does not exist parallel in the field. They are interacting with each other in the *in situ* conservation and this interaction is pertinent in the constitution or reconstitution of place or space of intervention. The studies consider place, as given, are considering the dynamics of actors in shaping the place till a point of time. While understanding the conservation effort it is important to look at how knowledge, power, capital, and governance are stepping in as

modern factors and shaping the conservation effort. Seeing capital as a juggernaut eliminating diversity has to be reconsidered and it will give more room to think about the interaction between capital and *in situ* conservation and capitals' role and interest in the *in situ* conservation.

2.8 Locating the Knowledge Gap and Conclusion

This chapter began with attempting to conceptualise agrobiodiversity, elucidating the need for agrobiodiversity conservation and introducing various conservation measures. The importance of ecological agriculture to ensure the ecosystem services and agrobiodiversity was mentioned following that. Then the debates were about the advantages and drawbacks associated with *ex situ* and *in situ* conservation. And the importance of *in situ* conservation in agrobiodiversity conservation in tune with the dynamic changes happening in the field level is also described. While discussing about the shortfalls of *in situ* conservation efforts and the way it is conceptualised and how that brought place into the centre of conservation effort and further how it went on constructing a dichotomy between *de facto* conservation and implemented conservation efforts. The role of IK and seed exchange systems as a part of traditional practices in the conservation of agrobiodiversity is elucidated and it also highlighted the coercive relationship between IK and developmental approach. Most of the context IK was used in the conservation effort or in developmental effort after validating it with the western scientific knowledge. The dichotomous understanding of *in situ* conservation strategy envisaged the parallel co-existence of traditional and modern practices. This study is looking beyond this, as this is not enough to understand the reality. And it is also found that the coercive relationship between IK and developmental approach, and the epistemological merit assumed by the development agents challenges the understanding of *in situ* conservation as a participatory one. The essentialisation of local knowledge as a part of the site of conservation contributes towards the creation of a bounded place. This work is also an effort to understand place in relation to conservation of agrobiodiversity.

Most of the studies referred in this chapter are carried out in South America, being very specific a vast number of those were carried out in Andes. This work will not be

subscribing to the understanding that traditional and modern or Non- western and Western existing parallel in the field of intervention and this work is interrogating the nature of interaction between modern and traditional with reference to conservation of agrobiodiversity. Apart from the works on agrobiodiversity conservation that was discussed above had the similar opinion it is also influenced by works of Gunnel Cederlof and Ajanta Subramanian. Cederlof's work on environmental history of Nilgiris, introduced me another way to understand place, boundaries, right claiming by describing the Toda herder's of Nilgiris (Cederlof, 2008).Subramian in her work shorelines, unravel the nature of right making of Mukkuva fishing community of Kanyakumari district of Tamil Nadu and offered me a way to think beyond the idea of right as a modern construct. She also brought in the constitution of shore as a place by various actors like the Mukkuva Community, Upper Caste Government Officials, and other backward communities of Kanyakumari district (Subramanian, 2009). Both their works on South Asian context gave me a new lens to look into my work. This work will enquire into the vacuum that, how the two different conservation efforts are interacting with each other, in Wayanad district of Kerala i.e., the work enquire about the nature of the interaction between the traditional and modern practices in the agrobiodiversity conservation of Wayanad at the same time the work may not be confined to Wayanad as a place given by jurisdictional boundaries.

Chapter 3

Agrobiodiversity in Indian Context: Legislations and *In situ* Conservation

The previous chapter introduced various concepts and the ongoing discussion and debates on *in situ* agrobiodiversity conservation and how the interplay of modern and tradition discursively constitute a place for conservation. As mentioned in the previously this work is trying to understand place in relation to the conservation of agrobiodiversity, and constitution of Wayanad as place for the situated conservation effort. As a part of it role of various agents in constituting a place is enquired in this work. This chapter is a discussion of national legislations dealing with conservation of biodiversity and agrobiodiversity. To understand the context of enactment of several legislations dealing with biodiversity conservation, it is indispensable to trace the changes happened in International arena on conservation. How sovereignty over resources, benefit sharing, prior informed consent and usage of intellectual property rights are introduced to the realm of biodiversity and how those are shaping conservation in Indian context with special reference to Wayanad, and in accordance to that how modern tools and practices are interacting with traditional practices in the field will be discussed in this chapter. Legislations, Conventions and Treaties as such and the available scholarly works on those are reviewed to as a first hand idea of the legislations. The ongoing academic discussions deal with the merits and demerits of the legislations in detail are brought in to this chapter to have a deeper understanding of the international treaties, conventions and national legislations. Modern tool and practices are backed by the legislations as a measure to conserve agrobiodiversity, this chapter will throw light into the manner in which modern practices and tools are introduced into the field and how they are acting in the field.

3.1 International Conventions and Treaties: Changes in Meanings and Practices

Notable shift happened International arena in understanding biodiversity and its ownership. The change in understanding of ownership and values are not the result of changes happening in the realm of conservation alone, and it has to be understood in the

much broader backdrop. Earlier time, genetic diversity is considered as the "common heritage of mankind", Downes consider this understanding as the starting position (Downes, 1996 as cited in Ganguly). FAO deemed the genetic diversity pertinent to food and agriculture as the "common heritage", and it can be seen in International undertaking initiated by FAO such as Plant Genetic Resource for Food and Agriculture (Brody, 2010 as cited Ganguly, 2015). Developing countries were fairly skeptical about the price they will pay for the free exchange of information as biodiversity considers as a "common heritage" (Ganguly, 2016). Prevalence of this skepticism and decolonization, firmed the assertion sovereignty of Nation States over their natural resources (Ganguly, 2016). Decolonisation happened to be an important factor reshaped the idea of stewardship of biodiversity.

One of the fundamental principle of international law ever since decolonization has been the permanent sovereignty of states over their natural resources (United Nations General Assembly Resolution as cited in Cullet and Raja, 2004). Establishment of the principle of permanent sovereignty over natural resources first came from newly decolonized countries (23 as cited in Cullet and Raja, 2004). International community adopted an international undertaking which recognised plant genetic resources as a common heritage of humankind. And the rationale behind it was the improved flow of germplasm that enhanced the food security of developing countries (Cullet and Raja, 2004). The current conservation and management of biological and genetic resource are now a "common concern of humankind" which implies at least loose "right of regard" by international community into state's policies (Preamble, Biodiversity Convention 1992, Preamble, PGRFA Treaty 2001 as cited in Cullet and Raja, 2004). Demand for sovereign rights of nation states over their resources was acknowledge in Convention of Biological Diversity (CBD). It marked the change in understanding of stewardship by acknowledging the sovereign rights of countries, and the post CBD era marked biodiversity is as the resource owned by the sovereign nation states (Ganguly, 2016). Apart from reassigning the stewardship of biodiversity, CBD also contributed towards streamlining the sharing of biodiversity by safeguarding the sovereignty ensure the sharing of benefits arising out of it.

CBD reaffirms that States are responsible for the conservation of their resources and its sustainable use. Member States provide access based on "mutually agreed terms" and is subject to the "prior informed consent" of the country of origin of those resources (Article 15, Biodiversity Conventions, 1992 as cited in Cullet and Raja, 2004). CBD encouraged right based discourse that offered a beginning for small groups of right-oriented actors. And moved the centre of discussion from conservation towards a "people centered, right centered approach". CBD also motivated the participation of rights based civil society groups, and the principles of the Convention went beyond from a convention on biodiversity to one that inspire the inclusive politics, and set towards launching legislative and institutional restructuring (Ganguly, 2016). Simiar opinion is shared by other as well. Gadgil et al, has the opinion that CBD created a space for us to creatively develop new approaches within the global framework that we are compelled to accept (Gadgil, 1997 as cited in Gadgil et al, 1999). Besides reaffirming states sovereignty and streamlining the exchange of biological resources between countries, CBD also made advancement in the Intellectual Property Right (IPR) Regime.

CBD contested the current IPR regime, and the attempts made by Trade Related Intellectual Property Rights (TRIPS) to homogenize it. TRIPS has no provision to safeguard TK, and it failed to acknowledge demand for equitable share in benefits emerged from the knowledge linked with biodiversity. The interaction between industry, communities and countries that anchor huge biological diversity are marked by heightened inequalities (Ganguly, 2015). The course of trade and IPR is largely determined by developed countries, and this situation catalysed India's participation in the CBD. This provided a platform for India to negotiate about the appropriate IP legislation and to resist the new fences being erupted to hinder the flow of technology from South to North (Ibid). At the same time CBDs cannot be considered as treaty which made a shift in the understand biodiversity, stewardship associated with it. To understand this claim better, the understanding of the underlying concept of this convention is must.

According to Hajer, ecological modernization is the fundamental structure of CBD. According to Ganguly, "The discourse of ecological modernization, in the contest of biodiversity, carries a neo-liberal rationale, emphasizing the economic and market

aspects of biodiversity by putting an economic value on ecosystem services" (Ganguly, 2015). In the light of this Hajer's another argument also can be seen. He argue that the discourses didn't insisted on any structural change rather preferred a "modernist and technocratic approach" towards environment i.e., the interest is so find a "techno-institutional" solution for the present issues (Hajer, 1995 as cited in Ganguly, 2015). Here nature is seen as an asset by connecting the economic and ecological indicators to manage it for development and the appropriated politics is said to have precautionary approach in conservation is valuing the "public good and realistic market" and about the function of government in boosting the investment made by private sector in markets rooted in the ecosystem (Pisupat, 2012 as cited in Ganguly, 2015). Such an 'appropriate politics' is clear in from the objectives of CBD, on sovereignty, that can be understood as a shift from an open access regime to the streamlined and controlled regime, inside the boundaries of a country.

The objectives of CBD is influenced by both the intrinsic value (conservation) and market value (sustainable use) and resulting sharing of benefits (fair and equitable sharing) (Ganguly, 2015). It can be observed that, both TRIPS and CBD are abiding to the logic of market. CBD offer an appropriate politics over the biased one of TRIPS. Apart from that there is no significant change in the core ideas underlying these two principles. This can be seen in connection with the changing interest of capital and how it is shape conservation as discussed in the previous chapter. This can offer yet different understanding of CBD, its underlying principles and capital.

Capital, which earlier devastated nature is currently showing an interest in conservation. Capital step into an "ecological" and conservation stage. This approach directed towards protecting nature by enclosing it for assuring continuity of economic growth (Escobar, 1993). The interest of capital in conservation is a sign of its entry to the "post-modern" phase, where it is trying to gain economic benefit from a broad range of biological materials. According to him the conservation effort has to be seen as a part of it. In the "postmodern phase of ecological capital", nature is considered as a "reservoir of capital", so every part of nature and the knowledge and cultural practice linked to it is considered as valuable and to be conserved (Katz 1998; McAfee 1999; Escobar 1996). In

ecological modernism also understands nature in similar manner (Pisupat, 2012 as cited in.Ganguly, 2015). CBD as an international convention marked changes in the manner biodiversity and its stewardship and sustainable utilisation is conceptualised. There are two possible ways of understanding the underlying concepts of CBD, one seeing CBD as result of negotiation between intrinsic and market value, whereas drawing from the manner Escobar understood the changing interest of capital it can only be seen as a result of capital entry into an ecological and conservation phase. Still a tussle of interest can be traced from the conflicting provisions of CBD.

CBD have contradicting provisions on IPR. According to the article (16.5) of CBD, IPRs are "supportive of and don't run counter to its (the CBD's) objectives" and this is "subject to the national legislations and international laws". And according to another article on IPR, the article (22) of CBD, the provisions of CBD will not interfere with the rights and commitments of countries to other "external international agreements except where the exercise of those rights and obligations would cause a serious damage or threat to biodiversity". The second provision permits certain deliberations with respect to IPRs, while acknowledging that patent and other IPRs will be subjects of international legislations on the same (Ganguly, 2015). From the difference in the two articles on dealing with IPRs in can be assumed that legislative framework offered by CBD don't have any intentions to confront the existing global order, and it declines to give up the politically important appeals made by developing countries to safeguard their national interest (Ibid). Similar to the inconsistencies between provisions dealing with IPRs, the manner in which CBD incorporated local knowledge into article 8(j) is also criticized. According to Escobar "the attention is insufficient and often misguided to the extent that the local knowledge is rarely understood in its own terms or it is re-functionalised to serve the interest of Western style conservation." (Escobar, 1988 as cited in Ganguly, 2015). Besides the shortfalls and ambiguities, CBD provided a new rights oriented framework for asserting rights over resources and decentralized governance.

Despite of the above discussed contradictions and drawbacks, CBD offered a new meaning to biodiversity and stewardship, which helped the actors engaged in rights oriented discourse In developing countries, opposition against TRIPS stemmed from the

incompatibility of Western techno-centric notion of IPRs in addressing their needs. Blakeney argue that, this notion of IPR is biased against the indigenous communities (Blakeney, 1997 as cited in Ganguly, 2015). The current legal regime is considering the patent novelty and individual inventions and it eschewed protection to the knowledge systems including traditional knowledge i.e., for those knowledge systems which are not suited this model (Ganguly, 2015). The IPR regime embodied in the TRIPS first and foremost safeguard the innovations developed within the system of formal sciences. It is adequate to secure the scientist and entrepreneurs from developed world. There is no provision for acknowledging and sharing benefits with the foundation of resources or knowledge in public domain (Gadgil and Rao, 1994). NGOs in their agitation against TRIPS borrowed the concepts of CBD. According to CBD, people and communities ought to have managed their knowledge and derive IPR benefits through it (Ganguly, 2015). It is evident that, the meaning and practices have changed in the international arena from TRIPS to CBD. As this work is about the agrobiodiversity conservation in Wayanad, a southern district of India, it is important to look at the implications of CBD in India's domestic policies and legislations. Following section depicts how CBD influenced the domestic policy regime of India.

3.2 CBD in India: Discovery and Loss of a New Democratic Space

CBD has three critical goals, Conservation of biodiversity, Sustainable use of biodiversity, Equitable sharing of the benefits from the usage of biodiversity. This three goal offered a critic to the culture of "fences and fines", by eliminating humans and usage of biodiversity. It argued for legitimizing the access and control of communities over "their own resources". This is complementary to the opening up of policy culture, to accommodate other voices and to take advocacy measures (Ganguly, 2015). These mirrored the change in meaning and practices happened in the international arena, and it also favoured the ascendency of rights based domestic actors and facilitated various actors to be a part policy making. India's constitution of National Biodiversity Policy was a distinct effort directed towards conservation of biodiversity. Attempts to conserve biodiversity excogitated during the last decades. And, it had conservation of biodiversity in the centre apart from the preservation of biodiversity. Idea of legally protected zones

for conservation also followed this norm. Five percentage of India's surface area falls under the legally protected zones. This kind of conservation received criticism as it eliminated people from various processes of conservation (Ibid). Another important aspect to be noted is the vacuum of a legislation dealing with the conservation of biodiversity. Biodiversity fall under the purview of a number of legislations on: forest law, patent policies, wild life acts and agriculture policies. The debates in the international arena served as a bearing for the introduction of an integrative biodiversity plan (Ibid). In other words CBD made it possible to have a policy and legislation exclusively dealing with biodiversity.

The impact of CBD in India's domestic sphere cannot be reduced to mainstreaming of biodiversity. Its contributions towards bringing up a right centered discourse in favour of decentralization are as important. In the post CBD era, right based discourse along with public deliberation gained importance in the Indian Policy regime (Ganguly, 2015). After the ratification of CBD, government of India formed a National Core group, consist of various stakeholders, made actions and strategy that resulted in the "National Policy and Action Strategy on Biodiversity" (Ibid). India also took up efforts to lay out sites, species and strategy for conservation as a part of Biodiversity Conservation Priotisation Project (BCPP) (Acharya, 2002 as cited in Ganguly, 2015).Biodiversity Support Programme (BSP) of BCPP performed its tasks with the informal coalition of NGOs and research institutions according to the guidance of steering group consists of WWF- India, Participating NGOs, BSP and government. This process ensured transparency and participation in priority setting. Ganguly observe that, this methodology can be adopted by other countries to fulfill the obligation of CBD (Ganguly, 2015). Despite of the path breaking nature of this project in ensuring transparency and participation, it failed largely in influencing the policy (Ibid). At the same time, BCPP is one among the earlier effort to think and act beyond the existing hierarchical structure in framing policies in India.

Framing of Biodiversity Policy took a quite different course from the existing hierarchical, top-down approach, which is peculiar to the Indian Policy arena. National Biodiversity Strategy and Action Plan (NBSAP) of India, was constituted through a

distinct process reiterate on decentralisation and inclusive participation by abiding to the mandates of the CBD (Ganguly, 2015). With an atypical combination of NGOs, Government Institutions, 18 sub-state ecological zones, 10 inter-state ecologically important zone are brought under the coverage of NBAP, and it made 13 thematic-level plans on important areas of biodiversity and also 30 reviews of specialized ecological areas. Outreach as a part of framing NBSAP covered ten-thousands of school children, youngsters and government administration. The outreach programmes included " biodiversity festivals(melas), cycle and bullock cart rallies, cultural programmes, calls for public hearing and participation to put forward their suggestions and concerns of the citizenry" (Acharya, 2002 as cited in Ganguly, 2015), effort were made to convey the message of CBD to the masses through the media those are accessible and close to them. In this way, similar to BCPP, the drafting of NBSAP also grabbed attention from academia. The method of drafting of NBSAP turned out as the "unique and trend setting" (Anuradha et al, 2001 as cited in Ganguly, 2015). Ganguly locate this effort in continuum with India's twenty years long experience with democratic decentralisation and observe that the domestic atmosphere was in favour of such an extensive participative movement (Ganguly, 2015).Along with this, the CBD's focus on IK and participation enabled the system to accommodate diverse stakeholders to create consciousness about regarding their rights as users and conservers according to CBD.

. There was conflict between the stakeholders while framing the policy due to varied reasons and in the end, this hasn't made a drastic shift in the policy as it didn't made it way as the National Policy. This happened as a result of tension between the implementation agency and the NGO (Kalpavrisksh) entrusted to draft the policy. Later, officials from the Ministry of Environment and Forestry themselves drafted the National Policy on Biodiversity Action Plan (Ganguly, 2015). Despite of the efforts made like inclusion of various actors into planning by measures like publishing "Call for Participation" brochure in 17 regional languages , decision to have designate the nodal agencies to prepare action plan at sub-national levels, and efforts made by the government to make the process representative by allowing NGO participation in the process of forming NBAP; it ended up as a failure in influencing the law making. Yet, it opened up a democratic space of deliberation. The 'rights turn' in the international arena

happened in relation with CBD (Ibid) and its impacts was not limited to the participation in framing of policies.

Norms disseminated by the CBD were significant in promoting deliberations in Indian policy space. The norms get translated into the locally significant practices as the result of government and civil society organisations were subscribed to these norms (Ganguly, 2016). CBD also strengthened the claims of pro-reform NGOs who were concerned about the ill-effects of TRIPS on genetic resources and IK. CBD enabled the NGOs to campaign vigourously for participatory, stakeholder involvement in the framing of legislations and policies, to ensure rights to the grassroot innovations and TK rather than safeguarding them naively for patents and from likely incidence of bio-piracy. Apart from this, it also helped them in claiming moral authority (Ibid). CBD has brought back the rhetoric of participation, in the culture of centralised planning. Gadgil et al also share similar view, CBD created a space for us to creatively develop new approaches within the global framework that we are compelled to accept (Gadgil, 1997 as cited in Gadgil et al, 1999). Despite of having ecological modernism as its underlying concept, CBD offered new meanings to biodiversity, stewardship and conservation. In the domestic arena, it attempted to opens up the policy framing of India, emphasized on rights of users, and advocated for the equitable sharing of benefits. The section is about the domestic legislations and how responsibility and rights are constituted and their role in conservation.

3.3 Legislations: Rights and Responsibilities of Conservation

Previously, the biodiversity conservation effort was planned and implemented in a centralized manner focusing on limited localities has time and again proved as pernicious (Gadgil and Berkes, 1993 as cited in Gadgil and Rao, 1994). According to Gadgil and Rao this context gave rise to the need of a system that can offer an advantageous position to the ecosystem people with sustainable use of biodiversity and amenable management (Gadgil and Rao, 1994). A shift happened in the conservation arena. Conservation efforts, which traditionally excluded people from the use and management of resources, began to consider them as stakeholders of the resource in the Indian legal regime. There are legislations directed to empower grass root organisations to manage and conserve

natural resource and agrobiodiversity. Forest Right Act is one among those; followed by it the Biodiversity Act also tried their bit to empower the grass root level organisations. Biodiversity Act,2002 (BDA), Protection of Plant Varieties and Farmers Right's Act,2001(PPVFRA), and Forest Right Act,2006(FRA) fetched considerable power to local self government i.e., the Panchayati Raj Institutions which help in the implementation of the provisions of "community rights" outlined them (Kumar and Prajeesh, n.d). Whereas, in the context of agrobiodiversity conservation enactment of BDA, PPVFRA and The Patents Amendment Act, 2005 are also seen as efforts directed towards the conservation of agrobiodiversity (Venakataraman & Latha, 2008). It is therefore important to examine each of these legislations, their objectives for their support for support for agrobiodiversity conservation. BDA, PPVFRA and Kerala Conservation of Paddy land and Wetland Act, 2008 will be critically discussed in the following sections.

BDA ensure a legal framework for executing the decisions espoused in the Convention of Biological Diversity (CBD), held at Rio de Janiero on 1992. Signatories have obligation to include the concerns of conservation and sustainable use of biological diversity into apt sectoral or cross- sectoral plans, programmes and policies. Abiding to CBD, India ratified BDA in December 2002 (Brahmi et al, 2004). The objective of this act is "to provide conservation of biodiversity, sustainable use of its components and equitable sharing of benefits arising out of the use of biological resources and matters connected with or incidental hitherto." (Biodiversity Act, 2002). This act mandated three tier governance of biodiversity. National Biodiversity Authority (NBA) in the national level, State Biodiversity Board (SBB) in the State level and Biodiversity Management Committee (BMC) at the Local Self Government institute were constituted according to the section 8 of BDA. NBA takes care of the issues related to the requests for access but foreign individuals, institutions or companies and those of result transfer to any foreigner. It also dictate the terms and conditions to secure fair and equitable sharing of benefits arising out of utilization of biological resources and approval for request for any form of Intellectual Property Rights (IPR) in or outside India for an invention based of research or information related to biological resource or knowledge associated biological resource obtained from India(Ibid).

The State level body, SBB handles matters regarding the access by Indians for commercial purpose and regulates any activity that breach the stated objective of conservation, sustainable use and equitable sharing of benefits arising out of the use of biological resources. BMCs are assigned with the task of conservation and sustainable use, chronicling biological diversity and documenting knowledge related to biological diversity (Biodiversity Act, 2002). Biodiversity Management Committees in the local body level is assigned with the regulation of biodiversity and harvesting of benefits arises from the harvest of biodiversity from their jurisdiction (Gadgil, 2007).This act is said to respect the knowledge of local communities related to biological diversity (Brahmi et al, 2004), which is addressing the issues raised regarding the biodiversity conservation in India.

According to Gadgil and Rao, there is a need for radical restructuring of India's biodiversity conservation. The earlier efforts of conservation alienationated people from their resources by converting the common property into open access property followed by the state intervention (Gadgil and Rao, 1994). They also propose that, it is the time to think beyond conserving biodiversity within the protected areas and there is a need to take up conservation of biological diversity throughout the length and breadth of the country. Protecting biodiversity in biodiversity rich islands surrounded by degraded landscapes is not feasible, and there is a need for attempts made around them to construct a biodiversity friendly, ecologically restored matrix around them (Gadgil and Rao, 1994). In this context BDA can be seen as the path breaking legislation. Ratification of BDA is seen as a shift took place in the management strategies of biological diversity i.e., from "control and command" to "inform and share" (Gadgil, 2007). It also delegates certain authority to the BMCs; BMCs are authorized to manage harvests of biological resources within their jurisdiction, and impose collection fee for this purpose (Ibid). It doesn't mean that BDA is a law that managed to get away with all the drawbacks of previous conservation regime.

One of the serious criticisms flagged against BDA is that, it failed to offer an inclusive regime for conservation and sustainable use of biological resource but focus on the question of access to resource and related issues (Cullet and Raja, 2004). This is

evident from the duties of NBA and SBB in particular. The focus is mostly on the access and benefit sharing beyond the concern for conservation and sustainable use of biodiversity. BDA have strong provisions to control access by foreigners at the national level. At the same time local knowledge holders are not given strong control over their resource and knowledge (Ibid). In other words the shift from "command and control" to "inform and share" retains the remnants of the centralised nature of the previous regime. Another critic is made about the act's attitude towards the common property arrangements. The act totally devalued the common property arrangement which is important in the context of the management of biological resources (Ibid). Another criticism also mention about the centralised nature of decision making by authorities as a part of an act which claimed to decentralise the biodiversity management and conservation. BDA centralise property rights (IPR) with the state through sovereign acquisition or to private inventions through monopoly of IPR. As a result of it, knowledge and resource that are not allocated to private entities through IPR or claimed by the state itself will be considered freely available (Ibid). Apart from discussing the advantages and disadvantages of BDA, it is also important to look into the extent of implementation of BDA across the country with special reference to Kerala and Wayanad, since Wayanad is the site of enquiry.

3.4 Biodiversity Conservation in the Kerala and Wayanad: Implementing the Legislation and Beyond

Kerala is the first state formed State Biodiversity Board back in 2008. Forehand to the formation of SBB, state of Kerala declared State Biodiversity Strategy and Action Plan by the year 2007(KSBSAP, 2007 as cited in Nayar, 2011). National Biodiversity Strategy and Action Plan of India and for various states drafted during 2000-03 with the support of grants from Global Environment Facility, a joint initiation of United Nations Development Programme, World Bank and United Nations Environment Programme helped the preparation and approval of the KBSAP (KFRI, 2005 as cited in Nayar, 2011). KBSAP had 28 strategies grouped under 11 categories including biodiversity in cultural landscape, agrobiodiversity and domesticated diversity. This stands as the acknowledgement of significance of biodiversity in the constituted landscape. Three

strategies grouped under agrobiodiversity and domestic biodiversity includes developing a database of agrobiodiversity and domesticated diversity, promotion of conservation of indigenous varieties and commercial production and prevention of contamination of natural biodiversity of the state from genetically modified Organisms (KSBSAP, 2007 as cited in Nayar, 2011). Wayanad district of Kerala acted in pace with the development happening in the State level.

Wayanad is the first district formed BMCs (Lydia et al, 2014 as cited in Kumar et al, 2015.) and completed the preparation of Plant Biodiversity Register (PBR) in all local self-governing institutes (Annual Report: Protection of Plant Varieties and Farmers Right Authority as cited Kumar et al, 2015). Despite the image of the pioneer district in implementing BDA there are setbacks associated with the functioning of BMCs. Most of the BMC members were ignorant of their roles, responsibilities and authorities (Kumar et al, 2015). In this context from 2016 onwards, along with Kerala S B B, M S Swaminathan Research Foundation (MSSRF) has initiated a five years programme to strengthen five selected BMCs of the district and help them in sustainable and equitable use of bio-resources (Ibid). Apart from this MSSRF also took up a genetic and legal literacy campaign at PRIs followed by the implementation of BDA (Ibid). This shows the fate of a decentralised management strategy, which is not demanded by the people

Irrespective of people's attitude towards BDA and their claims and rights under the act, there are certain responsibilities vested on BMCs. An important one among that is the preparation of PBR. The importance of PBR was realised in certain interventions of research projects related to medicinal plants. The importance of Folk knowledge is accentuated in the conservation effort. Folk knowledge perpetuate by its continued use in the field in the absence of any formal/ institutional way of handling the knowledge (Gadgil et al, 2000). There is a need to conserve the folk knowledge. Gadgil et al proposed the idea of conserving folk knowledge by creating more formal institutions for the maintenance of the knowledge system or constructing a new context for the continue the practice of local knowledge (Gadgil et al, 1999 as cited in Gadgil et al, 2000). PBR is seen as a one process or document that can constitute in conservation of Folk Knowledge.

The process of preparation of PBR is as important as that of PBR. The collaboration between people from organised sector, practical ecologists, peasants, herders, fishers, traditional healers, is as significant as the product (Gadgil et al, 2000). PBR is an attempt to ensure continuity for the folk knowledge. In the formation of PBRs the local people are acknowledged for their contribution, this opened space for access and benefit sharing (Gadgil et al, 1993). In long run PBR will evolve into a useful tool for supporting the process of community based management of living resources, contributing to conservation, and rewarding folk knowledge (Gadgil et al, 2000). Despite of all criticism raised against BDA there is hope that, this legislation will contribute in ensuring the continued existence of folk knowledge and this will help the conservation and management of biodiversity by local people. At the same time the role of BDA in the conservation of agrobiodiversity is contestable since the focus of the law is on the access and benefit sharing. In this context an enquiry regarding the role of PPVFRA in conservation of agrobiodiversity is crucial.

PPVFRA is drafted to serve a specific provision demanding the introduction of Plant Variety Protection, Article 27(3) (b) of Trade Related Intellectual Property Rights (TRIP) agreement. Objective of the act is stated as "to recognise and protect the rights of the farmers in respect of their contributions made at any time in conserving, improving and making available Plant Genetic Resources for the development of new plant varieties." and also to protect "plant breeders right to stimulate investment for research and development, both in public and private sectors for the development of new plant varieties." (Protection of Plant Varieties and Farmers Right Act, 2001). Farmers' right in the act includes the right to protect varieties developed or conserved by them (Protection of Plant Varieties and Farmers Right Act, 2001). Communities can avail compensation for their contribution in the new varieties as determined by the PPVFR Authority (Protection of Plant Varieties and Farmers Right Act, 2001). Benefit claimers can avail the fund constituted according to PPVFRA and the benefit claimers can be individuals, organizations and for compensation to village communities. PPVFRA adopts the criteria of the International Union for Protection of New Varieties of Plants (UPOV) convention namely novelty, distinctiveness and stability, which can't be used conveniently for the registration of farmers varieties. And it ensured a bare minimum right to farmers which

can't be taken away from them. Farmers' right is added as an afterthought to a regime based on UPOV Convention that is specifically addressed the interest of plant breeders not farmers (Cullet and Raja, 2004). Gadgil also shares similar opinion, it was not mandatory to adopt UPOV system which has no provisions to protect farmers interest, or to reward them for maintenance of cultivars (Dutfield, 1999 as cited in Gadgil et al, 1999). The recognition of contributions made by communities under PPVFRA has had impact in Wayanad.

Kurichya and Kuruma tribal communities of Wayanad won the Second Plant Genome Saviour Community Recognition and Award during 2008–2010 and 2010-2013 subsequently (Kumar et al, 2015). It is also argued that the benefit sharing as envisioned in the act doesn't contribute to the strengthening of the rights of farmers but merely propose financial compensation for actions not in a position to apply for property rights (Cullet and Raja, 2004). These two legislations have to be critically looked upon on their contribution in the conservation of agrobiodiversity by empowering the local community of who are the stakeholders of biological diversity. These legislations lay their focus on access and benefit sharing along with the sustainable use and conservation of biodiversity. At the same time these two acts had their role in remolding the biodiversity conservation regime in India.

There are State legislations those are not directly dealing with the conservation of agrobiodiversity but having their influence in the conservation of agrobiodiversity. In this context the Kerala State Conservation of Paddy Land and Wetland Act, 2008 is an important legislation. The objective of the act is "to conserve the paddy land and wetland and to restrict the conversion or reclamation thereof in order to promote growth in the agricultural sector and to sustain the ecological system, in the State of Kerala." (Kerala State conservation of paddy land and Wetland Act,2008). This act recommends incentive for the cultivation of paddy and constitution of local level monitoring committee, as this act, is directed toward conserving a landscape, which is of utmost importance in ensuring ecosystem services. As mentioned in the introduction, wetlands occupy significant share of Kerala's geographical area and the ecosystem services it provide is vital for the state.

The legislations are taking the people, their rights and landscape into consideration while trying to conserve biodiversity.

As the three legislations discussed here, PPVFRA, BDA and Kerala State Conservation of Paddy Land and Wetland Act contribute towards the conservation of agrobiodiversity at different levels. BDA tend to empower the grassroot level organizations, PPVFRA ensure farmers rights over their varieties and Kerala State Conservation of Paddy Land and Wetland Act mostly serve as a legislation which dictate the landuse. All these legislations are brining up new ideas to the field of conservation, PPVFRA introduced the idea of Farmers Variety Registration, BDA envisaged a multitier system to manage biodiversity which is also working toward making biodiversity conservation decentralised. Kerala State Conservation of Paddy Land and Wetland Act, is dealing with the safeguarding of a landscape and the services offered by them, which is new in the Indian arena. In this context, it is unavoidable to look at how people are constituted in the similar manner as places are constituted for conservation in Indian.

3.5 Creating Place and People for Conservation

Scholarly works enquiring about the agrobiodiversity conservation in constitute the site of enquiry as a place for conservation or as a suitable backdrop for situated conservation effort. For example, Nayar in his work draw from various accounts and construct Kerala as the place of diversity. The location of Kerala as a part of Western Ghats and Sri Lanka biodiversity hotspot is highlighted (Kumar et al, 2004 as cited in Nayar,2011) along with India's position as one among the classical Vavilovian Gene Centre for plants under cultivation (Vavilov, 1927 as cited in Nayar,2011). Narratives about agricultural practices which foster agrobiodiversity are also brought in, like Kerala a southern Indian state is one of the places where homegarden is popular just like Java, Thailand, East Africa and parts of tropical South America (Kumar&Nair, 2004 as cited in Nayar2011) to establish Kerala as place of agrobiodiversity. Similarly, Kumar et al constitute India as a region that harbours agrobiodiversity, to substantiate this vast number of crop varieties and their wild relatives are cited as examples. India has more than 160 varieties of crop species, 100s of varieties of crop varieties ,325 wild relatives and around 1500 wild edible plant species and variety of domesticated animals and birds

(Policy Paper for Conservation: Management and use of Agrobiodiversity, 1998 as cited in Kumar et al,2015). Parallel to this Wayanad is also constituted as a place that host diversity of life forms.

Broader biological diversity imparted into the narrative to construct Wayanad as 'the place' to carry out conservation effort. Floral diversity of Wayanad is described to make Wayanad as a place to be conserved by Kumar and Parameswaran. Wayanad houses the 49% of the flora of State of Kerala which is more than 10% of the flora of India. The flora of Wayanad has high degree of endemism. Roughly 596 endemic taxa have been recorded from Wayanad, out of that 15 were found to be exclusive to the district (Narayanan, 2009 as cited in Kumar and Prajeech n.d.). Since most of the conservation efforts in Wayanad is spinning around the conservation of paddy varieties. Some works focus on the diversity of paddy varieties. Wayanad has a notable diversity of paddy with over 20 landraces that are significant in their response to flood, drought, pest and disease (MSSRF, 2001; Parameswaran, Narayanan and Kumar, 2014 as cited Kumar and Prajeesh n.d.). Apart from biological diversity, the diversity among the human population is also included in the narrative to constitute Wayanad as an ideal place for situated conservation effort.

The human population of Wayanad is ethnically diverse and it is the home for people from diverse communities and religions. There are five major tribal communities in Wayanad; they are Kurichya, Kuruma, Paniya, Adiya, and Kattunaika (A report on agriculture export zone: prospects of Wayanad districts, n.d). This profile is given in a report drafted by MSSRF proposing to develop Wayanad as an exclusive agriculture export zone. To project Wayanad as a potential export zone, the all kinds of diversities are used. The presence of Adivasi communities and their engagement with agriculture is also well described in the scholarly works. According to Scholey and Padmanabhan, rice cultivation in Wayanad is mostly carried out by Adivasi communities namely Kurichya and Kuruma (Kumar et al, 2010 as cited in Scholey and Padmanabhan, 2017). Kurichyas and their knowledge system is also explored by scholars. Kurichyas are a community living their life depended on the local landscape elements. Among those landscape elements paddy field is crucial since the food security of Kurichyas is indispensably

linked with that. Kurichyas hold distinct knowledge about the landscape and have further classifies the paddy fields based on certain characteristics (Kumar et al, 2004). Most of these narratives are made to serve a purpose, to constitute a Wayanad which can render a backdrop required for conservation of agrobiodiversity.

In Wayanad, there are non-Adivasi communities actively engaging in farming. People migrated to Wayanad at different instances in the past. Migration of Jain farmers from Karnataka (Panikker, 1900) and the designation of Nair soldiers and the landlords as chieftains (Nair, 1911) had a role is widening the farming population of Wayanad. Down the time line, huge inflow of people into Wayanad occurred as part of grow more food campaign (Prasad, 2003). The role of Adivasi farmers in the development and preservation of the agrobiodiversity Wayanad is indisputable. At the same time, the constitution of Wayanad in the literature concern with agrobiodiversity conservation made the vast non-Adivasi population invisible in the context of farming and conservation of Wayanad (The word migrant / settler is avoided since it might bring the same invisibility to their contribution as farmers to the conservation efforts). It is bringing an imaginary of Wayanad where Adivasi farmers are solely concerned about the conservation of agrobiodiversity. It can also be seen as an attempt to racialise the conservation effort, because all these arguments are made by non-Adivasi scholars whose priority is the 'conservation of agrobiodiversity in Wayanad'.

This categorization of population as a part of the agrobiodiversity conservation effort is aligning with the idea of ecosystem people and biosphere people, which are widely accepted categories in the environmental studies in Indian. It is said that, ecosystem people preserve various relics of cultural tradition of sagacious utilisation that could be revitalized (Gadgil and Berkes, 1991 as cited in Gadgil and Rao, 1994). With the everyday close contact with environment, ecosystem people could efficiently supervise the destiny of biodiversity anchored in their environment (Gadgil and Rao, 1994). Another category of people are constituted as biosphere people. The ones who are at the seats of decision making i.e., the ones making decisions at the states apparatus namely the state departments of -forest, agriculture, revenue fall into Dasmann's category of biosphere people (Dasmann,1988 as cited in Gadgil and Rao, 1994). Since, biosphere

people obtain resources from all over India and other parts of the world through market they don't have any say in the health of any particular ecosystem. As they have alternatives they are not depending on any one ecosystem. This resulted in the misuse of resources by regulatory agencies, lack of responsibility of politicians and bureaucrats and weak grass root democracy in India (Gadgil and Rao, 1994). At one point Gadgil and Rao is also addressing the dimension of power imbalance prevailing in the grass roots owing to the caste system. The collective decision making in burdened with difficulties as the political power and ownership of means of production are centralized in the hands of small population of upper caste communities (Ibid). This is giving a picture of grass root level organizations meddling in the delivery of their responsibilities due to the caste system. This is making the category of biosphere, beyond the caste system, and it also needs to be scrutinized since the placing of caste solely with the grass root level engagements can be misleading.

In their argument Gadgil and Rao also attempt to reinforce the idea of boundedness of region, as they identify the geographically defined communities as the custodians of biodiversity and related knowledge (Gadgil and Rao, 1994). Marking a difference from the South American cases referred in the previous chapter, in the Indian context not just the place, the people in charge of conservation effort too are constructed discursively by the scholars, researchers and environmentalists associated with NGOs. While, there is no prominent Adivasi uprising noted so far for asserting food sovereignty or right to cultivate their crop varieties. Addition to that none of the eminent scholarship or environmentalists is from farming community or representing the communities which can be labeled as ecosystem people. In Indian context the 'epistemic merit' assumed by the scholars is not only constituting a place for located conservation effort it also assigning communities the task of conservation, thus by ascribing them a new identity.

3.6 Reflections and Conclusion

The latest developments in the international conservation arena took a turn, which is in favour of the developing countries. Even though the international conventions like CBD didn't challenge the existing lopsided IPR regime, it opened up a space for deliberation in the international and national level. In the national level, apart from the

three goals of BDA the constitution of institutions to enforce the act is in a manner that it facilitate the utilisation of biodiversity. Since, the key interest is access and benefit sharing this legislation is not mandated to do anything towards conservation of agrobiodiversity. This may be partly because of the already existing legislation on agrobiodiversity PPVFRA.

PPVFRA ensure the farmers rights over their varieties. This particular act is popular in Wayanad since a number of paddy varieties are registered as farmers varieties under this act. PPVFR Authority of India appreciates the farmers for their contributions in conservation of agrobiodiversity with cash award and the title of genome saviour. Kurichya and Kuruma tribal communities of Wayanad won the Second Plant Genome Saviour Community Recognition and Award. Both these acts, constitutes community which is in charge of conservation, and the line between right and responsibility is ambiguous in the biodiversity conservation in India, since the demand for this rights was raised by civil society groups and not directly by community organisations. And the intention is not to argue that, the communities didn't recognise the need to assert those rights, rather the "bottom-up" is not that bottom owing the epistemic merit assumed by the knowers.

The context in which these legislations are enacted gave us an idea about how these changes are brought in, which will enable us to raise question about responsibility, rights, constitution of people and places for located conservation efforts. A shift in the conservation regime in India, that intends on inclusive and democratic approach to natural resource management. Surprisingly the above discussed legislations led to a change in biodiversity management and conservation are not ratified as a result of demands raised by the people rather it happened as since India was obliged to abide to the which it is a signatory. This again raise a question how, communities will assert right which they haven't asked for.

All these legislation and academic discourses contribute in the making of place and people for situated conservation. This is problematic not only because it reinforced the bounded understanding of regions, but also nullifying the interactions between different groups of people along with migration and exchange of knowledge between

different communities. This is not limited to the state interventions and legislations, academia also contribute towards making of bounded places. The constituted categories of like ecosystem people and biosphere people in larger scale and locating the existence of caste only in the local or grass root level, which omits or fail to capture the caste dynamics are influencing decisions and ways of decision making. It also contribute its bit towards reinforcing the bounded understanding of region as Gadgil identifies ecosystem people are the suited ones to conserve agrobiodiversity. This again, point out the thin line between right and responsibility in the conservation of agrobiodiversity. This work is considering all the complexities and nuances at the policy level while trying to enquire about the nature of interaction between the traditional and modern practices in the conservation of agrobiodiversity in Wayanad.

Chapter 4

Memories of a Place: An Agrobiodiversity Perspective

This chapter intends to draw a map of the erosion of agrobiodiversity happened by introducing how the present varieties have made the way into the fields. A small number of farmers cultivate the traditional varieties; I discuss on the factors that shape selecting of traditional varieties over the modern varieties, and to an extent, to this knowledge and practices the stories on agrobiodiversity are not far removed from the cultural ethos that may be associated with them. Changes in the social structure and its impact on the conservation of agrobiodiversity are also elucidated in this chapter. Memories are important in the context of agrobiodiversity conservation in Wayanad. Memories anchor diverse crop varieties which are currently out of cultivation. It is more than a record of loss; rather it is something actively engaging in the everyday decision making and farm level management. In other words, memories are shaping conservation priorities and cultivation strategies. Several crops and crop varieties are currently out of cultivation in Wayanad, and at present memories of elders are the only ground they are rooted in. The intertwined narratives of the past are important to understand the factors that affect the loss of agrobiodiversity, and the pace at which it occurred.

4.1 Glorious Past in Present: Memories of Decision Making

Loss of certain crops and crop varieties have to be understood by placing it in the complex socio-ecological and economic changes happened and happening. Farmers have an account of glorious past, where they used to cultivate traditional crop varieties of their choice at the most conducive environment. As mentioned previously, the farming community of Wayanad is heterogeneous; still, all of them trace a lost glory in the past for various reasons. One of the essential parts in the narrative of a glorious past is the existed diversity of crop plants. Significant loss of millet diversity can be traced as a part of this narrative of lost glory.

Change in land-use pattern and forest management were crucial in the loss of millet diversity. Access to forest land was an essential part of millet cultivation. Moreover, finger millet was considered to be an important millet crop. It was grown with

a number of other crops including a number of millets. Maize and Sorghum find their place in the finger millet field which is termed as *'Muthari Parambu'*[1] by the farmers. One of the elderly Kurichya farmers recalls the cultivation of a variety of crops along with finger millet as a measure to ensure food security back then, which became irrelevant at a later point of time. That shift is partly attributed to government policies. Farmers are supported and ensured; farmers entering to field the way it used to be in the past have diminished.

Madathuvayal Raman, a Kurichya farmer and former Panchayath member from Thariyode, recalled the days when they were allowed to access and do cultivation in the forest land. Till 1960s, they were cultivating finger millet in the forest, and the forest department facilitated it part of the effort to convert forest into Eucalyptus plantation. They (Madathuvayal Kurichya family) took up finger millet cultivation in 5-10acres, and it helped the forest department to reduce the drudgery in the establishment of Eucalyptus plantation as the cultivation was concluded with the planting of Eucalyptus trees. After the establishment of Eucalyptus plantation, they were never allowed to cultivate millets in the forest land.

Millet cultivation was a multi-cropped cultivation practice as pumpkin, and other vegetables were grown along with finger millet by direct seeding owing to the nutrient-rich nature of the soil. Farmers from non-Adivasi communities did not have much to share about the cultivation of millets, because those crops were not widely cultivated by their families, but they do remember the days when millets were one of the major food crops of this region. According to Divakaran, a Nair farmer from Padinjarathara, finger millet was cultivated by Kurichya people in the barren lands, and they also cultivated *Chama* in a similar manner. Changes in land-use pattern and forest governance have impacted in the hasty loss of millets from the field. Conversion of hills into Coffee gardens immensely affected the availability of arable land to cultivate millets. Farmers chose to grow coffee despite finger millet, due to the higher income ensured by coffee. As the access to the forest is denied, it put an end to the shifting cultivation of millets in the forest land.

[1] Muthari is finger millet in Malayalam and Parambu means field. Muthari parambu denotes the finger millet field

Manuel, one of the active member of *Kerala Jaiva Karshaka Samithy* and descendent of Christian farmers came into Wayanad as tenants during the Grow More Food Campaign remember *Muthari Parambu* as *Jaivavaividhya* Parambu (Field of biodiversity). To be noticed here, cultivation of finger millet was not a practice brought in by migrants. They adopted this cultivation to some extent, and Manuel's observation about *Muthari Parambu* has to be considered as that of a farmer turned agrobiodiversity conserver, this made his observations on farming different from that of the other non-Adivasi farmers. Sorghum, foxtail, cowpea, sesame, and pumpkin were grown in the *Muthari Parambu*. These crops ensured availability of food from this field at different times. Pumpkin leaves are harvested as leafy vegetables along with the first weeding in the field in the month of *Medam. Thakara* (Senna tora) was also allowed in the field. After weeding, they go to the field by the month of *Chingam* i.e., the field is free from any agricultural interference apart from the standing crop for three months. By the month of *Chingam* at a time all crops will be bearing fruits except sesame. Harvest is not carried out at one point, ragi ears harvested according to the maturity of each panicle. He also made a remark that landless people used to practice this type of cultivation in the land of the landlord, in return, the landlords used to demand them to plant fruit trees following the finger millet cultivation. His remark on finger millet cultivation also echoed the impact on land-use change in the erosion of its cultivation along with the detailing about this of mixed cropping.

Peruvayal Kelu, the chieftain of Peruvayal Kurichya family, recalled the detailed practices of finger millet cultivation. Finger millet was cultivated under slash and burn agriculture. The initial step of finger millet cultivation was setting the fire and cleaning the shrubs in the month of *Midhunam*, followed by seeding. Weeding was carried out twice, in the months of *Karkkidakam* and *Chingam.* Few people from the family will be assigned to take care of the finger millet field. *Pola Cholam* (Maize) and *Kathir Cholam* (Sorghum) were grown along with finger millets. He considers this as one among their hard efforts to ensure food security.

Loss of freely available arable land and diversity of crops are one of the components in the tales of glorious past, and the reduced labour availability and increased

labour cost created a different context to trace glory in the past. Labour availability, shaped by the caste system was praised as a significant feature made past glorious by the farmers. Farmers pointed out the lost efficiency of labours by drawing an example from the past and juxtaposing it with the ones drawn from the present. Soopi Haji shared memories about past when transplantation in an acre was carried out in eighteen days time against the current scenario, where transplantation is carried out between fifteen to twenty days, which may also extend up to 25days. Farmers' disappointment about labour is not limited to efficiency; it is also related to the increased wages.

The glory of the past was a result of exploitative labour practices that were hinged to the existing caste hierarchy, where the agriculture labour force was comprised of people from Paniya, Adiya and Wayanadan Pulaya community. Two of the practices like *Kambalanatty* and *Kuthaka* are important in this regard. *Kambalanatty* was a practice which facilitated labour exploitation. Farmers held *Kambalanatty* to finish transplantation in vast paddy fields with less time. This was frequently cited by farmers as the best example for the lost vigour of labour. *Kambalanatty* involving various communities (labour communities) are different in form. Landlord assumes an important role in the rituals associated with *Kambalanatty*, where the transplantation will only begin as the landlord handover the seedling to the labours, and this is called as *Thottukodukal.* Labours had to work till they finish the transplantation of the field against the increased *Valli* paid to them as a part of *Kambalanatty*. They also get oil along with their *Valli*, and the Mooppan will receive a new cloth from the landlord. The higher pay in wage for *Kambalanatty* is termed as Avakaasham that can be loosely translated into English as rights. Despite the exploitative nature of the practice, *Kambalanatty* has colours of the festival in the farmers' narratives and the usage of musical instruments such as Kuzhal and Thudi are provided as evidence for it. This practice is also associated with pooling of other resources like drought animals and ploughs from the neighbouring farmers. According to Manuel, *Kambalanatty* is not everyone's affair as it is very expensive. Divakaran observes that the lack of alternative jobs for women can be a reason which ensured participation of labours in *Kambalanatty*; he added that this increased community participation is also one reason which made it as a festival.

If this gives an impression that Kambalanatty is a practice followed by non-Adivasi farmers we may go wrong. Omana, a farmer from Anappara Kuruma colony remembered Kambalanatty held in her family's field, and also described another practice named *Kuthaka. Kuthaka* is a practice similar to *Kambalanatty,* in terms of using labour to finish the paddy transplantation with the stipulated time. In *Kuthaka* a person will walk across the *Kandam* and mark the area to be transplanted with paddy, this is termed as *'Kuthaka Chavitti Kodukkal'*.In *Kuthaka* the people are expected to finish the task assigned to them. They are not compulsion to do exhaustive labour with stipulated time as in the case of *Kambalanatty*. While most of the elders from the Kurichya and Kuruma households shared their memories about the past glory emphasising on the food sovereignty enjoyed by them. Their tale of loss is not a linear or simplistic one; it has many branches and it unfurls the complex and interconnected nature of many traditional practices, land-use change, change in community structure, etc. For example, the loss of cattle had affected the farming of Kurichyas and Kurumas, since those animals held a significant role of draught animal in farming. The loss of livestock happened as a result of a plethora of changes, including the change in land-use pattern, social changes, and change in access to public and forest land as well. Kurichyas and Kurumas managed a huge herd of cattle, and the availability of community labour was pertinent in managing the huge herd of cattle. The social changes happened over years, reshaped the nature of community labour, and children who once managed the free-ranging cattle are no longer a part of community labour. Loss of cattle and community labour had profound implications in the cultivation and conservation of traditional paddy varieties by the Kurichya and Kuruma communities. The loss of cattle coupled with the change in land-use pattern placed the farmers from this community in a difficult state, since the cultivation of traditional paddy more tedious.

In Kuruma households the land fragmentation and change in the nature of community labour coupled with the loss of cattle led in the increased efforts to grow traditional paddy varieties. In Anappara Kuruma Colony, the threshing field is forgone as part of the Land fragmentation and land-use change, as it was converted into housing plots of the nuclear family. Later the farmers had to carry out mechanical threshing of paddy in the nearest field available, with the tractor provided by *Padasekhara Samithy*

since threshing with cattle vanished along with the threshing field. Currently, women from the family are making use of the public road to thresh grains manually, since mechanised threshing is not feasible with many of their small holding size and yield. Loss of community labour also had an impact on various agricultural practices. The previously used storage structures were designed to make use of the available community labour. Storage structures were made with Bamboo/ cane was used to store paddy apart from *Pathayam*. *Methayidal* was a method of storage, where harvested paddy is stored by staking in a manner that avoided spoiling of grains by rainfall. It allowed the usage of unevenly available community labour for threshing. Changes made the paddy cultivation a cumbersome process for the Adivasi farmers whose landholding was fragmented and loss of community labour made it more difficult, yet they adhere into the cultivation of traditional paddy varieties and for doing so they are drawing motivation from their prosperous past.

Memories of glorious past act as a source of motivation for a lot of farmers to stick on to the cultivation traditional varieties of crops. Memories played in, in the decision making about the selection of cultivar when the purpose of cultivation is domestic consumption which is associated with the cultural importance assigned to certain varieties of paddy. Despite the role of memory as motivation and a moral obligation which remind them about the importance of paddy cultivation, few of the Adivasi farmers shared the thought that they are in a state of dilemma, as their living expenditure is increasing, and the cultivation of traditional paddy varieties is burdening them. In earlier times these communities had bare minimum links with the market, and purchase from the market was done together for the entire joint-family. This was followed for clothes as well; clothing was purchased together for the entire family. The lifestyle with minimal consumption was significant in ensuring continuity for their subsistence farming by reducing the expenditure.

This has been changed later since the joint-families have shattered and decisions on consumption were made by individual nuclear household. Subsistence farming is not a choice for the current times and large numbers of Adivasi farmers with smallholdings are taking up jobs like agriculture labours or any other casual labour as a source of income,

yet they are gluing on to the cultivation of traditional paddy varieties. Even with the increased drudgeries aroused from the non-availability of community labour and land fragmentation, the memories and the value they assign to the crops, which is essentially drawn from memories motive them to cultivate traditional paddy varieties. Admiration towards the previous generation for the way they carried out the agriculture practices amidst the hardship was central to the narrative of Adivasi farmers. They also think that the change is agriculture centred lifestyle had a role in the deterioration of their health. The decision to cultivate traditional paddy varieties is also a part of their effort to ensure good food for themselves and it is essentially related to their idea of wellbeing.

Those Adivasi farmers took up a various job for survival, did managed to cultivate the rice for their consumption. This elucidates their deep connection with their varieties and how they are bearing with the drudgeries to grow good food, as all the traditional paddy varieties are organically cultivated for domestic consumption. This has deep-running connections with the varieties. Many elderly Kurichyas emphasised about the need to cultivate certain paddy varieties namely *Veliyan* and *Chennellu*, significant paddy varieties required for many of their rituals. *Gandhakashala* is important to Kurumas in a similar fashion; they need it for many rituals including life cycle ceremonies and the rites for ancestors. *Gandhakashala* is a small-grained variety relished by birds, and all of the Kuruma families may not be in a position to grow this variety and they don't have any custom of keeping aside the collectively owned piece of land like Kurichyas. They manage it by sharing *Gandhakashala* rice among the families. Adivasi communities' value and respect rice.

Omana, shared anecdotes from the paddy cultivation carried out by her parents when she was a child. In one of these anecdotes, she shared an incident which sum up the respect they hold for paddy. In older days food was served to the agricultural labourers in the field. One day during transplantation, her mother was carrying a bamboo-basket full of hot rice from their house to field. On the way to the paddy field, she fainted. After waiting for her, hungry labours and her husband came in search of her, and they found her fainted. To everyone's surprise, the basket was intact with rice. Omana exclaimed about it, and concluded that; God did that seeing their toil to produce *"Annam"*. The

usage of the word Annam is significant here since she referred cooked rice as *"Choru"* is other contexts. Annam is a word, which is more respectful and can be used as a synonym for food. This serves as an example of the great deal of respect Adivasi farmers have for 'their food'.

Non- Adivasi farmers who abandoned the cultivation of traditional paddy varieties also shared memories about those varieties. Despite their disengagement with the cultivars for the last few years, they still remember the package of practices, the traits, and usage of those particular varieties of paddy. Their memories about paddy varieties unfold a list of factors determined and determining the selection of paddy varieties. In earlier times, for the purpose of rice *Chomala* was cultivated, and for preparing porridge *Veliyan* was used. Later, modern varieties were taken up owing to a shortage in labour availability, increased labour charge, increase mechanisation and incompatibility of tall lodging-prone traditional paddy varieties with a mechanical harvester. The crops once cultivated still lives in their memories of Non-Adivasi farmers as well. The glaring difference between how memory is interacting with the present can be traced from the way crop varieties are selected. Memory is not a triggering factor for non-Adivasi farmer's crucial decision making like the selection of crop and crop varieties, and it has no role in influencing the decision making at the farm level.

The memories of a glorious past have its significance in decision making at the farm level, but it is not the sole factor to determine variety to be grown in the field. Apart from its importance as a factor influencing decision making it is an account for how a number of diverse crops and their different varieties were present in the fields and how the selection of crops made in the past and what were the priorities back then in selecting those crops and varieties of those particular crops. An enquiry into that will make us aware of the way of life lived by the farmers back then and how they cultivated and preserved diverse crops and how some of those and still finding a place in the field and some of those crops and varieties are no more cultivated in Wayanad. With the understanding about how past is seen and still playing a role in the decision making, how the community structure, festivals, traditional cultivation practices, and associated

knowledge and their role in the on-farm conservation are evident from the farmers' memories.

4.2 Traditional Social Fabric and Farming

Jointly owned properties and coherence of community structure are keeping farming active among the Adivasi community in Wayanad. In the Kurichya hamlets, the governing authority is the Karanavar. The centre of the day to day activity is the Tharavadu/ Valiya veedu . Few families are living in the Tharavadu, and most of the members are living in individual households and the bond between them is kept warm by the collective farming activities. In Kurichya hamlets, people do cultivation and take revenue from the land assigned to them. They will be receiving help from the rest of the joint-family members, as they are obliged to help each other in cultivation activities. Community labour is the major factor keeps farming among Kurichya community active.

Apart from the pieces of land allotted to different individual households, there is a piece of land which is kept aside to serve the common purposes, that piece of land is not limited for the cultivation of paddy, and coffee plantation also fall under this commonly held property. Paddy which is grown in the land will be used for festivals and life cycles ceremonies. The revenue from the coffee will be held to serve common expenditure associated with the Tharavadu. It is the Tharavadu bearing expenditure for marriages and *Vayasariyikkal Kalyanam*[2] in a Kurichya family.

Picture-1

Madathuvayal Kurichya Tharavadu

[2] Celebration of girls attaining puberty

Picture-2

Peruvadi Kurichya Tharavadu, Aaruval

Labour sharing is not enforced as a norm in Kurichya families; rather it spins around the celebrations associated with crop cultivation, especially of that of paddy cultivation. The seed sowing marks the coming together of the entire family for the first time for an agriculture season and it will be celebrated with a feast and there are other rituals held as a part of sowing. There are instances, where Kurichya families deployed their community labour for works line pre-monsoon cleaning of streams, which were otherwise carried out under MNREGA scheme.

Practice cultivation and community labour is quite different in Kuruma community. Most of them are cultivating in small pieces of land as independent farmers. Even with the jointly owned property, individual households are allotted with individual plots of land, and they carry out cultivation in that allotted piece of land, and they need not help each other in doing during crop cultivation. There is no common land set aside to serve the common needs of the joint family. At the same time, there are organic connections which bring them together despite the lack of a coherent community structure like that of Kurichyas. Few individuals from Kuruma community have great concern about each other's farming and crop. Omana from Anappara colony was worried about her brothers' paddy fields, and she was trying to contact her brothers and in-laws to

enquire how are they going to harvest the paddy in the heavy rains. She was ready to offer her support in the carrying out the harvest. She usually gets help from her siblings in the cultivation of paddy, last year her elder sister came to help her in transplantation and that time they finished transplantation in their paddy field in a single day. It is not organised community labour as it is in the case of Kurichya community.

Kuruma people are still growing traditional paddy varieties for domestic consumption, whereas in Kurichya joint families in the individually held piece of land paddy are not the crop of choice; they rather go for cash crops like Banana, Ginger, etc. The lack of coherent community structure and community labour is not a hurdle before Kurumas to make their decision to cultivate traditional paddy varieties. Working as casual labourers they ensure the income and allot their land for the cultivation of traditional paddy varieties. Few of the Kuruma farmers are cultivating traditional varieties in their land and surviving with the income they are earning from working as agriculture labour. Some of them are cultivating cash crops for income generation and traditional crops for consumption. Kurichyas and Kurumas identify or realise their self in relation to the paddy cultivation. While most of the respondents are elderly members of the family, they are worried about the continuity of the cultivation of traditional varieties since the younger generations are not much into cultivation of paddy. Even in the households, where youngsters are engaged in farming, they are not very convinced with the loss incurred by cultivating traditional paddy varieties. Omana's son a graduate, keep a note on the expense and income and he is much worried about the loss incurred in the traditional paddy cultivation. He shared it with his mother and she is also depressed about it. At the same time, she is optimistic and believes that Kurichyas and Kurumas will never abandon traditional paddy varieties. It will be unjust to limit the discussion on traditional social fabric about these two communities alone.

Paniya and Adiya communities are major labour force working the paddy fields of Wayanad. Land owing non-Adivasi farmers highly depend on these two communities for paddy cultivation. Both landowning Adivasi communities, Kurichya, and Kuruma communities are not an exception to this, still not in the same manner as that of non-Adivasi communities. There are Paniya puras in the premises of Peruvadi Kurichya

tharavadu and the Karanavar Peruvadi Kelu's made it clear that they do get Paniya labourers when they need that why the Paniya puras are located in the premise of their Kurichya hamlet. Kuruma farmers also mention Paniya labourers worked and working in their field.

4.3 Traditional Agricultural Practices and Traditional Knowledge in Conserving Agrobiodiversity

From farmers account, the traditional farming practices and knowledge associated with it is of utmost importance in the cultivation of traditional varieties in their field. Traditional agricultural practices are drawing from the traditional knowledge system, and they feed on each other and exist symbiotically. An enquiry into the in situ agrobiodiversity conservation will be incomplete if there is no mention about the role of traditional knowledge system and traditional agricultural practices.

Farming community adheres to a number of traditional cultivation practices they value. While, there are another set of practices eventually became irrelevant, and abandoned by the farming community. Mechanisation, landscape changes, changes in land use pattern, and change in cultural practices made a number of traditional agricultural practices along with associated knowledge insignificant. Practices such as Methayidal to store harvested paddy stalk are not in use anymore. The technological advent led to the mechanisation of farming activities. Availability of farm machineries made practices like harvest, transplantation, and threshing easier than it used to be in the past. This annihilated the previously existed need for certain practices, skills, and knowledge associated with it. With the availability of mechanised harvester and thresher, the need for a practice like Methayidal became irrelevant. In other words, the context which demanded Methayidal as a post-harvest practice has become archaic.

Farmers are following those traditional practices which they found beneficial in the present times, and also because of beliefs associated with those practices. They are still following the local agriculture calendar, and sow seeds in the month of Kumbham. Sowing in the month of Kumbham is found to be a useful practice by the farmers since it will ensure the germination of crops and the crops withstand the weather. The lunar calendar is taken into consideration while carrying out sowing and harvest. The same is

used for harvest of other natural resources as well, such as felling trees and bamboos. Trees should not be felled during elampkkam, and it is believed that felling of trees for the purpose of furniture making should not be done in this time since it may result in the poor quality of wood.

The lunar calendar is strictly followed for harvest and seeding. Harvest has to be carried out according to vaavum pakkavum , it is believed that otherwise the paddy may get spoiled while storage. Leave aside farming. Kurichya farmers will not even handle seeds during black moon days. The continuity of traditional cultivation practices is not essentially related to belief systems, and there are other reasons which ensured the continuity of traditional practices. For the purpose of seeds, most of the farmers' prefer manual harvest over mechanical harvest. The decision of harvest is also influenced by the allied farm activities. Farmers who own cattle tend to prefer manual harvesting over mechanical harvesting since the cattle prefer the manually harvested straw due to its juicy nature; which the mechanically harvested straw is devoid of. And farmers responded to this situation by adopting manual harvest of paddy followed by mechanical threshing with a tractor. It is evident that farmers tend to follow traditional practices associated with the harvest, and storage firmly. They are willingly following this to ensure quality seed, and also for the enhanced shelf life of the produce. Practices like keeping menstruating women away from handling seed are also common among the farming community. Belief system and traditional knowledge are an essential part of traditional agricultural practices.

Traditional knowledge forms the base of traditional agricultural practices, and it shaped traditional agricultural practices, and decision making at the farm level. Farm-level decision making depends upon the farmer's knowledge about the field condition, and crop varieties. In the case of paddy cultivation, selection paddy varieties are made according to the nature of the field. Paddy fields are categorised into two by the farmers as Karakandam and Kundukandam. This classification a part of traditional knowledge helps the farmers to wisely choose crops and varieties for cultivation in their field. Kundukandam is the low lying paddy field with stagnated water. Karakandam, lay in the higher elevation with sandy soil, and it is not swampy in nature. This is classification is essential in the cultivation of traditional varieties of paddy. Thondi variety of paddy will

be cultivated in Manalkandam (Paddy field with sandy soil) and other paddy varieties are grown in Kundukandam or Chelikandam (Paddy field with clayey soil). Thondi is a lodging prone variety, and cultivating it in the clayey soil will result in increased yield loss owing to the incompatible nature of field type and crop.

Apart from the inherited knowledge like the classification of paddy fields, the knowledge learned by farmers from their everyday engagement with the field is important in agriculture. Rajesh Krishanan, shared the opinion that after a decade of engagement with agriculture, he learned about his field. And he claimed that farmer's knowledge about his/her field is a decisive factor in farming; if a farmer has an idea about the nutrient availability in the field, it will be useful in decision making about the cultivation practices. In a field rich with basal nutrients paddy can out-compete the growth of weeds, and in this case, the weeding can be avoided. Farmers who are keen about their field make choices in the farming practices by looking at the growth of paddy and relating it with the likely availability of nutrients in the field.

Most of the farmers said to learn the traditional farming practices from the elders of the family. This is how the knowledge exchange happened over generations. Manuel offered a narrative that depicts how farmers were relying on the knowledge inherited from elders in agriculture. Selection of seeds, date of sowing and harvest was followed according to the knowledge inherited by the elders. He learnt things from his father and also from other elderly farmers. As a descendant from the family migrated to Wayanad from Travancore he recalled that the migrants adopted the cultivation methods of Wayanad in the beginning. This gave an account of the spread and exchange of knowledge happened across different communities engaged in farming, and also locates the importance of traditional knowledge in the day to day engagements of farming. His efforts to reach other the elders in need of help or opinion signify the importance of traditional knowledge in agriculture.

Traditional knowledge and skills associated with traditional practices are still valued by farmers. Erosion of traditional knowledge held by both farmers and agricultural labourers are said to have implications on the day to day activities and the decision making in the field level. Venkitesh a farmer belongs to Chetti community from Kattikulam, repeatedly pointed out the lack of traditional knowledge as one of the huge

trouble he is facing in farming. He took up farming at a later point by quitting his job as a teacher followed by his father's demise. He is aware of his lack of knowledge about farming. He is adopting the widely followed practices for the harvesting of paddy, and trying to learn the traditional practices and associated knowledge since it's important to have a grip on them in order to cultivate traditional varieties. He also has the opinion that erosion of knowledge of agricultural labourers is also affecting farming.

The knowledge held by agricultural labours is very important in cultivation. Venkitesh said to bear a huge loss of hay since the labourers didn't properly stake the hay. In other contexts farmers who later took up farming as an occupation has great respect for the knowledge held by the labourers. Farmers who took up farming as an employer of choice are admitted that they learn a lot from their labourers. While some of the farmers are not engaged in the learning process, they make sure that the knowledge held by the farmers is being used appropriately. Balaramaswamy, a farmer from Dwaraka depend on the knowledge of Kurichya farmhand. Selection of planting material and variety is made by the Kurichya labourers for Balaramaswamy. Even with the spread of farm mechanisation, traditional knowledge about crops, crop varieties, and cultivation practices are important for farm level decision making.

4.4 Looking Beyond Tradition

The farming community of Wayanad actively took up learning to use new cultivation practices and technologies. The newly learned knowledge and practices are employed together with the existing practices which stemmed from the traditional knowledge system. Farmers are interested in learning new practices that tend to help them in resource management and also to earn better yield. Few of the farmers are very enthusiastic about learning a new package of practices, such as System of Rice Intensification (SRI). Adoption of SRI didn't force the farmers to leave any of their traditional practices associated with paddy cultivation. Efforts of a number of organisation and governmental agencies were crucial in popularising SRI. One of the government employees associations have offered training and input materials for cultivating paddy under SRI, their activity was based on Vazhavatta in Muttil Panchayath. Anil Kumar, a farmer benefitted from the training have an opinion that SRI is a good practice to cultivate paddy. Mr. Johnson, a migrant farmer who came and

settled in Wayanad for taking up farming as his employment recalled that, people were willing to give a try at SRI in paddy cultivation. He adopted two types of seedling transplantation under SRI. One is kettinatti, he considers it as a progressive form of seed ball, where the seeds are dipped in cow dung and forecasted in the field. Organic manures and biofertilizers like jeevamritham and azospirillum are respectively filled in the holes of the rubber mat (Which is like the holes in the door mat), followed by placing the seed and covering it with some kind of material. Later the pellets will be dried after the removal of the rubber mat. This can be placed in the field instead of the single seedling transplantation in SRI. This can be used to save around 10-15 days on managing nursery and the seed treatment will enhance the yield. Apart from the support from the Regional Agriculture Research Station and State Department of Agriculture, he also obtained information about SRI from the internet.

In this chapter, the traditional practices, knowledge and their role in the conservation of agrobiodiversity is discussed in depth. Addition to that memory is looked upon as a ledger of history and also as a presence of past in everyday life. Conservation effort cannot be located in the realm of traditional practices and knowledge alone. There are narratives from the landowning farming community about the glorious past; it should not lure someone into glorifying the existed exploitative nature of the labour-farmer transaction in the field of farming in Wayanad. Memories of farmers and their laments about the lost efficiency of labour force and the increased wages provoked me to think beyond peasantry to understand the farming in Wayanad as represented by most of the scholars and those narratives didn't have space for agriculture labour as a stakeholder in the entire activity of conservation, the ghost present of agriculture labour has to be seriously looked at since, paddy cultivation was essentially depended on the availability of cheap labour in the past, which is extracted from Paniya, Adiya and Wayanadan Pulaya communities. Drawing from the traditional practices need not draw the caste related exploitative practices from the past. Farmers of Wayanad made smart steps by clubbing two different knowledge systems at their farm level to cultivate traditional paddy cultivation. Few of the traditional practices and knowledge related to those practices became irrelevant due to the changed social context. The argument about the exploitative labour practices will not discount the role of traditional practices and

knowledge associated with that practices in the farm level decision making and conservation of agrobiodiversity, rather it will disagree with romanticising past by drawing attention to the unjust practices associated with traditional agriculture system. In this line it's also important to understand how these various communities have responded to the new legislation dealing with the conservation of agrobiodiversity like BDA, 2002 and PPVFRA, 2001 and how are they helping the farming community to conserve agrobiodiversity by providing a set of complementary practice to their traditional practices in the conservation of agrobiodiversity.

Farmers of Wayanad have a narrative of a glorious past where they produce food for themselves and shared cordial relationship with the agricultural labours. This narrative is shared by indigenous communities of farmers and the descendants of farmers who migrated to Wayanad. Fall of moral economy is one of the significant components in the narrative of glorious past apart from that the accounts of glorious past carry details about changes occurred in the landscape level, land use pattern, nature of engagement with the landlord and tenant, tenant and agriculture labourers. The stories of glorious past are also the story of agrobiodiversity loss and lost food sovereignty. It is important to narrate story drawing from different narrative shared by farmers from different communities. This result narrative will bring about a past which is experienced and lived differently by different communities engaged in farming. Apart from mapping how the changes occurred and how they are perceived, this lost glory of the past is also acting as a determining factor at the present farm level decision making. Hence, the effort is not to use memory as the ledger of the past even though it is used to understand the trajectory of changes and trace the complex and interconnected nature of changes.

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Chapter 5

Diverse Interests and one goal: Modern Practices and Conservation of Agrobiodiversity

In the previous chapter role of traditional institutions, practices, knowledge system in the conservation of agrobiodiversity is discussed at length. Conservation of agrobiodiversity on the farm is not an activity that is limited with to traditional practices and institutions since the farming community is keen to learn new practices which will add on to their efforts of field level agrobiodiversity conservation. As discussed in the third chapter there were efforts to frame the nation's legislations in accordance with the changes happening in the international. The introduction of new legislation happened as a result of India's obligation made to a number of international agreements in which India is a signatory. In this context, CBD is an important international convention which reshaped the legal understanding of biodiversity as a resource to be conserved in India. Numerous NGOs also picked up this changing momentum and designed their conservation interventions in accordance with the changes brought in the legal sphere. Consequently, several new actors found their way into Wayanad in this changing context. These new actors include the state institutions formed as mandated by the new laws and acts, NGOs, trade organisations and farmer's organisations.

There are different and varied interests of NGOs and agencies. Couple of NGOs are highly visible actors in the agrobiodiversity conservation in Wayanad and it is impossible to discuss the agrobiodiversity conservation by leaving those organisations besides. Discussing the interventions and contributions made by the NGOs in the light of new legislation will be the best way to enter into the ongoing conservation efforts of Wayanad. This chapter discusses conservation efforts and their impacts in the agrobiodiversity conservation in Wayanad; especially by farmers self-help groups, Padasekhara Samithy, which plays a supporting role in the conservation of agrobiodiversity. It is of utmost importance to introspect into the efforts made by these non-state actors in conserving agrobiodiversity.

5.1 Conservation of Agrobiodiversity: Efforts Made by NGOs

MSSSRF initiated their Community Agrobiodiversity Centre in Wayanad as early as 1997. The location was chosen considering the rich biodiversity of Wayanad. This

reason was emphasised by the publication by the organisation and the works of people associated with it. Thanal began their activities towards conservation of agrobiodiversity as a part of saving our rice campaign and initiated their first Rice Diversity Block in Kammana, in Wayanad district in 2010, and they initiated their Agro-ecology Centre in Panavalli by 2013. The presence of these two important centres from two prominent NGOs brought attention to agrobiodiversity conservation of Wayanad

To map transformation in the field of agriculture, and on-farm conservation it is important to look into all new actors, who became like a part of conservation efforts of Wayanad at a later point. As Thanal and MSSRF are the major NGOs working for the conservation agrobiodiversity in Wayanad, it is important to discuss the interventions and objective of both the NGOs to map the ongoing transformation in the field of agriculture and how it influenced the on agrobiodiversity conservation in Wayanad. Two of the NGOs have very different motives in intervening in the conservation effort, which is evident in their nature of interventions. Yet they share a plethora of similarities in their mode on interventions. It is unavoidable to discuss the nature of interventions of both these NGOs extensively.

5.1.1 Thanal's and Agrobiodiversity Conservation: Shared Knowledge and Common Heritage

Thanal's early initiatives in the conservation of agrobiodiversity dated back to 2010, with the seed caravan campaign as a part of 'Save our Rice Campaign'. Seed caravan covered 30 centres in the northern districts of Kerala, and ended up with seed distributing program at the Thanal's Agro-ecology Centre, Panavalli. For agrobiodiversity conservation, Thanal collaborates with a number of organizations namely Bharath Bij Swaraj Munch and Kerala Jaiva Karshaka Samity, and adopted multitudes of activities and strategies.

Thanal is maintaining a paddy, and tuber germplasm in the campus of their agro-ecology centre in Panavalli. There total entries of the germplasm are 210 including varieties from countries such as Thailand. 164 paddy varieties collected from India, and out of that 32 are folk varieties from Kerala. Tuber germplasm has 40 entries. Presence of crop varieties originated outside Wayanad in the biodiversity block is justified by the view that diversity is not bound to any isolated spaces and exchange brings diversity into

the field. Till now Thanal has identified 24 characters for all the folk varieties of paddy in their collection. Thanal's efforts in agrobiodiversity conservation are not limited to the establishment of on-farm germplasm. Seed Savers Network (SSN) facilitated by Thanal has positive impacts on the conservation of agrobiodiversity. Apart from the one in Panavalli, there are thirteen diversity blocks managed by Thanal, and eleven out of the thirteen rice biodiversity blocks are being managed by SSN.

Besides Thanal's support in educating farmers about farming traditional varieties, and providing seeds; formation of SSN gave hopes to farmers. Farmers said that presence of this network made them feel confidence by assuring a sense of belongingness, through helping them to get away with the lonely state of being by providing a chance to stay connected with farmers who are concerned about the conservation of agrobiodiversity. The confidence farmers gained by coming together is incredible. SSN is a collective forum of voluntarily mobilized farmers, interested organizations and even educational institutions. Leneesh claimed that the formation of SSN in Kerala motivated a number of farmers to cultivate folk varieties (FV), and it also led to the creation of a seed exchange system.

Apart from facilitating the formation of SSN and efforts towards in situ conservation by maintaining diversity blocks with the help of farmers, Thanal's efforts also run into the marketing of farm produce. Thanal provides market linkage to farmers and helped them to fetch a premium price for their produce. The price offered by Thanal is always higher than that of the market place, and this assured price gave confidence to farmers that they can thrive by cultivating the traditional paddy varieties. The produces procured from farmers were sold through the Organic Bazar of Thanal at Thiruvanthapuram, where Thanal's office is located. Thanal's conservation is not targeting any particular farming communities and any willing farmer can be a part of SSN. Leneesh, shared the opinion that the current trend of taking up farming by educated youth as a profession can bail out agrobiodiversity. And farmers who take up farming as a profession of their choice acknowledge the support Thanal extended to them in the initial days in supplying seeds, facilitating them to learn about the farming practices. Johnson and Rajesh Krishnan are thankful to Thanal for supplying them with seeds in the initial phase of farming.

Picture-3

Weekly Market Organised by WaMP

It is evident from the interventions of Thanal that they are seriously considering the role of IK in conservation. Thanal sees traditional knowledge system related to agriculture in Wayanad as a shared knowledge system, as a number of farming communities co-exist and share the knowledge system in this landscape. Leneesh shared the view that the migrant farmers learnt the knowledge acquired by indigenous communities over the years from the indigenous communities, and address every farmer as the stakeholders of this knowledge. Thanal is worried about the rate of erosion of TK, and community wisdom, and are working on conserving it. Thanal took up an effort to document TK, and the organization also did their bit in documenting TK related to food, and this included the documentation of edible leafy vegetables, recipes, etc. Leneesh, who is involved in these efforts understand IK is a dynamic entity and it's impossible to document every aspect of it, still count this effort to conserve TK important owing to the loss of this informal knowledge system. He also shared a hope that communication and dialogues between the farmers are going to keep the IK dynamic and alive i.e., sharing of knowledge among farmers has a great role in enriching IK. Meanwhile, Thanal is planning to bring out a book by collecting agriculture-related IK of Wayanad.

Thanal did organise seed festivals in their Agro-ecology Centre in Panavalli, and it offered a space for farmers to exchange or sell their seeds. Thanal supplies seeds of 5-6 FV every year from the yield obtained from their Rice Diversity Block. Farmers are given with an opportunity to seeds of their choice after verifying the performance of the varieties of paddy in their germplasm collection. This opportunity is still available, but the seed festival was later taken up by Biodiversity Management Committee (BMC) of

Thirunelli Panchayath and the venue shifted from the campus of Agro-Ecology Centre to Kattikulam.

Thanal, an NGO which was primarily active in issues related to the environment started their activity to conserve agrobiodiversity as a component of their effort to save wetlands. Thanal emphasize the ecological services rendered by wetlands (Paddy field Ecosystem) and look forward to safeguarding wetlands and avoid the conversion of wetlands by keeping the paddy cultivation in the fields. To obtain the full-fledged ecological services from the paddy cultivated wetlands, Thanal recognized the need for cultivating paddy organically. In order to make the organic rice production economic, Thanal focused on the culture of FVs of rice. The tolerant and resistant nature of FV of rice is found as a favorable character which encourages the organic cultivation of FV of rice economically viable. For Thanal the safeguarding environment is their prime concern while making interventions in the conservation of FV. In other words, the conservation of traditional paddy varieties is a part of Thanal's effort to conserve wetlands.

Thanal vehemently opposes any kind property right assertion over traditional crop varieties, since they believe that the crop diversity is a result of efforts and collaborations of different communities happened over the years. And that cannot be claimed by any individual farmers or by a group of farmers with the help of the modern property right regime. It can be observed that they are conceptualising agrobiodiversity as a shared heritage. They strongly disagree about the potential of intellectual property right as a tool in the conservation effort, and also argue that the usages of intellectual property rights will exclude certain sections of farmers from getting benefit out of cultivating the same crop varieties. To substantiate this Leneesh project officer with Thanal gave the example of Geographical Indicator claim made over paddy varieties like Njavara, and its impact on larger farming communities. Thanal is critical about the exclusion of a set of farmers from enjoying benefits from cultivating the very same variety which has registered as a GI product of different place. They are not in favour of the differential benefits enjoyed by farmers of any particular region by cultivating the variety which is grown over a larger region. Thanal is critical about the GI status of Gandhakashala and Jeerakashala gained by seed care a farmers organisation backed by MSSRF. They see this as an injustice

towards farmers from the neighbouring districts of Nilgiris (Tamil Nadu) and Mysore (Karnataka) from availing the same benefit by cultivating the same variety of paddy and also commented that exclusion of this nature will tunnel the conservation effort in the much broader manner.

Despite the claims made about having no target group, Thanal's engagements with the farming community particularly benefit a bunch of farmers, who are educated, young and new to farming and Wayanad. And the effort has nothing for an indigenous family engaged in cultivating traditional paddy varieties for their domestic consumption. Their efforts are aligned with modern scientific knowledge, they characterise the folk varieties according to the traits recognised by modern science. This effort is inclusive by letting farmers be a part of it, yet it asserts the epistemic merit of the knower. Despite the acknowledgement of "IK as a dynamic knowledge system" by the individual leading Thanal's activity in Wayanad, the efforts to document and conserve IK is still on. They do acknowledge the diffusion of knowledge among the farming community and that again helped them to initiate a platform to facilitate interaction between farmers, which can keep IK related to farming activities. Thanal's view of region and understanding agrobiodiversity as a shared heritage is significant since they are not trying to add value to Wayanad over neighbouring places. Thanal do consider the rights of farmers from neighbouring places and conservation in a closed region is not their motive and the SSN they formed is covering the entire state.

5.1.2 MSSRF's Agrobiodiversity Conservation: Invoking Indigeneity and Boundedness of Region

MSSRF established their Community Agrobiodiversity Centre in Puthoorvayal in 1997. Multidimensional interventions are made to conserve agrobiodiversity. The initial works they took up was to document biodiversity. Later, the organisation began to work on the conservation of traditional varieties in the field and established field germplasm in their campus. The organisation closely associates with farming communities in their effort to conserve agrobiodiversity. MSSRF is framing their conservation efforts in tune with the changing legislation. They mobilised farmers to claim the benefit of the newly introduced legislation. Seed Care, a farmers' organisation backed by MSSRF registered 21 paddy varieties of Wayanad registered as farmer's varieties under the Protection of

Plant Varieties and Farmers Right Act, 2001. And this organisation claimed GI for Gandhakashala and Jeerakashala two scented paddy varieties. Apart from Seed Care, MSSRF organised farmers from Adivasi communities under the organisation called Adivasi Vikasana Pravarthaka Samithy.

Apart from the two organisations directly concerned with conserve agrobiodiversity, MSSRF also facilitated the formation of a producer marketing company named Wayanad Agri-Producer Marketing Company (WaMP). MSSRF had played a role of facilitating the sales of farm produces in order to ensure better revenue for the farmers, and now they are planning to withdraw from this by forming a producer-marketing company. As a part of kicking off the activities of WaMP a weekly vegetable market was launched. This idea was discussed in the WaMP meeting, and the first weekly market was held in December 2017 at Kalpetta, the headquarters of the district. Seed festivals are also used to make WaMP popular. WaMP put up stalls in the last two seed festivals organised by MSSRF. WaMP is expected to detach from MSSRF with due time and work as an independent producer-marketing company.

MSSRF's efforts to conserve agrobiodiversity are closely associated with the farming community. Farmers from different communities with diverse land holding sizes linked with the NGO. In Anappara hamlet, Kuruma farmers obtain seeds of traditional paddy varieties apart from those traditional varieties of paddy they conventionally cultivate from the NGO. Other than the seeds of traditional varieties, MSSRF also provide them vegetable seeds, and staff from the NGO often visits them, and there is an interpersonal connection between the field staff and the farmer which in turn is facilitating the NGO's interventions. People from Anappara Kuruma colony often contribute their labour for the preparatory activities of seed festivals, given the proximity with MSSRF's Community Agrobiodiversity Centre campus.

The support is beyond ensuring the availability of seeds. Madathuvayal Kurichya family has two metallic seed bins received from MSSRF. They were also asked to keep a written record of seed exchange. Yet, Madathuvayal Raman the chieftain of Madathuvayal Kurichya family decided to refrain from the meetings and programs organized by MSSRF regularly saying that it's a wasteful affair for him, spending much

time in travelling. MSSRF keep their focus on Kurichya and Kuruma communities in their conservation effort, as these communities immensely contributed towards safeguarding the agrobiodiversity. The support extended to these communities in conservation is justified by saying that traditional farmers moved away from the previous cultivation practices due to the change in the family set up, and property ownership. Currently, the communities are in a dwindling mindset about agrobiodiversity conservation, and it's believed that support or intervention can serve effectively in this context for safeguarding agrobiodiversity. Adivasi farmers are awarded as seed saviours as a part of every seed fest, which in term act as a morale booster to the communities.

Picture-4

Madathuvayal Raman with the seed bins installed by MSSRF at their Tharavadu

Their effort towards the conservation of agrobiodiversity is not limited to the conservation of traditional crop varieties and they expand it to the conservation of greens and other food items which can be obtained from the commons. Their good food campaign was an attempt to mainstream the IK related to that food and to remove the social stigma attached with the consumption of certain food and caste, especially of that associated with seasonal vegetables consumed by the tribal communities (Paniya). There is a conscious effort from MSSRF to document the IK of landless agriculture labours (Paniya) with regards to the food they obtain from the commons. They also tried to create a market for the locally available seasonal vegetables by removing the social stigma

attached to it. MSSRF accept that the IK is of paramount importance in the conservation of TVs. MSSRF offers training to farmers with an objective to help them in using the newly gained knowledge along with IK, not by replacing it.

MSSRF's conservation efforts are shaped by keeping Kurichya and Kuruma communities in the centre. They back three farmers' organisations as a part of their conservation effort. They acknowledge the role of IK with reference to cultivation and gathering of greens. While, how the interventions are shaped has to be critically engaged. Let us consider the example of seed bin received by Madathuvayal Kurichya family, they never asked for it. And it was empty during my visit which was during the sowing season. And the support comes with strings attached as a part of seed bin and management of seed exchange, the family was asked to keep a note of seed exchange, which farmers don't do otherwise.

MSSRF said to have done their bit in mainstreaming the food of Paniyas, while the participation of Paniyas and Adiyas two of the communities who are the major labour force in the paddy cultivation in Wayanad is under-represented in the 'Adivasi Vikasana Pravarthaka Samity', despite the usage of the umbrella term Adivasi. This representation is problematic since it makes the contributions made by two Adivasi communities towards the conservation of paddy insignificant. Projecting the locally collected greens as the food of Paniyas and not ensuring their participation in the 'Adivasi Vikasana Prakarthaka Samithy' is problematic. MSSRF attempt to invoke indigeneity by forming an Adivasi organisation, where it can be compared with the Campesino uprising and assertion of rights in Andes, as this is organised by an NGO, and the members of this organisation is the ones have landholding i.e., the idea of modern property right in determining the members of an organisation which invoke indigenity and use the umbrella term Adivasi.

Farmers who turned into farming as a matter of choice are not a major focus group of MSSRF. And there is no attention paid towards the likely contribution can be made by these set of farmers. Beyond reinforcing the image of Wayanad as bounded regions, these efforts also essentialise the meaning and values of TVs with antiquity. While there are efforts to use the market in the conservation as well. It has to be noted that the seed saviour award presented as a part of their seed festival is exclusively considering

Kurichya and Kuruma families, it is justifiable considering the historic contributions made by those communities and it practically acts as a token of appreciation for those two communities. It leaves behind a group of farmers without acknowledging their contribution in agrobiodiversity conservation.

> As a part of my master's thesis, I got an opportunity to attend a meeting of Adivasi Vikasana Pravarthaka Samithy held at the Community Agrobiodiversity Centre, MSSRF prior to the seed fest 2017. Most of the office bearers of the organisation were from Kurichya and Kuruma Communities. Very few people from other Adivasi communities were present in the meeting. One among them, Nanjan a Paniya farmer from Meenangadi raised his concern over how his voice will be heard in the organization as a Paniya. It was received with no response from the office bearers. The representatives from MSSRF present in the meeting also chose to negate the concern raised by the Paniya farmer.

They are not concerned about the impact of the young farmers taking up farming as a profession by choice in their conservation effort. Every organisation backed by MSSRF is based on Wayanad barring the few members hailing from the nearby neighbouring district. The organisation is facilitating the farmers to claim their rights assured under PPVFRA, 2001 and claimed those varieties as farmers' varieties of Wayanad. It can be observed that the conservation efforts of MSSRF constitute Wayanad as a bounded region. The understanding of Wayanad and indigeneity in the conservation efforts of MSSRF is problematic since it fuel exclusion of many, who also can be considered as stakeholders.

5.2 Addressing a Single Concern Differently: Conservation Efforts of Thanal and MSSRF

One can draw parallels between both the NGOs; both identified a group of farmers as their contact farmers and working along with those groups of farmers, yet a clear distinction can be observed in the contact farmers group of both the NGOs. The contact farmer group of Thanal is constituted by farmers mostly mobilised by them. Whereas, in case of MSSRF there is a substantial effort made by the NGO in mobilising contact farmers of MSSRF are mobilised by the efforts of the NGO. MSSRF is deciding the agenda in conservation intervention, in other words, the organisation is following the top-

down approach in decision making by sticking on to the agenda of conservation proposed by MSSRF. Let us consider the earlier mentioned case of seed-bin given to Madathuvayal Kurichya Tharavadu, despite no requests made by them. And the provision of the bin made MSSRF to request the farmer to do a certain task to monitor the seed exchange, i.e., to enter the seed exchange which farmers usually don't do.

According to Ms. Suma Vishnunadh social scientist with MSSRF, the NGO is giving more importance to community conservation. According to the farmers from the Kuruma community living near to MSSRF Agrobiodiversity Centre, staff from MSSRF visits them frequently and they are in constant touch with the NGO. Their efforts in conserving agrobiodiversity are placing the Adivasi communities in the centre. The approach of Thanal is starkly different from that of MSSRF. According to Mr. Leneesh, the second wave of migration into Wayanad has to be taken into consideration and the migrated farmers can also play a crucial role in the conservation. The contact farmers of Thanal are mostly younger comparing to the contact farmers of MSSRF since the farmers associated with Thanal are mostly the migrated farmers or those who later took up farming as employment.

Both the NGOs have their role in shaping the nature of seed exchange and agrobiodiversity conservation in Wayanad. The services offered by the NGOs to the farming community are found to be shaped by their focus group. MSSRF is not focusing on training new farmers and Thanal is not facilitating Kurichya and Kuruma communities to stick on with the cultivation of traditional varieties. Both the NGOs act as a channel for obtaining seeds of traditional crop varieties and they made significant contributions in making the seed exchange network more open in nature and establishing a close link between farmers who are cultivating the traditional crop varieties with special reference to traditional paddy varieties.

With a difference in opinion about IPR regimes, stakeholders, and target groups, both the NGOs had made similar measures to conserve agrobiodiversity. Still, their efforts constitute two Wayanads. Thanal, constitute a Wayanad with porous boundaries and their interest in agrobiodiversity conservation is not limited with the given jurisdiction boundaries of Wayanad. They want to consider agrobiodiversity as a 'common heritage'

and stand for the rights of farmers beyond Wayanad, when the GI of two scented varieties seems to harm them by initiating a discourse of authenticity. They also critic the farmers' variety registration, suggesting that the entire regime of IPR has to be challenged and assigning property rights to farmers cannot be considered as a solution. MSSRF's efforts constitute a Wayanad which is bounded and place the two landowning Adivasi communities as the stakeholders of the traditional paddy varieties. They are bringing controversial stands in the conservation of agrobiodiversity, they are invoking indigeneity to conserve agrobiodiversity while the idea of indigeneity gets influenced by the modern IPR regime. And apart from efforts to invoke indigeneity and finding values of traditional varieties in antiquity, the same organisation align with the modern IPR regime and try to tap benefit from those legislations to conserve agrobiodiversity. With differences and same concern both, these NGOs contribute towards the conservation of agrobiodiversity and they constitute Wayanad as a part of their effort differently. Besides these NGOs, there are farmers organisations engaged in the conservation of agrobiodiversity.

5.3 Farmers Organisation and Trade Agencies in Conservation

Thanal and MSSRF have farmers association, that is established by their effort and those organisations have important roles to play in the conservation effort. And there are farmers organisations formed by the efforts of farmers without the help or support of any other organisations or agencies. The differences between these organisations are beyond how they are formed. These associations have varied interests as well; few of these farmers organisations are dealing with conservation as a direct interest. Seed Care backed by MSSRF and SSNW supported by Thanal are these kinds of organisations. Apart from both these organisations Kerala Jaiva Karshaka Samithy is also active in the conservation of agrobiodiversity, and they are doing it along with their effort to popularise organic farming. Apart from all these, there are farmers' organisations with the sole motive to ensure better revenue for the produce, through fair trade.

5.3.1 Producer Companies: Making Farming Profitable

Farmers' producer companies are established to ensure a good price for farmers produces by eliminating middle-men. There are a number of producer marketing companies functioning in Wayanad including WaMP, Thirunelli Agri-Producers

Company, and Wayanad Natural and Holistic Farmers Producer Association (WNHFA). Apart from WaMP, the rest of the companies are formed by farmers themselves without any support from NGOs or any other agencies.

Previously MSSRF was channelling the orders for organically grown traditional crop produce. Now the newly formed company will be in charge of doing so. This company is marketing the rice from the traditional paddy varieties, coffee powder, turmeric powder, cardamom, etc. Seed festival organised by MSSRF for the last two years had a stall of WaMP selling traditional rice and value-added products made from rice. WaMP is headed by Divakaran, a farmer from Pozhuthana. WaMP meetings are held at the campus of MSSRF with the presence and participation of staff from MSSRF. The participation of staff in the meetings indicates the say the NGO has in the decision of the producer-marketing company.

Unlike WaMP, Thirunelli Agri-Producers Company is formed by farmers themselves. Farmers formed this company to address the hiccups they faced in marketing their produce in the previous market channels they relied on. Most of them were depending on the Organic Bazar of Thanal, and the long-distance marketing and the issues associated with it forced the farmers to think about marketing their produce in the nearby markets. This producer-marketing company is a result of an effort to market the produce in the nearby markets. A farmers' Self-Help Group (SHG) constituted by ten farmers from a neighbourhood in Thrissileri formed shareholders in the Thirunelli Agri-Producers Marketing Company. Mr. Rajesh Krishnan who was pivotally forming the SHG and this company is the current CEO of this producer-marketing company. Company managed to contact 150 farmers from Thirunelli Panchayath so far. They are hopefully looking forward to the sound population of customers based in nearby urban centres.

They are optimistic about the customer preference developed in favour of the traditional varieties as a result of the activities of Thanal and KJKS. At the same time, this is not the general trend, the majority of the customers are still ignorant about the traditional paddy varieties. This is considered as one of the major hurdles in front of the producer-marketing company. Scented rice varieties have a huge demand in the market

and it is met by the scented rice imported from other states, and this situation is creating a great market potential for Gandhakashala and Jeerakashala.

As a newly formed producers company, Thirunelli Agri-Producers Marketing Company has to go ahead by facing the number of hurdles. Since they are planning to market the produce with the organic label, the lack of knowledge about the package of practices followed by individual farmers created a tough state to handle. Mr. Rajesh, CEO of this nascent company is worried about ensuring organic products. In the case of producer marketing company, the trust of buyers in the company is important and the company is planning to have Participatory Guarantee Certificate. The shortage of supply is identified as a major constraint they are going to face as a nascent company. Farmers cannot store the produce with them for a long time by depending on a single buyer or purchasing agency, this is one of the major concern behind forming this company. Their activity is not limited to the supply of organic rice, the company also received the order is from the Brahmagiri Development Society for seeds of traditional varieties of paddy.

Another producer-marketing company formed by the zero budget farmers of Wayanad. In the 2000s a number of farmers from Wayanad picked up zero budget farming as an alternative. They attended the trainings offered by experts in zero-budget. A lot of farmers attended the training sessions handled by Subhash Palekkar, the proponent of zero-budget farming himself. The adoption of zero-budget farming helped a lot of farmers to avail premium price by growing organic produce. Farmers adopted zero budget farming came together and formed WNHFA. They have an organic shop in Eranellur, Panamaram where produces such as country cattle's ghee too, vegetables, spices and rice available.

Fair Trade Alliance of Kerala (FTAK) is another group actively engaged in the fair-trade of organically grown produce from the hilly districts of Kerala. Unlike, the other producer companies rooted in Wayanad, FTAK is active in Kasargod, Kannur, Wayanad, and Kozhikode districts. FTAK is marketing traditional rice varieties such as *Thondi, Gandhakashala, Jeerakashala, Mullan Kayama,* and *Veliyan* under the brand name *Kabani* in the domestic market. FTAK is also involved in the exporting of spices, coconut, and coffee. Food security, Gender justice, and Biodiversity are three major

slogans raised by FTAK. The effort is to channel the benefits of fair trade to ensure food security, gender justice, and biodiversity.

According to Mr. Tomy Mathew Vadakkancheril, owner of ELEMETS an organic shop one among the pioneers worked behind the formation of FTAK, the governmental policies in the field of agriculture had placed farmers in vulnerable position, and the increased rate of farmers suicides in Wayanad in the early 2000s moved him to intervene in the farming sector as someone hail from a family of farmers and also an activist. The major export destination of FTAK is Europe, due to the growing interests in those markets on organic produces and fair-trade. He recalled that they never had to be apologetic about the marketing of their produce in the overseas market, rather they had a chance to say it firmly that our produce is safeguarding the rainforest in the Western Ghats and you must pay us for that.

The profit generated from organic farming halted the penetration of market with a variety of agrochemicals, and it also helps the biodiversity conservation of Wayanad positively as farmers will not abuse agrochemicals in their farm as they became keener about the cultivation of crops organically. Selection of the market is done by considering various factors including the market price into consideration. FTAK is not encouraging the export of paddy or tubers as these are the key crops ensuring nutrition and food security in the farm families. Export is limited to cash crops. The representation of women among the office bearers in FTAK is notable compared to the other farmers' organisations. He strongly believes that the noisy democracy (by referring the noisy resolution happened over selecting farmers who will be given bee boxes as a part of seed fest organised by FTAK) will keep FTAK on track, and no one's voice will be muffled in the organisation. Many of the office bearers of FTAK were former office bearers of Infarm, and the organisation has a sound population of Christian farmers as stakeholders. We may not understand the field dynamics if we are not giving the household decision making on marketing needed importance.

5.3.2 Making Choices of Cultivation and Marketing

It is observed that few of the farmers associated with WNHFA are also associated with FTAK. They are picking up the best choice out of the two in for selling their produce. For cash crops like coffee, they prefer to rely on FTAK in order to get the benefit of export price. For perishable products and paddy, they are depending on the shop run by WNHFA. Farmers are not only depending on these two, but they are also using the marketing facility offered by Wayanad Social Service Society (WSS). WSS was formed as a result of interventions made by Church. They are also active in the export of coffee. Vanamoolika and Organic Wayanad are other export agencies which farmers are looking for the export of Coffee and spices. The certified organic farmers are exporting their produce through all these channels. There are farmers those who are associated with more than an agency and they make the decision by considering the price being offered. All these exporting agencies will be giving money after the consignment of product. The time elapse is forcing farmers to sell their produce in domestic market, since it will ensure cash at the time of sale of products.

There are farmers who depend on Brahmagiri Development Society to market their paddy. While there are farmers who decided to sell their produce by themselves since they were not satisfied with the price offered by the society. Farmers who have a consumer base don't find it difficult to sell their produce. Let it be Shelli, who is selling value-added products made out of rice to his neighbourhood, Venkitesh who is sending rice to consumers living in Ernakulum and Trivandrum, Johsnon selling his rice to an Ayurvedic hospital and ELEMENTS or Rajesh who can send the value-added product from *Nenthran* Banana to an organic shop in Chennai. I never came across an Adivasi farmer making use of such marketing channels. There are people from Kuruma community like Balan or few of the Kurichya household selling their produce in the neighbourhood or shops in the neighbourhood. The trust between others and the framer is ensuring their market.

Mr. Manuel is also helping farmers to market their produce at a price higher than that of the market price. He is helping a lot of farmers to get a better price for their produce especially the tuber producers. The farmers' selection of market and market

linkage has a lot to do with the information available to the farmer, which depends on their social location. Rajesh and Johnson both took up farming lately in comparison with the other farmers managed to access the markets that fetch a premium price, and cultivating traditional paddy varieties are not a wasteful affair for them. It makes their major source of income. At the same time, there are farmers those abandoned or thinking to shift from the cultivation of traditional paddy varieties. Those who are still sticking with the cultivation of traditional paddy varieties are mostly the ones cultivating those for domestic consumption or the people from Kurichya or Kuruma community for whom cultivation of paddy is a part of their way of life.

At the same time, the marketing companies or farmers organisations are not the only factors brought farmers into the conservation of agrobiodiversity, whereas they offer strong anchorage for the farmers' efforts to conserve agrobiodiversity. Few of the farmers have their own personal reasons to take up the cultivation of traditional crop varieties. A peek into their stories will help one to identify how individuals are assigning values to farming as an occupation and how they understand agrobiodiversity. Rajesh was motivated by the save our rice campaign while working as a project officer with Green Peace. Johnson who was a teacher wanted to live a life in which he brings him peace. He took Wayanad for that, as a person hails from the family of farmers he always wanted to take up farming. He along with his wife is also running an evening school for underprivileged children in their locality.

Venkitesh who was previously a teacher also has a similar story to share. He used to associate with the organisation named "*ore bhoomi ore mannu*" and participated in the programmes organised by them. Through this, he got to know about K V Dayal from Alappuzha district. Support extended by him is considered as crucial in Venkitesh's decision to take up farming. Support and knowledge shared by K V Dayal helped him a lot in getting into farming, even though he doesn't identify himself as an active member of the organisation. These accounts are elucidating how one is assigning values to farming as an occupation and how one is seeing agrobiodiversity and its important. In this line, it is important to into the new gatherings and new spaces for gathering which are reconstituting a space to come together for the farming community.

Out of these three farmers, none was attracted to the cultivation of traditional paddy varieties as it is a profitable venture. At later, points they made their efforts to make it profitable by depending on available marketing channels and forming producer-marketing companies. These examples are significant not just to illustrate that farmers are trying to make cultivation of traditional crop varieties profitable, rather it elucidates how traditional crop varieties have meanings and values to educated youngsters, who are not from Wayanad. Their concern is shaped by their nostalgia for farming, knowledge about conservation and awareness about the need to safeguard the environment. This validates that, it is not necessary to have long term engagements with the varieties or to preserve the traditional social fabric to conserve agrobiodiversity.

5.4 Festivals and Celebrations: Coming Together and Happiness in Agrobiodiversity Conservation

New festivals and occasions to come together have been created in the field by NGOs, farmers' organisations, and farmers themselves to serve motivation to the conservation efforts. Seed festivals are held annually and this renders a space for coming together, and exchange of knowledge, and seeds among the farming community. Both the NGOs Thanal and MSSRF organise seed fests annually. Among the farmers' organisation FTAK organise annual seed festivals. These seed fests are appreciated by farmers as venues for knowledge, and seed exchange, which is a new space for knowledge exchange as told by a number of farmers. The fashion in every seed fests are organised is different.

MSSRF hold their annual seed festivals in the campus of Community Agrobiodiversity Centre in Puthurvayal which is near to the district headquarters. The seed festival is not an event exclusive to the farming community; it attracts people from different walks of like. Apart from the informal knowledge exchange happening between farmers and between farmers and other people who are buying the seeds or planting material for their kitchen garden, there is a formal session held in the seminar as a part of seed festivals. Scientist from State institutions like IIHR Bangalore, Kerala Agriculture University and other state Universities, an activist from other NGOs like Thanal and State Biodiversity Board interact with the farmers in the formal sessions. Farmers are also invited as speakers and discussants in the formal sessions. Farmers will be honoured with

the Award of seed saviour in each seed fest. The cash price for the Award is taken from the Award received by Seed Care under PPVFRA, 2001.

The seed festival is being organised with the support of governmental agencies. Kudumbasree Mission, State Biodiversity Mission, District Panchayath and Biodiversity management committees collaborate with the seed fest. Stalls are allotted for each BMC from each village of Wayanad. Apart from that, stalls were allotted from farmers and farmers groups from other places. One stall was for the farmers from the neighbouring district of Nilgiris, another stall was for the millets from Kolli hills Tamil Nadu, where MSSRF has another centre. There was a stall by Pulari a farmers group from Payyanur, Kannur district of Kerala. In addition to all these one stall was there for WaMP and it intends to introduce their products to people.

Thanal used to hold seed festivals in the campus of their Agro-ecology centre in Panavalli, and now it is taken over by the BMC of Thirunelli Panchayath, where Mr. Leneesh the project officer from Thanal is a BMC member. Last year, Thirunelli Panchayath conducted the third seed festival, and the venue shifted from Panavalli to Kattikulam to ensure more participation. For the last two years, Kattikulam remains as the venue of the seed festival. Around 2000 people participated in the last two seed festivals. As a part of the seed festival, we organised a lunch called *"Nalla bhakshanam"* (Which can be translated as good food), to popularise the TVs of paddy and tubers. Apart from farmers, there were stalls of other primary producers such as weavers. Two stalls were occupied by weavers. Both weavers' groups were from Tamil Nadu, one was the Lambada tribes, and the other was a weavers group from Chennai named 'Tula'. Rajesh recalled that these two stalls were the major attraction in the seed fest. The first seed festival was anchored by Thanal. BMC stepped in and it anchored the second seed fest, whereas the third seed fest was hosted by BMC. Taking up of seed festival by BMC was gradual.

Edavaka BMC has been organising seed festivals for the last couple of years. The first seed festival was held at Ellumandam as a part of Ellumandam fest, which was a village fest. Thanal, was active in the seed fest and they displayed seed diversity and posters creating awareness about environmental issues. Food was also an important part of this seed festival as well, in the first seed fest; they served rice porridge along with

boiled mixed tubers to create awareness about the tuber diversity. The second seed fest was held at Dwaraka, and the farmers of Edavaka Panchayath actively participate in the seed festival, and the seed festival also turns into a venue to appreciate farmers of the Panchayath who are doing good at conservation and development of new varieties of crops.

FTAK holds annual seed festivals. Unlike the seed festivals held by MSSRF or the one initiated by and later took up by BMCs, the seed fest are held at different venues each year. Farmers associated with FTAK take part in the seed fest with their produce for exhibition and sales. While I visiting Alakkal Jose of Nadavayal, he was busy with organising things for the upcoming seed festival. He has seedlings of tomato that yields small fruits. He is expecting people those who are interested in the kitchen garden to buy that. He is multiplying the Pepino planting material. He is also preparing saplings of eranji (a tree with white fragrant flowers, Bakul in Hindi). He is also preparing kanthari chilli seedlings for the seed fest. He is not preparing the saplings and seedling by keeping just the farmers in mind. He is expecting people to buy Eranji saplings for their garden, and Kanthari chilli is for the ones need it for the kitchen garden. Pepino is an exotic salad vegetable, but that's also finding its way to the seed fest.

FTAK seed festival also accommodates people such as Blacksmiths, and Potters.

FTAK held its 2019's seed festival in Sulthan's Battery, Wayanad. Farmers from all the four districts FTAK functions were present at the seed. Country breed of cattle was also exhibited in the seed fest. And the seed festival had the participation of people those who are running organic shops in cities such as Chennai and Pondicherry, as they see this as an opportunity to contact a number of farmers at a go. One representative from organic outlets was hoping the stalls to find dealers for her shop. The weavers' group Tula, and ELEMENTS had their stalls in the seed fest. Parallel sessions were held with scientists from the coffee board, experts among farmers and also people from MSSRF.

The governmental support received by the seed fest organised by MSSRF makes it distinctive from the seed festivals organised by others. Among all the seed festivals mentioned here, two are held in the Panchayath level organised by BMCs of the respective Panchayaths. From this point let us look at the activities of BMCs and how it is playing a role in the decisions making in the Panchayath level. Seed festivals offer an

occasion to come together and share. It is a role in making the seed chain more open is commendable. It also ensures a common place where IK is exchanged casually and there are formal sessions dealing with scientific knowledge. It has its role in incorporating a sense of belongingness to the farmers. Many of the farmers are overwhelmed about this opportunity, and they explain how they grow traditional varieties with pride and happiness, Abdulla Haji, a respondent from Padinjarathara shattered into tears as he said he is solely struggling to cultivate all these and none in his family want these crops anymore.

Bringing happiness to agriculture is addressed as a need by Rajesh. He and his neighbours tried to recreate Kambalanatty as a part of it, and this revived form of Kambalanatty is free of the feudal elements as they didn't follow the previous format where the landlord is pivotal in the process. Farmers and agricultural labourers worked together in the field with music. Manual refused to consider this new form of Kambalanatty is not considered as Kambalanatty, and Manual and he adds that they tried to conduct Kambalanatty once and to make it complete they invited the Nair landlord in their locality to be a part of it. This again complicates the efforts to understand the meanings and values of agrobiodiversity, as many who took up farming owing to various other reasons and settled in Wayanad later turned into the search of festivals from the past to bring happiness in agriculture, and it again complicates the role of past in present.

5.5 Role of BMCs and Panchayathi Raj Institutions in Conservation of Agrobiodiversity

Wayanad is one of the pioneering districts came up with BMCs in every local bodies. Edavaka Panchayath is the first Panchayath came up with the People's Biodiversity Register in India. In the year of 2012, State Biodiversity Board with the support of Ferns an NGO based in Mananthavady constituted pilot BMC in Edavaka Panchayath. Currently, BMCs are there in every panchayath, and the relevant question is to what extent they are functioning to ensure the conservation of agrobiodiversity.

In Edavaka Panchayath BMC has a say in the landscape management. They are consulted in the landscape management programmes implemented in the local body level, and BMC gave root map for the works to be completed under the Mahatma Gandhi

National Rural Employment Guarantee Act. In Edavaka BMC had a role in decision making about how the watersheds and streams have to be managed. It is said to be similar in Poothadi and Muttil Panchayath as well. Rainwater harvest pits and earthen bunds are constructed under MNREGA as recommended by BMC in Muttil Panchayath. Landscape-level management decisions are made by BMC and MNREGA works are designed to serve that need.

Few of the farmers and BMC members are happy with this level of activities being carried out by BMCs. Landscape management has a great role in managing an agro-ecosystem conducive for the cultivation of traditional crop varieties. In Edavaka Panchayath the BMC established an agrobiodiversity exhibition plot for tubers by consulting the elders and also by inquiries made to Centre Tuber Crop Research Institute (CTCRI), Sreekaryam, Thiruvananthapuram. Few farmers are dissatisfied with the manner BMCs function. They observe that much more can be done with BMC if the body is given autonomy and sufficient fund. They challenge the manner funds are being allocated for BMCs and how this nature of fund allocation can make the committee handicapped.

Mr. Mauel a BMC member from Edvaka panchayath take the example of how the fund was allocated for BMC to build an office, whereas sanctioning funds for BMC activities is not an easy task. He is worried about his personal efforts in the conservation duped in as the BMC activities. In line with that, the totally opposes the habit of writing off activities carried out by a Panchayath at the normal level into BMC activities, for example, distribution of vegetable for fruit tree saplings. It is also observed that the constitutions of BMCs ensure the presence of people from marginalised communities and women. It works similar to that of 'Adivasi Vikasana Pravarthaka Samithi', the members are from the landowning communities. Ownership of land is serving as a token, which determines the entry people into the decision making bodies.

He also thinks that the powers of BMC as a quasi-statutory body are yet to be used. As BMC can request the Tehesildar for immediate action on issues like the reclamation of paddy field, which mandate the officer in charge to take immediate action within 24hrs. This kind of power vested in BMC made the politicians uncomfortable and it constitutes a reason for the power tussle and attempts to keep BMC as a dormant body. Many of the

respondents shared the experience that the BMC being captured by the political parties. Since BMCs holds certain power with regards to the landscape level land management like reclamation wetland. Few of the respondents think that the lately earned awareness about the power of BMCs in crucial decisions made the political parties to either capture BMC or to keep the respective BMC in their local body inactive. The power tussle doesn't mean that BMCs are absolutely idle in Wayanad. There are BMCs which are still doing playing their role in conservation.

Few of the farmers associating with Panchayati Raj Institutions either as BMC member or as a working group member are acting as a pressure group. In Thirunelli and Edavaka Panchayath the presence of pressure group is the one deciding the works carried out by the BMC Working in association with BMC and PRI helped the farmers to gain more insight about how these organisations can help in the conservation of agrobiodiversity. They are not only making suggestion and feedbacks about the functioning of BMC rather highlighting certain flaws in the legislation itself, and how it is disarming BMC from its capacity to conserving agrobiodiversity.

Mr. Rajesh and Mr. Manuel were critics of the manner BMC is functioning at the same time they are part of the BMCs and Working Committees in their respective Panchayaths and they are relentlessly working towards making BMCs more equipped for the conservation of agrobiodiversity. It is observed that those BMCs where partisan politics is not deciding the members are functioning better than the other BMCs. There are a lot of issues hindering the smooth functioning of BMCs at the same time it is not doom situations since there are people from the farming community capable enough to voice their discontent and critic about BMCs and the way PRI are dealing with BMCs. While a large number of farmers who cultivate traditional crop varieties are not aware of the presence of such a body in the local body.

5.6 Mapping the Transition

A bunch of new actors came into Wayanad with the motive to conserve agrobiodiversity. In spite of the difference in core ideas, they adopted similar strategies to conserve agrobiodiversity. MSSRF's activities align in line with the State policies and legislation, and they also collaborate with the state for implementation of legislation such

as BDA. Thanal is a staunch, critic of many of the legislation and all this is emerging from ardent disagreement with modern IPR regime. Thanal's stand on legislation pertinent to conservation echo the criticism raised by Hajer that the discourses initiated by CBD didn't insist on any structural change rather preferred a "modernist and technocratic approach" towards environment i.e., the interest is so finding a "techno-institutional" solution for the present issues (Hajer, 1995 as cited in Ganguly, 2016). Then NGO expresses disbelief in the usage of modern IPR to conserve agrobiodiversity and argue to see agrobiodiversity as a 'common heritage'. Here the articulation of 'common heritage' is not carrying in the same meaning as it had in the international negotiations. Various stakeholders of a set of crop varieties are scattered in three neighbouring States of India namely, Karnataka, Tamil Nadu, and Kerala, and facilitating farmers from Wayanad district of Kerala with modern IPR right over these varieties may tunnel the conservation effort as a whole. Thanal acknowledge the diversity host by Wayanad, yet the NGO prefer to stand with the farming community as a whole and this decision challenges the understanding of place as a bounded entity.

MSSRF's efforts brought in a Wayanad, where Adivasi farmers are actively engaged in the cultivation of traditional crop varieties. Their publications reinforce this imaginary of Wayanad. The formation of Adivasi Vikasana Pravarthaka Samithy and seed saviour award dedicated to Adivasi farmers in every seed festivals accentuate the importance they assume to Kurichya and Kuruma communities. While using the umbrella term Adivasi to refer two landowning communities and alienating the Adivasi communities such as Adiya and Paniya remains problematic. Indigeneity assertion here again falls into the regime of property rights and only landowners are considered as the stakeholders of agrobiodiversity. The field activity of MSSRF is inclusive towards other communities as well, but the publications are revolving around two Adivasi communities.

In spite of the efforts of various agents to create meaning and values of traditional crop varieties from the past, the very same agents and their actions are making boundaries more porous and bringing new stakeholders into the field of conservation. Agents like MSSRF, whose publications give a bounded idea of Wayanad is making the

boundaries porous by letting the farmers from neighbouring districts to be a part of their conservation effort, and connecting farmers to market across the state.

The market is gaining importance in the field of conservation. The presence of a bunch of producer-companies is the evidence of attempts made to keep cultivation of traditional crop varieties profitable. Most of the people instrumental in the formation of producer-marketing companies are not Adivasis, and it was not the profit which attracted them to farming. This makes it clear that the traditional crop varieties have meaning and values in contemporary times to people who are not born in Wayanad but chose to come and settle as farmers here. This meaning is quite different from the meaning the Adivasis of descendants of early settlers have for the traditional crop varieties.

The ones, who later take up farming is also interested in the past of agriculture in Wayanad. As the traditional social fabric wither away, they are trying to create new spaces for coming together and share belongingness. As mentioned in chapter 4, there were a number of celebrations associated with farming. Currently, farmers are trying to bring back happiness to agriculture by re-creating practices such as Kambalanatty with an effort to detach it from the feudal past of Wayanad. It can be observed that past is also influencing the ones who came into Wayanad in the last decade and their imaginary of Wayanad and its farming practices.

Learning and agency of farmer are crucial in farm level decision making and conservation. Currently, they are making choices of cultivation practice by drawing from various knowledges available to them. At the same time, most of the farmers are not informed about BMC and its activities, and the farmers who grow traditional varieties for domestic consumption are the ones who are ignorant about BMC and its activities. It is few of the farmers, mostly non-Adivasi farmers who were vocal about the activities of BMCs and constitutes the members of BMCs. Adivasi presence in the committee is mandated and the landowning Adivasi communities again fill this slot. And the power tussle between PRI and BMCs has led to the inactive state of BMCs in few Panchayaths.

All the conservation efforts are made the boundaries porous and made the connections with farmers and distant markets strong. Various agencies offered various

special imaginaries as a part of their conservation goals. KJKS is thriving to conserve agrobiodiversity in Kerala. FTAK is concerned with four northern-hilly districts of Kerala. MSSRF's Community Agrobiodiversity Centre is concerned with the conservation of agrobiodiversity in Wayanad. The simultaneous actions of these actors and enabling of a new market made a Wayanad, with more porous boundaries.

Chapter 6

Conclusion

From the evidences shown in earlier chapter we can observe that, meanings and values are constituted and re-constituted for agrobiodiversity in the field, which draw from various knowledge systems. The existing value and meaning of traditional crop varieties that are developed as a result of long time engagement with those varieties are pivotal in the conservation. New meanings are added later, with the entry of new stakeholders, NGOs, legislations, and institutions. These actors and their interplay also developed Wayanad as a place apart from their contribution in the conservation of agrobiodiversity. And this chapter discusses and concludes on the role played by legislations, institutions, and NGOs in *in situ* agrobiodiversity conservation and in the development of a place.

6.1 Memory, Knowledge and Conservation

Cultivation of traditional paddy varieties is a part of being Kurichya or Kuruma. Kurichyas and Kurumas recall the glorious past, and memories of it help them to identify themselves as the ones cultivate traditional paddy varieties. Communitarian life of Kurichyas, and Kurumas positively contributed to the conservation of agrobiodiversity. Memories linked to cultivation, and consumption of traditional crop varieties serve as a factor which forces the farmers to stick on to the cultivation of traditional crop varieties. Memory is actively playing out in decision making about cultivation in the Adivasi households. In other words, memory is not a register of things from the past rather it is the driving force where one find themselves and assign meaning and value to their self. Similarly IK is also observed as a factor which is closely associated with the traditional crop cultivation.

Memory may be interfering in the decision making in Adivasi households; where as the reference to the past which emerge from the collective memory is strong enough to influence the later settlers, who came to Wayanad in the last decade. This moved those people who are new to Wayanad -having no memory relating to any of these crop varieties- to look into the past as a measure to revive current cultivation and to bring

happiness into agriculture. As part of it, a modified version of *Kambalanatty* was performed with efforts to make it different from what it used to be. Reviving such practices seems to be easy because of the memory still persist about those practices in the minds of farmers and agriculture labours. One of the non-Adivasi farmer shared his opinion that this cannot be called as *Kambalanatty*, since the landlord is not assuming an important role in it and he referred another attempt made to revive *Kambalanatty* where they engaged the local Nair landlord as a part of it. The former attempt to revive *Kambalanatty* and make it as a transplantation-festival is giving the chance of assigning to new meanings to the practices from the past, and that is very hopeful from an *in situ* agrobiodiversity conservation point of view.

IK also needs to be considered in line with memory. It is valued by all organisations involved in the conservation, let it be governmental agencies or NGOs. Farmers and other actors are also well aware about the importance of IK in the cultivation of traditional crop varieties. IK held by agriculture labours is out of the purview of governmental agencies or NGOs. Farmers do value the knowledge of agriculture labours, especially the ones newly took up agriculture. They acknowledged the role of agriculture labours in their learning process. Some of these farmers bestow more responsibilities to the labourers. Few traditional practices, especially those related to seed collection, preservation and sowing are strictly followed by farmers. The lunar calendar is still followed for agricultural activities. The practices which were important for labour management such as *Methayidal* became obsolete after the wide spread of technology. Still it cannot be concluded that the traditional and modern practices are competing in the field.

Seed festivals and informal gatherings help farmers to obtain seeds as well as knowledge. There are efforts by individuals and NGOs to record the knowledge, whereas IK is continuing in the field and finding new learning channels and spaces. It is not necessarily exchanges among community and family members, and it has became a shared knowledge system held by farming community of Wayanad irrespective of which community held it and developed it so far. The exclusivity of IK is not asserted by any of the farmers, all were willing to share and the new farmers are eager to learn as well. IK is

not seen as the only knowledge system, which has role in conservation of agrobiodiversity by any of the stakeholders.

6.2 Complementarity of Traditional and Modern Practices and Decentralised Conservation

As discussed earlier in chapter 2, modern and traditional worlds are not non-colliding worlds exist in the same place. Modern and traditional practices have their interfaces, where they come in contact and interact. Traditionally the community structure had a role in preserving crop varieties, ensuring the continuity of cultivation, and use of those crops. Currently the community structure of Kurichas has its own role in conserving paddy varieties, which is not exactly the same role as it was served in the past. New communities are formed beyond traditional lines and those too offer a sense of belongingness to farmers from Adivasi and Non-Adivasi communities. This manifested in the formation of farmers organisations mentioned in chapter 5. Farmers came together to share a sense of belongingness in organisations such as SSN.

These farmers' organisations offer a range of supports to the farmers. These services range from support for conservation to facilitating marketing. Multiple memberships in various organisations help farmers to gain benefit from every organisation they are enrolled as members. Now a new context has created by these actors for cultivation of traditional crop varieties, since conservation with the help of traditional practice cannot be considered as the only way of conservation. It is evident from the example of *Methayidal,* and how it became irrelevant as a practice. The effort is not to conserve traditional crop diversity as a part of traditional way of life; rather the efforts constitute new meanings, values and stakeholders. The meanings and values constituted are not competing with the traditional ones, but they are interacting with each other and constituting another meaning and values.

The complementarity of traditional and modern practise can be illustrated at its best through considering the producer-companies. Farmers, those who are keen about the need of conserving IK, owing to its importance in the cultivation of traditional crop varieties are also keen about the market. They are aware about the market trend, and the scope of

primary producer companies in the market. It is not a prerequisite to preserve traditional way of life to conserve agrobiodiversity, since the meaning and values of traditional varieties are not just emanating from this way of life. Farmers are catching up with the market, and finding a way to earn profit from organically cultivating traditional crop varieties. Their efforts led to the creation of new combinations of traditional and modern, where crops cultivated with traditional practices were marketed under a collectively owned brand name. Even the ones have staunch criticism on modern IPR regime especially with reference to the registration of farmer's varieties, and GI tag of *Gandhakashala* and *Jeerakashala* are using registered brand names to market their products. This mark the penetration of modern IPR regime and market, yet this is different from Aistara's account of how new legislations are enforced as a part of organic farming in Latvia and how it devalued the traditional knowledge and termed the seeds as 'germinating grains' (Aistara, 2011). We can witness negotiation between modern and traditional practices, and modern knowledge system is not assuming a superior position as it assumed in Latvia to homogenise packages of cultivation. Unlike Latvia, there is ground of negotiation between the modern and traditional practices in India, which is in favour of the conservation effort.

This negotiation also extended to field level as farmers' are making the package of cultivation as a combination of modern and traditional practices. Tractors are used to prepare land and for threshing, and most of the important farming practices are still scheduled according to the lunar calendar. The importance of IK in cultivation is appreciated by the educated farmers who later took up farming. They are learning IK from farmers and labours. Adherence to IK is not preventing farmers from adopting new practices or from clubbing traditional practices related to IK with modern practices. Farmers took up SRI and different practices of seeding and transplantation to cultivate traditional paddy varieties. They are also aware about the importance of certain infrastructure such as having mechanised mill and farm machinery such as tractor, which essentially linked with the scientific knowledge to continue their farming profitably. Memory and IK are pertinent in the conservation, at the same time farmers are open to modern scientific knowledge and rely on both to conserve agrobiodiversity.

New communities like SSN and events like seed fests ensure continued presence and use of IK. Seed fests enabled a space to come together and share seeds and knowledge. It provides organised, yet informal, platform to interact with fellow farmers. This has to be juxtaposed with the idea of conserving folk knowledge by creating formal institutions as proposed by Gadgil et al. The proposed formal institutions are envisaged to contribute towards maintenance of knowledge systems by constructing a new context for continued practice of local knowledge (Gadgil et al, 1999 as cited in Gadgil et al, 2000). The interaction and exchange of IK in newly created informal space was much helpful than that of BMC's documentation efforts. As BDA is skewed towards the access and benefit sharing, IK related to agriculture don't have much importance, because it can't be merchandised to earn income. Seed festivals helped to open up seed exchange network. As described in chapter 4, farmers conventionally inherit seeds from their family and learn IK from elders in the family (Not ignoring the porous nature of seed exchange system and willingness of farmers to share seeds). Seed festivals created new space for transaction by making it as a space accessible to farmers from various communities. Seed exchange network, facilitated by seed festival, cannot be seen as a mere modern seed exchange practice 'introduced' later, rather its ensuring continuity of traditional informal seed exchange. Seed festival is not a replacement for existing informal seed exchange in neighbourhoods or among kin; it is an attempt to make it more open and accessible to farming community and other stakeholders.

Legislations on agrobiodiversity introduced new responsibilities at local self government. BDA mandated every BMC to have PBR, manage conservation, and use of biological resources. This provision makes sense for plant resource that can be merchandised, such as plans of pharmaceutical importance. Conservation of agrobiodiversity can be addressed by BMCs, but the committee is expected to earn money for its activities through access and benefit sharing of biological resources. It doesn't mean that BMCs don't engage in the conservation of agrobiodiversity, rather BMC can't generate money for the conservation from agrobiodiversity unlike plants of pharmaceutical importance and it will hinder the funding for agrobiodiversity conservation. BMCs organise seed fests at the Panchayath level, and provide space for coming together to farmers for exchange seeds and knowledge. Panchayath level seed

festival ensured participation of people other than farmers in the Panchayath. Few BMCs took initiatives in landscape management by suggesting activities needs to be carried out under MNREGA, to facilitate the agrobiodiversity conservation by ensuring the needed landscape elements for cultivation of traditional crop varieties, especially with reference to paddy cultivation.

Cultivation practices and landscape level management offer coalition of new practices with the traditional ones in the conservation of agrobiodiversity. The seed festival offers an extension of the traditional informal seed exchange. Market also acts as complementary with demand of organically grown traditional varieties. This is a new trend, considering how the millets were out competed by the cash crops that had market potential.

6.3 Constituting Place and People: Wayanad and Farming community in Wayanad

In situ conservation happening in a 'place' can be the result of various factors, and efforts. Conservation efforts constitute the place for conservation along with the people those are responsible for conservation. Wayanad is often portrayed as a place where two Adivasi communities are actively engaged in cultivation of traditional crop varieties, especially the traditional paddy varieties. This portrayal undermines efforts and contributions of other communities in conservation of agrobiodiversity. MSSRF took initiative in forming an organisation named *Adivasi Vikasana Pravarthaka Samithy*, and it lacks representation from the Paniya and Adiya communities.

As mentioned in the chapter 5, organisation named as the welfare organisation of Adivasis is not an inclusive one. In fact it is not even including all the Adivasi communities engaged in farming. This is unjust, when there are no efforts to address Paniyas and Adiyas as stakeholders. Despite the appearance of organisation as rooted in Adivasi communities, this is formed in lines with modern property rights. All members of this organisation are from landowning Adivasi communities. Through this intervention MSSRF created a Wayanad, where Kurichyas and Kurumas are doing agriculture

independently. Farming is portrayed as peasantry, which made agriculture labours invisible. This portrayal denied ground to assert their rights as stakeholders.

MSSRF's efforts to mainstream Paniya community's food have to be introspected. Greens and other foods gathered by Paniyas are brought into market as a step towards removing the stigma associated with these foods and to mainstream it. This effort constitutes Paniya, whose life is essentially linked with the availability of greens in common land. Role and importance of Paniya in cultivation and conservation is ignored. There were no determined efforts to ensure their representation in the *Adivasi Vikasana Pravarthaka Samithy,* neither from MSSRF as patron of the organisation nor from landowning communities who holds significant posts in the organisation. This constitutes Wayanad as a place, where two landowning Adivasi communities lived by subsistence farming, and the Paniyas lived life by gathering food. This is not true considering the *Paniya puras* around the Kurichya farmland and their own account of having Paniya farmhands for the cultivation of paddy, as mentioned in chapter 4. Indigenous identity and place is discursively constituted in this context to justify certain conservation interventions. Adivasi constituted as custodian of IK, and seeds are an exclusive category. Adivasi communities are categorised based on their landownership, and modern IPR dictate the constitution of Adivasi, who can be a stakeholder. Neglecting the role of landless labourers undermine their contributions and knowledge as labourers in the conservation effort.

There are agrobiodiversity conservation efforts that evoked indigenous identity. One of the significant efforts in this line came from Andes. Glaring difference from the Andean conservation effort and that of Wayanad is the constitution of indigeneity and decision making. In Wayanad, the Adivasi-organisation is formed as a brainchild of MSSRF, whose prime goal is to conserve agrobiodiversity. This NGO actively involved in conservation efforts played great role in constituting people and place for conservation by evoking indigeneity. This indigeneity assertion can be disputed because of its exclusive nature. All these efforts contributed to a spatial imaginary of Wayanad as bounded place.

Thanal direct their efforts towards agrobiodiversity conservation by invoking spatial imaginary of Wayanad with porous boundaries. This constitutes Wayanad as a dynamically changing terrain. This NGO challenge the usage of IPR such as GI and plant variety registration as these constitute Wayanad as a bounded place. These ignore the inward flow of people and crop varieties into Wayanad. Thanal's critic of IPR cannot be seen as the manifestation of their understanding of agrobiodiversity as common heritage alone. It is essentially linked with their understanding of boundary. Thanal imagine Wayanad as a place that host heterogeneous farming community. Thanal is no motivator to farmers for cultivating traditional crop varieties, rather it played the role of a facilitator.

Thanal is not evoking indigeneity, in constituting place and people for conservation; but they are looking into farmers those who decide to cultivate traditional crop varieties as a result of their individual decision making. Thanal constitute Wayanad as a place with porous boundaries, where diverse group of farmers settled and are engaged in farming. MSSRF assign the responsibility of conservation to the Kurichya and Kuruma farmers, whereas Thanal constitute the well to do non-Adivasi farmers who is concerned about agrobiodiversity as people who can support the conservation effort.

The modern practices arise out of the implementation of new legislations that reinforce the idea of place as a bounded entity, from where resources can be drawn. MSSRF facilitated the implementation of PPVFRA and BDA. They also facilitated farmers to claim GI tag for *Gandhakashala* and *Jeerakashala*. The legislations made to conserve agrobiodiversity in India do not consider agriculture labours as stakeholders, despite of the knowledge and skill held by them. These legislations also contribute towards constituting farming as peasantry in India. The labour availability in past and present are driven by caste, the argument here is not to reinforce caste based labour and bring them back as agriculture labours, rather it is to emphasise the need of acknowledging their historical contributions in the conservation of agrobiodiversity. Constitution of place and people for conservation may serve as a continuity of the existed forms of exclusion.

All efforts to ensure market linkages made boundaries of Wayanad porous. MSSRF, Thanal, and producer- marketing companies, contribute towards making the boundaries of Wayanad porous. MSSRF's academic interventions and efforts to form *Adivasi Vikasana Pravarthaka Samithy* tend to constitute a Wayanad which is bounded, whereas their efforts to ensure market linkage are making the boundaries porous.

6.4 Ecological Agriculture: Conservation and Ecosystem Services

Ecological Agriculture is gaining momentum in Wayanad in various other names such as zero budget farming and organic farming. Ecological Agriculture in combination with fair trade offers a new space to negotiate better price for the organic produce. There are three farmers' organisations in the field from which KJKS is concerned about maintaining health of farm ecosystems.

Market is facilitating the spread of ecological farming by helping the farmers to avail higher price for their products in fair trade market overseas. This gave them confidence to relay on organic cultivation. All members in FTAK are certified organic farmers and many of them were first attracted to zero budget farming and later enrolled as members of FTAK. Many farmers hold membership in both WHNFA and FTAK. The growing market demand for organically grown products in India and abroad is facilitating farmers to adopt organic agriculture.

All the Producer-Marketing Companies are looking forward to market organic products, at least as safe products grown under Good Agricultural Practices. The organic bloom in turn facilitates conservation of agrobiodiversity, since high yielding modern varieties cannot be cultivated without agrochemicals. Complementary to this, traditional paddy varieties cannot be grown with agrochemicals as they respond to fertilisation with increased vegetative growth and lodging.

Mushrooming of producer-marketing companies and active presence of KJKS is good news for environment of Wayanad as well. The objectives of all these organisations are to increase profit and conservation, but this is also doing a bit towards ensuring the ecosystem services from agricultural landscape. Seeing this in connection with the interventions of BMCs in landscape management, scenario of conservation of Wayanad

is connecting many important dots such as ecological agriculture, conservation and market to make it a sustaining effort.

6.5 Scope for Further Study

Modern and traditional practices are acting complementary to each other in conservation efforts. Modern institutions and practices ensure continuity of traditional practices and its components as well. As a part of *in situ* conservation, place and people in charge of conservation are constituted and re-constituted by various actors. One of the NGOs and the legislations constitute a bounded imaginary of Wayanad. And another NGO emphasise about the movement of people and crops into Wayanad to illustrate it as a place, which has fluid boundaries. Market is further opening up the boundaries of Wayanad.

Even though this study offer a critic to the manner indigeneity is asserted in connection with conservation of agrobiodiversity, the interlocutors of this study are constituted by Adivasi and Non-Adivasi landowning farmer. If the communities working as agriculture labours are included in a further enquiry about agrobiodiversity conservation of Wayanad, it will offer a comprehensive picture of farming and agrobiodiversity conservation of Wayanad beyond peasantry. Many of the farmers mentioned about their trouble with unpredictable climate and application of IK which emerged from a context where climate change was not a challenge. Further enquiry is possible, if one want to understand the impediments of climate change on IK and how it is affecting agrobiodiversity conservation.

To understand how BMCs are understood by the office bearers of PRI and how it affect agrobiodiversity conservation, and how BMCs and PRIs act upon on agrobiodiversity conservation, there is a scope for further institutional ethnography study. This can be further explored to understand the nature of institutions established with the motive of decentralise decision making and management and to answer the question how decentralised is our decentralised biodiversity management.

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Questionnaire for NGOs

1. What are the mission and Visions of the organizations?
2. What are the major areas of interest of the organizations?
3. How long have been your organization involved in conservation of traditional crops in Wayanad?
4. Which are the target crops of your conservation effort?
5. Why those particular crops or varieties are given importance over other traditional crop varieties?
6. What is the nature of your intervention?
7. How many farmers are associated with the NGO?
8. Which are all the organizations or institutions supporting the NGOs in their conservation effort? If yes, what is the nature of support?
9. Are you collaborating BMCs in the agrobiodiversity conservation?
10. Is there any common platform for NGOs working for conserving biodiversity?

Questionnaire for Farmers

1. Name
2. Age
3. Gender
4. Ethnicity or Religion
5. Size of Landholding
6. How long you have been engaged in farming?
7. What are the traditional crop varieties under cultivation?
8. How long you have been cultivating the same varieties?
9. Why these particular varieties are selected for cultivation?
10. Are you cultivating this for domestic consumption or do you sell the produce?
11. Which are all the varieties you lost or abandoned over years?
12. What are the constraints you faced in cultivating traditional crop varieties?
13. Have you ever received any support from State department of agriculture for cultivating traditional varieties?
14. Which are all the organisations or institutions facilitating you to cultivate traditional crop varieties?
15. What is the nature of their support?
16. Are you a member of any farmers organisations?
17. Are you a member of Biodiversity Management Committee?
18. What are the activities of BMC in your village?

AGROBIODIVERSITY CONSERVATION :EXAMINING COMPLEMENTARITY OF TRADITIONAL AND MODERN PRACTICES

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