



Network for Certification and Conservation of Forests

Conservation of Non Wood Forest Resources for Sustainable Livelihoods



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FOREWORD

India is blessed with abundant forest and tree resources providing us many wood and non-wood resources which are tangible and physical objects of biological origin. Collecting, harvesting, processing, value addition and marketing of Non-Wood Forest Resources (NWFRs) is an important source of livelihood for the forest dwellers and local communities. Despite socioeconomic benefits, the forests are under substantial pressure, particularly in the growing and developing economies where large part of extraction is informal.

New trade and commerce opportunities are emerging and increasing for NWFRs having diverse uses ranging from food, beverages, pickles, medicines, oils, aroma, scents, tobacco, decorative, and many more. This ease of trade is opening new markets, bringing in decentralized governance, enabling the communities to have a greater role in management of these resources.

This well researched paper “Conservation of NonWood Forest Resources for Sustainable Livelihoods”, by Mr. Arun Kumar Bansal, a profound professional forester, Chairperson, NCCF’s Standard Development Group for NWFRs, is based on extensive stakeholder consultation by the author and his team, deals with the extent of availability and diversity of NWFRs, depicting broad norms for conservation and sustainable utilization of the resources, enhancing livelihoods and marketing opportunities for the grass root gatherers and thus uplifting their social and economic status.

NCCF is grateful to witness and publish the practical approach and suggested guidelines for dissemination of sector specific knowledge to the stakeholders for their larger benefit.



October 05, 2020

A.K.Srivastava,
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The research derives from the renewed insights gathered during the study conducted by Energy and Resources Institute (TERI) for providing methodology for fixation of Minimum Support Price for 12 Minor Forest Produces in nine states of the country during 2014-16, sponsored by Tribal Federation, Ministry of Tribal Affairs, Government of India.

Starting in 2017, Chairing the Standard Development Group, Network for Certification and Conservation of Forests (NCCF) for evolving sustainability standards for Non-Wood Forest products gave me the opportunity of extensive outreach to key stakeholders for my intensive research on the subject suggesting adaptable measures to formalize and conserve NWFP resources.

I place on record my thanks to TERI and NCCF for the above-mentioned assignments and hereby express my appreciation for the TERI team members, particularly Dr JV Sharma and Dr. Yogesh Gokhle, and the members of NCCF-MWFP Standard Development Group. I wish to make special mention of Dr Sushil Siagal, Applied Land Scientist, The Nature Conservancy, and Dr. Yogesh Gokhle, Fellow and Area Convener, Centre for Forest Management and Governance, Forestry and Biodiversity Division, who read through the initial draft and made valuable suggestions for improvement to make the synthesis report more apt.

I am extremely grateful to NCCF for agreeing to publish the report as NCCF Working paper.

A handwritten signature in black ink, appearing to read 'Arun K. Bansal', is written above a horizontal line.

October 05, 2020

Arun K. Bansal

CONTENTS

EXECUTIVE SUMMARY	v
ABBREVIATIONS	vi
FORESTS - A UNIQUE RESOURCE.....	1
NWFP TRADE	4
LEGAL FRAMEWORK RELATED TO NWFPS.....	7
MANAGEMENT OF NWFPS.....	16
SURVEY OF NWFRS	19
STRATEGY FOR MANAGEMENT OF NWFRS	28
CONCLUSION	31
REFERENCES.....	32
ANNEXURE - 1.....	33
ANNEXURE - 2.....	35

EXECUTIVE SUMMARY

Indian forests are resource and biodiversity rich, which support livelihood of 275 million people living in the forest fringe areas through non-wood forest resources (NWFRs). Despite the large quantum of trade in NTFPs, the management of forestry has largely been timber-centric. This approach has neglected the management of NWFRs jeopardizing their sustainability potential along with livelihoods of rural and tribal communities. This paper is an attempt to address the NWFR management issue by highlighting the prevalent legal framework around NWFRs and key operational challenges in their management.

This paper argues that sustainability and economic potential of NWFRs is yet to be realized because of systemic issues. Multiplicity of acts and regulations specifying different institutions as in-charge of NWFR handling and management has created jurisdictional confusions leading to mismanagement of NWFRs. Moreover, another major concern in NWFR's sustainable management is the lack of systematic and comprehensive data on various aspects of NWFRs. Current data collection exercises are largely small-scale and are either species-specific or area-specific. This paper argues for large-scale data collection on NWFRs using improved scientific methods. A good quality data collection exercise is to be conducted recurrently and should cover aspects such as mapping the areas of NWFR availability and potential, scientific harvesting, collecting, and processing of raw material, standardizing their harvesting and procurement procedures, third party certification. These data will help in unraveling impacts of various management practices and will be helpful in informing policymaking for ensuring the long-term sustainability of yields, and economic security of forest dependent communities.

ABBREVIATIONS

BDA	Biological Diversity Act
BIS	Bureau of Indian Standards
BMC	Biodiversity Management Committees
CFR	Community Forest Resource
CoO	Certificate of Origin
CRs	Community Rights
CSE	Centre for Science and Environment
DFO	Divisional Forest Officer
EU	European Union
FAO	Food and Agriculture Organization
FRA	Forest Rights Act
FRC	Forest Rights Committee
FRLHT	Foundation for Revitalization of Local Health Traditions
FSI	Forest Survey of India
GACPs	Good Agricultural and Collection Practices
GOI	Government of India
IFA	Indian Forest Act
JFM	Joint Forest Management
MFP	Minor Forest Product
mha	Million hectare
MOEFCC	Ministry of Environment & Forest and Climate Change
MSP	Minimum Support Price
NBA	National Biodiversity Authority
NCCF	Network for Certification and Conservation of Forests
NFP	National Forest Policy
NMPB	National Medicinal Plant Board
NTC	Normally Traded Commodities
NTFP	Non Timber Forest Product
NWFPs	Non Wood Forest Products
NWFRs	Non Wood Forest Resources
NWPC	National Working Plan Code
PBR	People's Biodiversity Register
PEFC	Programme for Endorsement of Forest Certification
PESA	Panchayats Extension to Scheduled Areas
PF	Protected Forest
PRA	Participatory Rural Appraisal
R&D	Research & Development
RET	Rare, Endangered and Threatened
RF	Reserved forest
RRA	Rapid rural appraisal
SDGs	Sustainable Development Goals
SFD	State Forest Department
SHG	Self Help Group
TERI	The Energy and Resources Institute
TRIFED	Tribal Cooperative Marketing Development Federation of India

FORESTS - A UNIQUE RESOURCE

Forest ecosystems are increasingly becoming important for their provisioning and regulating services. Globally, 22.6% of population (1.6 billion) in the year 2012 was living within five km zone of a forest, of which 71% of the population was situated in developing countries (Newton et al. 2020). Forest are a critical source not only for forest-proximate communities, but also for environmental benefits such as regulating global climate, conserving biodiversity, storing carbon, among others. Forest are being seen as essential resource for “green economy” and, that investment in forest conservation could make significant contribution to the transition to green economy, while reducing vulnerability and risks posed by climate change.

India, with mere 2.4% of world’s total geographical area is a home to about seven percent of world’s recorded bio-diversity. Even though India is one of the 12 mega-biodiversity hotspots globally, 17.5 percent of world population, and 18% of livestock population also live in this country. They provide livelihood support to over 275 million people living in and around forests – in 170,000 forest fringe villages (Indian State of the Forest Report 2019)¹. Per capita forest area in the country is 0.06 hectare (ha) against the world average of 0.59 ha. It is estimated that India’s forests meet 40 percent of the energy needs and 30 percent of total fodder supply in the country. Consequently, the natural resources such as forest are under huge anthropogenic pressures. Sustaining human lives and livelihoods while supporting over 46,000 species of plants and 81,000 species of animals, systematic management of forest resources is critical.

National Forest Policy (1988) set an ambitious target of covering one-third of India’s geographical area with forest or tree cover. According to the latest forest cover assessment by the Forest survey of India, forest and tree cover is reported to be 80.73 mha, which is about 24.26% (21.67% forest cover, 2.89% tree cover) of the total geographical area (Indian State of the Forest Report 2019). A cursory look of previous forest cover assessments indicates that India has successfully been able to arrest the deforestation. However, this analysis also highlights some worrying trends. Forest cover is declining in 34% of the districts in the country (Narain, Mahapatra, and Das 2020). Moreover, degradation of the forest resources affecting the quality of forest cover and productivity of the forests continues to be a matter of national concern.

The administration of Indian forestry has largely been timber-centric. Systematic management of forest began in British India in 1864 with an objective of regulating the timber supply. Subsequently, in 1927, with the passage of Indian Forest Act (IFA)², the process of demarcation, measurement and mapping of forest areas and their classification as Reserve Forest (RF) or Protected Forest (PF) was initiated. Given heavy impetus on timber, other forest products, generally considered as Minor Forest Produce (MFP), had received limited attention for

¹ The rapid estimation/assessment of number forest fringe villages done by the Forest Survey of India way back in 1997. There is a need to redo this exercise by superimposing village boundaries using Census data over a map of recorded forest/green wash areas, along with fresh assessment of forest dependent people.

² Several states, having made state specific amendments and some states, have enacted their own acts based on Indian Forest Act, 1927. These include Rajasthan Forest Act (1953), Kerala Forest Act (1961), Karnataka Forest Act (1963), Andhra Pradesh Forest Act (1967), Orissa Forest Act (1972).

their management and sustainability.³ Forest management in India witnessed a paradigm shift with the passage of National Forest Policy (NFP) in the year 1988 which emphasized on the importance of the forest beyond timber extraction and focused on maintenance of environmental stability, conservation of the natural heritage of the country by preserving the remaining natural forests, meeting the livelihood requirements of rural and tribal communities. Recognising that MFPs provide sustenance to tribal population and to other communities residing in and around the forests, the National Forest Policy underlines that productivity of MFPs be enhanced. Effective conservation practices of MFPs improve the prospects of employment and income generation for forest-dependent communities. In this respect, NWFP based economy has tremendous potential to fulfill several Sustainable Development Goals (SDGs): SDG 1 – No Poverty, SDG 2 – Zero Hunger, SDG 3 – Health and wellbeing; SDG 12- Responsible consumption and production, and SDG 15 – Life on Land.

Some also signify MFPs as non-wood forest products (NWFP) or non-timber forest products (NTFP). Even though these terms are used interchangeably, there are subtle differences as explained below (Table 1):

Table 1: The terms prevalent for non-wood forest resources

Term	Description
Minor Forest Produce (MFP)	<p>Indian Forest Act (1927) defines Forest Produce in two categories (i) Whether found in or brought from the forest or not, and (ii) When found in and brought from the forest.</p> <p>IFA uses the term “timber and other forest produce”. Thus timber was considered as the major produce from forests and remaining were considered as MFP i.e. all produces other than timber, which are derived from forest including those of biological (plant and animal) origin, and minerals (such as peat, surface soil, rock and minerals (including lime-stone, laterite, mineral oils), and all products of mines or quarries when found in forest).</p> <p>Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (commonly known as Forest Rights Act (FRA)) defines MFP as all non-timber forest produce of plant origin including bamboo, brush wood, stumps, cane, <i>tussar</i>, cocoons, honey, wax, lac, <i>tendu/ kendu</i> leaves, medicinal plants and herbs, roots, tubers and the like.</p>
Non timber Forest Produce (NTFP)	All products of biological origin other than timber. Till the recent amendment of the Indian Forest Act, 1927 (by the Govt. of India in 2017) bamboos were included in “timber”.
Non Wood Forest Produce (NWFP)	All products of biological origin other than wood. Wood includes timber as well as fuel wood.

³ It is important to note that all MFPs/NWFPs are not found in forests only as the name MFP would suggest. A number of NWFP producing trees/plants grow in non-forest areas viz. amla, tamarind, neem, chironjee, mahua. Moreover, a number of NWFP plant species, including medicinal/aromatic plants are cultivated.

The Report of the Committee on Ownership, Price Fixation, Value Addition, and Marketing of MFPs, Ministry of Panchayati Raj, Government of India, May 2011 mentions “An estimated 100 million people derive their source of livelihood directly from the collection and marketing of MFPs¹”. According to a World Bank estimate, the MFP economy is fragile but supports close to 275 million people in rural India¹ - a significant part of which comprises the tribal population. However, there are no accurate national estimates of the number of people who depend on MFPs, and the share of income that they derive from them. The report further mentions that Non-wood forest products, generally known as MFPs are important source of livelihoods for people living in Schedule V areas, as also other forested areas. MFPs provide essential nutrition to people living in forested areas and are used for household purposes and are an important part of their non-cash income. For many tribal communities MFPs are also a source of cash income, especially during the slack seasons. Some MFPs, especially bamboo and tendu leaf have significant commercial importance.

NWFP TRADE

Globally, the reported value of NWFP collected in the year 2015 amounted to almost USD eight billion. These estimates are likely to be grossly underestimated as their trading is largely concentrated in the informal sector and is not well tracked in national statistics (FAO 2020)⁴. As per the State of World Forest (2014), the estimated income from NWFP in the year 2011 was 88 billion USD of which 87% was from plant based NWFPs, and 0.8% was from medicinal plants (FAO, 2014).

International trade data of NWFPs are available for only few NWFPs e.g. tamarind⁵, gum⁶, lac⁷, natural honey⁸, myrobalan fruit extract⁹, vegetable materials used primarily as planting¹⁰, and some medicinal plant parts. A large number of NWFPs are used as ingredients in many consumer products that are exported under different HS codes, thus only a few items have independent codes in the Harmonized System of Codes for international trade. Table 2 gives the exported quantities and values of some NWFPs in last four years.¹¹

Table 2: An overview of export of key NWFPs (2016-17 to 2019-20)

Year	Quantity ('000 kg)				Value (lakh Rs.)			
	2016-2017	2017-2018	2018-2019	2019-2020	2016-2017	2017-2018	2018-2019	2019-2020
Trade name (HS Code)								
Tamarind Fresh (08109020)	16,476	9,787	3,329	2,294	9,328	5,954	2,903	1,908
Tamarind Dried (081340100)	21,492	15,203	16,794	18,416	23,514	11,968	14,651	13,522
Bees Wax (15219010)	277	265	282	293	1,048	927	1,054	1,044
Wattle Extract (15219001)	479	327	292	341	388	241	228	541
Myrobalan Fruit Extract (32019020)	842	950	714	687	572	687	638	593
Nux Vomica Dried Ripe Seeds (12119012)	0	3	30	12	0	5	28	17
Neem Seeds (12119014)	1	0	70	97	1	1	17	16
Jajoba Seeds 12119015	0	0	0	54	2	0	0	10

⁵ HS code 08109020 - Tamarind fresh & 08134010 - Tamarind dried

⁶ HS code 13012000 - Gum Arabic & 13019016 - Gum Karaya

⁷ HS code 1301 - Lac, Natural gums, and Resins

⁸ HS Code 0409

⁹ HS code 32019020

¹⁰ Bamboo, rattans, Reeds HS code 1401

¹¹ <https://commerce-app.gov.in>

Year	Quantity ('000 kg)				Value (lakh Rs.)			
	2016-2017	2017-2018	2018-2019	2019-2020	2016-2017	2017-2018	2018-2019	2019-2020
Neem Leaves/Powder (12119023)	65	86	179	190	149	95	191	200
Belladonna Roots (12119041)	3	0	0	5	16	0	0	2
Chirata (12119091)	2	27	13	5	7	56	23	9
Garcelona (12119096)	38	32	39	63	121	84	82	172
Vegetable seeds for planting (12099190)	5,504	6,820	8,988	5,407	25,242	33,804	45,908	35,671
Natural Honey (0409)	NA	NA	NA	NA	55,779	65,358	73,219	63,379
Lac, Natural Gum, Resins (1301)	NA	NA	NA	NA	24,691	21,770	25,843	38,878
Veg materials used primarily as plating Bamboos, Rattans, Reeds (1401)	NA	NA	NA	NA	206	481	692	496

In India, nearly 75% of total MFPs collected in the country come from the six States - Maharashtra, Madhya Pradesh, Chhattisgarh, Odisha, Jharkhand and Andhra Pradesh. Some argue that NWFP trade has increased manifold in last decade, but the lack of comprehensive and exhaustive data collection on NWFP trade at national level limits the ability to estimate the economic value of NWFPs. Some attempts have been made to assess the NTFPs quantities extracted and traded. Indian Council of Forest Research & Education (ICFRE) estimated the economic value of NTFPs based on a study sponsored by the Central Statistical Organization (CSO) on the quantities removed by the tribal communities and villagers. At the prevailing market price, the total annual value of NTFPs (excluding fodder, fuelwood and bamboo) was estimated to be Rs. 81,000 crores (Bahuguna and Bisht 2013). However, as per the National Account Statistics 2020, in the last five years (2014-15 to 2018-19) average output and value addition from the NTFPs at the current prices was Rs. 40873.6 crores, approximately 16% of the output and value added from the Forestry and Logging¹².

In terms of quantum of the NTFP trade, National Medicinal Plant Board¹³ mentions that about 1178 species of medicinal plants are traded. Of these 242 species have estimated annual consumption of more than 100 metric tons (MT). Total domestic and international demand of medicinal plants was estimated to be 1.95 lakh MT and 1.35 lakh MT respectively for the year of 2014-2015. Total consumption of herbal raw medicines in the country for the year 2014-15 was estimated to be 5.12 lakh MT with corresponding trade value of Rs. 5,500 crores.

Despite such large magnitude of trade, NWFPs have received limited attention from forest policymakers and managers. Since trade volume is increasing with time, NWFPs run the risk of degradation and depletion from sustainability point of view. Working Plans of the forest areas

¹²<http://mospi.gov.in/publication/national-accounts-statistics-2020>.

¹³ Under the Ministry of AYUSH, Government of India

invariably have a separate working circle for their management, but the management prescriptions are often generic. The management practices are not prescribed based on specific inventories or regeneration status of NWFPs, standard/good collection practices or sustainable harvest limits. The Revised National Working Plan Code (NWPC) 2014, prescribes for a separate chapter on important NWFPs comprising of preparation of priority list based on the potential of NWFPs, estimation of production, market demand and sustainability to form basis of management, sustainable harvesting limits, sustainable harvesting / collection practices, submission of returns by collectors, capacity building of communities about harvesting, grading and storage of NWFPs. Advising the states to make appropriate rules for the conservation and sustainable management of NTFPs from government forests, the NWPC suggests a seven-step methodology for community-based management of NTFPs.

**Seven Step methodology for community based management of NTFPs
(National Working Plan Code, 2014)**

- STEP 1:** Identify the NTFPs to be managed, their uses and the people who are to manage them
- STEP 2:** Determine the community's rationale and goals for sustainable NTFP management
- STEP 3:** Document the community's existing NTFP management system
- STEP 4:** Evaluate the existing system's potential for sustainable NTFP management
- STEP 5:** Consider incorporating new approaches to NTFP resource management
- STEP 6:** Develop a plan for sustainable NTFP management introduction
- STEP 7:** Implement and monitor the management plan

However, the actual adoption of these guidelines is yet to start, and most working plans continue to have MFP (Overlapping) Working Circle with traditional prescriptions. Sincere attempts are yet to be made for assessment/mapping of NWFPs, developing and prescribing sustainable non-destructive collection/ harvesting practices or annual limits, and protocols for enhancing regeneration, among other issues. Moreover, the issues related to ownership, conservation, regeneration and sustainability continue to remain illusory and recent enactments and their actual implementation have compounded the confusion. It is therefore imperative to analyze the legal framework of NWFPs to understand their standing from legal standpoint.

LEGAL FRAMEWORK RELATED TO NWFPs

a. Indian Forest Act, 1927

The Indian Forest Act (IFA) Section 2(4) defines only "forest-produce" and this term connotes to those products whether *found in, or brought from a forest* and includes:

- a) timber, charcoal, caoutchouc, catechu, wood-oil, resin, natural varnish, bark, lac, mahua flowers, mahua seeds, kuth and myrabolams, and
- b) trees and leaves, flowers and fruits, and all other parts or produce of trees,
- c) plants not being trees (including grass, creepers, reeds and moss), and all parts or produce of such plants,
- d) wild animals and skins, tusks, horns, bones, silk, cocoons, honey and wax, and all other parts or produce of animals, and
- e) peat, surface soil, rock and minerals (including limestone, laterite, mineral oils), and all products of mines or quarries;

Timber is defined as trees, when they have fallen or have been felled, and all wood whether cut up or fashioned or hollowed out for any purpose or not (Section 2(5)). Trees are defined to include palms, stumps, brush-wood and canes (Section 2(7)). Bamboos have been excluded from the definition of trees by amendment of IFA in 2017. Thus, IFA recognizes only two categories of forest produce namely (i) timber and (ii) other forest produce and does not define the term 'Minor Forest Produce'. In common parlance all forest produces other than timber are known as MFPs.¹⁴

Movement/Transit of Forest Produce

IFA vests the power to make rules with the state governments to regulate transit of forest produce including the control of all rivers and their banks for floating of timber, as well as the control of all timber and other forest-produce in transit by land or water (Section 41). States have the jurisdiction to make rules regarding the transit routes, passes for import or export, examination in transit, establishment of depots, and exemption of any specified class of timber or other forest-produce from such regulations.

¹⁴ It is noteworthy that the IFA prescribes the process for notification of Reserve Forest/Protected Forest/Village Forest etc. but does not define the term "forest" which was defined by the Apex Court in 1996 (in the context of the Forest Conservation Act, 1980) to *include not only "forest" as understood in the dictionary sense, but also any area recorded as forest in the Government records irrespective of its ownership. ...*

Joint Forest Management

Following the National Forest Policy 1988, with a strategy for active involvement of the people in the protection, conservation and management of the forests, GoI issued guidelines on Joint Forest Management (JFM) in June 1990 for involving rural communities for the protection and conservation of forests. In some states JFMCs were formed under section 28 of IFA (1927) while in other states JFMCs were constituted under State Resolutions.

By 2011, there were 1.20 lakh JFM Committees, albeit known by different names e.g. van panchayat, van samrakshansimiti, van surakshasamiti, village forest protection committee; involving about 145 lakh families (of which around 50% are SC & ST families) supposedly managing around 23 mha of forest land. The functioning of these institutions is by and large government driven with funds provided under National Afforestation Programme, state schemes like Aam Jungles Yojana in Odisha, Compensatory Afforestation Management Planning Authority, and externally aided projects. With over three decades of experience, JFM is recognized to be one of the reasons in stabilizing the forest cover in the country. Given the encouraging results of JFM approach for combining forest restoration efforts with the addition of livelihood support through income generation activities, further attempts are needed to evolve JFM into a higher platform “JFM Plus”. The impetus should be on livelihood promotion of the communities through women based self-help groups (SHGs, along with on conservation and management of forests. National Mission for Green India, one of the eight missions under the National Action Plan for Climate Change, launched in 2011-12, also adopted a similar approach.

b. The Panchayats (Extension to Scheduled Area) Act

A Constitutional amendment in the year 1993 gave a way for self-governance as Panchayati Raj Institutions. But this amendment was not applicable to Scheduled Areas under Article 244 of the Indian Constitution. The Panchayats Extension to Scheduled Areas Act (PESA Act), 1996 extends Panchayats to the Schedule V areas across nine states¹⁵). The Act empowers the states, among other things, to entrust panchayats at the appropriate level and the Gram Sabha as the owners of MFP, without defining the Term. Panchayat structure in different states depends on that state specific Panchayat Acts. Many states have upto 20-25 or more villages in one Panchayat and village level decision making body is the Gram Sabha in each village (ordinarily consist of a habitation or a group of habitations or a hamlet or a group of hamlets). Most of the Panchayats are inadequately prepared to handle PESA norms with large number of villages in Panchayat jurisdiction and states too have not taken actions as envisaged under PESA.

In March 2000, the Odisha Forest Department brought out an NTFP Policy through which ownership, control and management of over 60 items (revised to 69 items), excluding the nationalized items (such as Kendu Leaves and Bamboo) were handed over to Gram Panchayats (GPs). The state Panchayati Raj Department notified Odisha Gram Panchayat MFP Regulation Rules (2002), whereby ownership rights of these MFPs were conferred to the GPs. The rules also include provisions for registration of traders, regulation of the trade, fixing minimum price to be

¹⁵Maharashtra, Madhya Pradesh, Chhattisgarh, Jharkhand, Orissa, Andhra Pradesh, Rajasthan, Gujarat and Himachal Pradesh

paid to primary collectors by the Panchayat Samiti, reporting structures etc. The latest amendment to the transit rules was taken place in December 2002 whereby MFPs can be transported without a transit permit. Some steps were taken such as registration of traders for collection of registration fee of Rs. 100, and fixing minimum price in some cases. However, the overall implementation of these provisions has been dissatisfactory given the poor status of monitoring of the trading activities in procurement of MFP. There is no institutional arrangement for reporting or maintaining data about NTFP wise quantity collected, and collation of such information at block, district or state level.

c. Biological Diversity Act, 2002

India, as a party to the United Nations Convention on Biological Diversity, enacted Biological Diversity Act (BDA) 2002 with the objectives of conservation of biological diversity, sustainable use of its components, fair and equitable sharing of the benefits arising out of the use of biological resources, including MFPs. Under this Act, the provisions of establishing three tier governing structures are given for creating Biodiversity Management Committees (BMCs) at local level, State Biodiversity Boards (SBBs) at state level, and the National Biodiversity Authority (NBA) at the national level for its implementation. The guidelines for preparing People's Biodiversity Register (PBR) as a legal document are also delineated to provide the details of all biological resources and associated traditional knowledge occurring within the jurisdiction of BMC. The Act specifies any foreign individual or body corporate, association or organization is required to take prior approval of NBA to obtain any biological resource occurring in India or knowledge associated thereto for research or for commercial utilization or for bio-survey and bio-utilization. However, its procedures of granting approval for exports in the absence of sustainability assessment of related resource are ambiguous.

BMCs are to be constituted by local bodies (within the meaning of clause (1) of article 243B and clause (1) of article 243O of the Constitution) and they are entitled to levy charges to anyone for accessing or collecting biological resources for commercial purposes from areas falling within its territorial jurisdiction. As of April 2020, 2.38 lakh BMCs at Village / Panchayat level, 444 BMCs at district local bodies level and 4611 BMCs at intermediate levels have been constituted. Total number of PBRs prepared at these respective levels are 11594, 99 and 1185¹⁶. National Biodiversity Authority (NBA) has issued guidelines for operationalizing the BMCs. But most BMCs have been constituted in a target-driven mode without required attention for their operationalization and achievement of intended results.

Under Section 40 of the Act, some NWFPs of plant origin, both wild and cultivated, have been categorized as Normally Traded Commodities (NTC) for which the provisions of the Act do not apply. This is to facilitate trade of listed items including biological resources and products derived from the listed items, unless any item is intended to be used for any other purpose, and the onus of substantiation that the said products fall within common practice, shall lie on the claimant. Updated list of NTCs is given in Annexure 1.

¹⁶www.nbaindia.nic.in accessed on 13.05.2020

Indian government is required to develop national strategies, plans, programmes for the conservation and promotion and sustainable use of biological diversity including measures for identification and monitoring of areas rich in biological resources, promotion of in-situ, and ex-situ, conservation of biological resources, incentives for research, training and public education to increase awareness with respect to biodiversity. In addition, the Indian government is tasked to integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies, wherever possible. However, appropriate action towards achieving these goals are yet to be taken up.

d. The Scheduled Tribes and OTFD (Recognition of Forest Rights) Act, 2006

MFPs got its first legal definition with the enactment of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (commonly known as Forest Rights Act (FRA)). Under this Act, MFPs are defined as “all non-timber forest produce of plant origin including bamboo, brush wood, stumps, cane, tussar, cocoons, honey, wax, lac, tendu or kendu leaves, medicinal plants and herbs, roots, tubers and the like” (Section 2(i)). Thus, the definition of MFP includes bamboo and cane, thereby changing the categorization of bamboo and cane as “trees” under the Indian Forest Act (1927).

Notwithstanding anything contained in any other concurrent law for the time being, FRA recognizes and prescribes procedure for granting individual forest rights which are inheritable but non-transferable. This provides land ownership rights to Scheduled Tribes and Other Traditional Forest Dwellers in forests including reserved forests (RFs) and protected forests (PFs). Further, the Act provides the: (i) community rights to own and dispose minor forest products from forests where they had traditional access [section 3(1)(c)], and (ii) right to protect, regenerate or conserve or manage any community forest resource (CFR)¹⁷ which they have been traditionally protecting and conserving for sustainable use [section 3(1)(i)]. Individuals, communities and gram sabhas having rights under this section of the Act not only have the rights to use but also the rights of ownership over MFPs. Till now, around one million hectares forest area has been recognized as Community Forest Rights (CFRs) in various states including Maharashtra, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha and Rajasthan.¹⁸

Under FRA, the authority to initiate the process for determining the nature and extent of the all types of rights lies with the Gram Sabha¹⁹ of the village (or equivalent body of local governance). Moreover, the duties of the holders of any forest right specified in this Act include protection of wildlife, forest and biodiversity. Further, they are entrusted to ensure that the decisions of the gram sabha to regulate the access to community forest resources and stop any

¹⁷ CFR is defined in Section 2(a) of the Act as customary common forest land within the customary or traditional boundary of the village or seasonal use of landscape in the case of pastoral communities, including reserved forests, protected forests and protected areas such as Sanctuaries and National parks to which the communities have traditional access.

¹⁸ In actual implementation of the provisions of granting CFRs it is learnt that many times they have been granted despite non-fulfilment of any of the requisite conditions contained in the FRA itself eg. the assignment of whole of Gadchiroli district forests of Maharashtra for management by Gram Sabhas under section 3(1)(i) of FRA.

¹⁹ In FRA Gram Sabha is defined as a village assembly which shall consist of all adult members of a village and in case of States having no Panchayats, Padas, Tolas and other traditional village institutions and elected village committees.

activity which adversely affects wild animals, forest and the biodiversity are complied with. The rules framed under FRA provide for constitution of committees for the protection of wildlife, forest and biodiversity.

However, the implementation of the FRA, except perhaps recognition of individual rights and community rights, remains unsatisfactory. Gram sabhas have limited capacity to implement the Act. Moreover, no specific guidelines for management of CFRs have been issued by the concerned nodal agency, the Ministry of Tribal Affairs, GoI. No concrete information is available at state/national level about the actual management of community forest rights.

e. Alphabetical soup of NTFP management committees

It may be seen that there is a multiplicity of acts/rules/regulations under which there are several committees at gram sabha /gram panchayat or sub-village level including the Forest Rights Committee (FRC). JFMC and BMC are tasked with the management of MFPs within their jurisdictions (Table 3). This has created a situation of utter confusion in the absence of any efforts to harmonize the provisions under various Acts. A proper coordination mechanism at various governance levels is essential for synergy in implementation of various acts /rules / regulations / guidelines aiming at conservation and management of NWFPs and supporting sustainable livelihoods for the local communities. Moreover, all states do not have uniform regulations for movement of NWFPs within and out of the state, requirement of registration of traders and foreign pass, and issue in-lieu transit pass for inter-state movement. Additionally, various state governments have evolved localized regulatory instruments to regulate collection and trading of NTFPs from wild habitats or forests. It would go a long way if the present transit permit system is replaced by a Certificate of Origin (CoO) to be issued by competent authorities of gram panchayat/gram sabha or forest department, as the case may be, for transporting NWFPs (in the form they are collected –with or without primary processing) from the source to its destination with national validity for a prescribed period, not less than 12 months to cover the lifespan of the certified produce. This proposed system is advantageous over the current system of transit documents and shall have wider applicability not only for facilitating the verification during interstate transit but also to the end user in knowing the origin of the product.²⁰

²⁰Very recently, on 23rd July 2020, MOEF&CC launched an online portal of national transit pass system for issuing transit permits for seamless transport of timber, bamboo and other forest produce. It is to be piloted in two states Madhya Pradesh and Telangana and is proposed to be extended to other States/UTs. However, proper implementation of the system, after successful piloting in the two states and its need based refinement, would require change in the transit rules in the states particularly relating to issue of in lieu permits while transporting forest produce across states.

Table 3: An overview of various legal instruments dealing with NTFRs.

Item	IFA	JFM	PESA	BDA	FRA
Nodal Ministry/Department	MOEFCC State Forest Department	MOEFCC State Forest Department	MOPR Panchayati Raj Department	MOEFCC Environment Department	MOTIA State Tribal Development Department
Number/Area covered	Village Forests declared in many states under Sec 28	~0.1 Million plus/ 23 mha	9 States Schedule V Areas	72304 BMCs	3.47 M Ha: Community Rights (CR) & Community Right to Forest Resources (CFR)
MFP definition	Defines Forest Produce (Timber and other forest Produces)		Not defined	Defines bio-resources	Defined
Ownership of MFPs	With government, JFMcs		Panchayats at appropriate level/ Gram Sabhas	BMC to levy charges on accessing bio resources for commercial purposes	Right Holders in whose favor forest rights have been recognized under the Act.
Jurisdiction Administrative structure		Village / Helmet Constituted under the State Forest Act or under State JFM resolution. Defined by DFOs, registered under Societies Act or with SFD General Body/ Executive Body	Scheduled areas with GPs	BMC constituted by every local body – Panchayats or Municipalities	Village or tola etc. CRs (Section 3(1)(c)) include right of ownership, access to collect, use, and dispose of MFP CFRs (Section 3(1)(d) rights to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use within traditional village Jurisdiction including RF/PF/PA areas, with delineation of boundaries & map, recorded as new category “CFR” in FD records GS to constitute Committee for the protection of wildlife, forest and biodiversity from amongst its members. CFR rights cannot be conferred on JFMcs

Table 3: An overview of various legal instruments dealing with NTFRs.

Item	IFA	JFM	PESA	BDA	FRA
Protection, Management and Regeneration	States to make rules for management of VFs and duties of villagers for the protection & improvement of such forest.	Protection, Management and Regeneration under approved Micro Plan along with provision for benefit sharing as defined in the respective State's JFM resolution. Legal action for violation with SFD			Gram Sabha to protect the wildlife, forest and biodiversity if there are any right holders under FRA (IR/CR/CFR) CFR area to be managed as per conservation management plans for their sustainable use. No comprehensive guidelines for CMPs preparation. GS empowered to stop any activity, which adversely affects the wild animals, forest and the biodiversity. However, punitive action can be taken only under IFA/WIIPA/SF Acts.
Access/ Collection/use		Free access, collection, use, sell	Some States have made rules empowering GP to fix collection prices etc.		Access to collect, use and dispose of minor forest produce
Documentation mechanism for Management		Micro Plan approved by DFO in conformity with the Working Plan of the Forest Division/District	Does not include any provisions for conservation/management.	People's Biodiversity Register in consultation with the local people, containing comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use.	Community rights - no provision for plan for conservation/management except protection. CFR Management Plan approved by Gram Sabha (Working Plan stands modified to that extent)

MANAGEMENT OF NWFPs

NWFPs play a very important role in the lives of millions of tribal and rural people living in the vicinity of forests for meeting nutrition, fuelwood, medicines, and livelihood needs. Based on their needs and experiences, forest-dependent communities have evolved various practices for collection and use of different NWFPs. Unfortunately, the timber-centric scientific management of forests has ignored these practices and has taken NWFPs for granted.

It may be pertinent to clearly understand the connotation of “ownership of NWFP” in the context of management of forests from which MFPs are collected/harvested. The way the term has been defined under various acts as discussed in the earlier sections, the produce when collected or harvested from the forests does not include the plants themselves. As such, ownership of NWFP infers the ownership of the produce upon its collection/harvest and not the ownership of plant resource or the area. Thus, NWFP ownership rights under PESA and FRA do not include management of the plant resources, except in the case of community forest resources, under FRA. Community forest resources include rights to protect, regenerate or conserve or manage the forests. Even in the CFR area, the punitive actions, if any warranted, have to be taken by the Forest Department. It means that the management related responsibilities continue to lie with the state forest departments.

The NTFP sub-group of the Planning Commission’s Working Group on Forest and Natural Resource Management, for evolving strategies under the 12th Five Year plan, emphasized upon the tremendous potential of NTFPs, with a business turnover of more than Rs.60,000million per annum("Report of the SubGroupII on NTFP and their sustainable management in the 12th Five Year Plan 2011"). The Working Group also recognized the potential to create large scale employment opportunity, thereby helping in reducing poverty and increasing empowerment of tribal and poor people residing in the poorest and backward districts of the country. The sub-group recommended, among other things, zone-wise inventory of NTFPs and prioritization of species for conservation, minimum support price (MSP), certification system for improved trade, national level comprehensive policy(Planning Commission, 2011). Most of these recommendations except MSP scheme for selected MFPs introduced during 2015-16, have remained on paper only.

Recommendation of NTFP Subgroup of the Working Group for Forest and NRM, 12th Five year Plan, Planning Commission (2011)

Resource management through conservation of all genotypes including rare, endangered, and threatened (RET) species, development of sustainable harvesting protocols, zone wise inventory of NTFPs, zone wise prioritization/ selection of species for conservation, development and harvesting (CDH); resource augmentation and development; pilot initiatives followed by a cluster-based approach for further development of NTFPs, and SFM including revision of Working Plan Code, certification and community based national resource management.

Better opportunities in marketing through minimum support price (MSP), mechanism for market intelligence and information system, efficient certification system for improved trade, revolving fund for primary collectors and their institutions, value chain development by aggregation, primary processing, grading, branding and certification, eco-services of NTFP such as herbal ecotourism and local enterprise development, and encouraging corporate sector involvement-contract farming, infrastructure development, resource augmentation.

Capacity building through formation and strengthening of local institutions, special training of front line staff, strengthening and restructuring existing institutions, modular training for primary collector, grower, entrepreneurs and traders, exposure visits of relevant stakeholders, and user friendly information, education, and communication materials.

Expediting research and development activities through strengthening existing potential national state R&D institutions, undertaking state of art research on NTFPs, prime focus on developing new/alternate marketability for single market NTFPs, low value high volume NTFPs, silviculture and conservation biology of NTFPs, tapping the concept of payment for ecosystem services (PES), and study on impact of non-anthropogenic factors like climate change.

Ensuring an enabling policy environment through formulation of a national level comprehensive policy, convergence of schemes implemented by different ministries, establishment of an apex body such as NTFP Development Board and similar state level bodies, empowerment and strengthening of local institutions, ensuring better access and benefit sharing mechanism with legal provision, facilitating a compatible and uniform tax structure and transit rule, exemption of value added tax, special compensatory support for NTFP crop failure, and introducing new schemes for North-Eastern region, mountain areas and Left Wing extremism affected states.

Considering its significance of NWFP, GoI set up National Medicinal Plants Board (NMPB) in the year 2000 to develop an appropriate mechanism for coordination between various ministries/departments/organization and implementation of support policies/programs for overall growth of medicinal plants sector both at the National/State and International level. The NMPB is focusing on *in-situ* and *ex-situ* conservation and augmenting local medicinal plants and aromatic species of medical significance, research and development, capacity building, raising awareness and supporting programs for quality assurance and standardization through

development of Good Agricultural and Collection Practices (GACPs). NMPB conducted demand and supply assessment studies of medicinal plants in the country (Ved and Goraya 2007). However, no comprehensive survey of medicinal and aromatic plant resources and their valuation at national or state level has yet been conducted.

Ministry of Tribal Affairs, GoI, initiated an MSP scheme for 12 NWFPs during the year 2014-15, designed primarily as a social safety net for improving the livelihood of primary collectors by providing them a fair price for their produce. The scheme covers 49 NWFP items (Annexure 2) and is being implemented by TRIFED through designated nodal agencies in each state. The states can fix MSP within the range of 10% of the MSP decided by the GoI. Some states have decided to provide incentive (bonus) in addition to MSP on some NWFPs. However, at present the MSP scheme does not take into consideration either the sustainability of resources from where the produces are collected or adherence to good field collection and primary processing practices that are prerequisite for ensuring long-term availability of these produces and a minimum guarantee for their quality.

The role of NWFPs in the economy of tribal societies has also been emphasized in the concept note of Pradhan Mantri Van Dhan Yojana launched by GoI in 2018. It mentions that, *“annually around Rs. two lakh crores worth of NTFPs are gathered by the tribals and traded in the haat bazars. The potential of this huge capital, grossly under-managed, is yet to be fully appreciated by the Government and planning agencies”*

Conservation and development of NWFRs is also important being the source of NWFPs as raw material to industries for phyto-therapeutic and cosmetic products, food and nutritional supplements, handicrafts etc. However, since the management of forest in India has been timber-centric, there has been minimum focus on the management of the NWFPs. Following the dictum that unless you know what you have how do you manage it, as a starting point for effective management, there should be a national-level assessment of NWFRs.

SURVEY OF NWFRS

a. National Forest Inventory, FSI

The primary objective of the National Forest Inventory (NFI) conducted by FSI is to estimate the growing stock or the carbon stock of its forests and of Trees Outside Forests (ToF) areas. In recent years, other objectives of the inventory studies also include assessments on biodiversity, NWFP resources, ecology or conservation as they generate information that may be required for planning purposes at the national level. NFI assessments cover 60 district every year in both forest and non-forest areas for collecting data on the number of prominent tree species²¹, some of which yield NWFPs including *Terminalia belerica*, *Buchnanialatifolia*, *Azadirachta indica*, *Mangiferaindica*, *Madhucalatifolia*, *Butea monosperma*, *Tamaridusindica*. As a part of the exercise for growing stock assessment, FSI also collects data on trees, shrubs, herbs etc. in around 30,000 sample plots.



In 2016, FSI switched to a grid-based design with 5 x 5km uniform grids with 5 year revisit time in forest area (recorded forest areas/green wash boundaries in topo sheets) and 10 years in other areas (trees outside forest), cluster of circular plot in place of square sample plots, as shown in the figure 1:

²¹ These include data on number of stems and volume in three diameter classes: 10-30 cms, 30-50 cms, > 50 cms

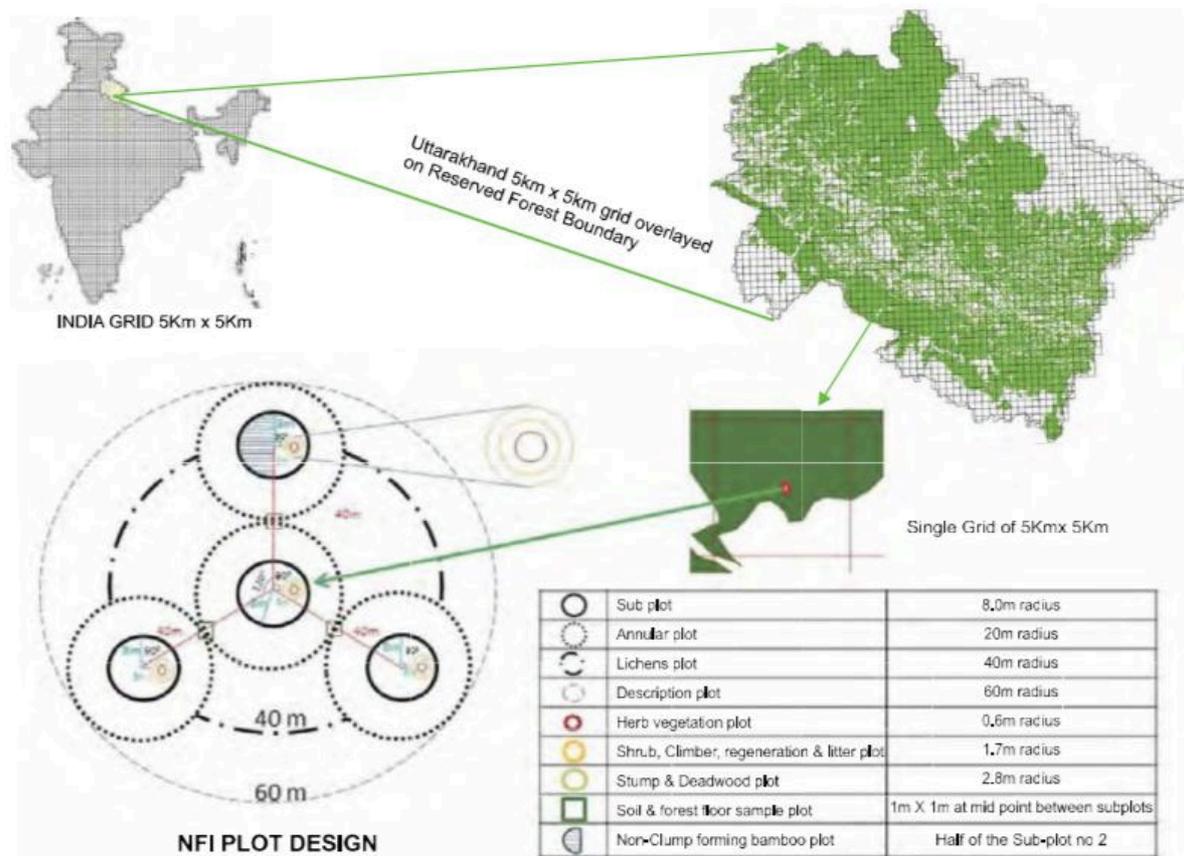


Figure 1: An overview of methodology adopted by FSI for national forest inventory assessment

ISFR 2019 mentions Shannon-Wiener Index²² of tree, shrub and herb species in different forest types in each state based on rapid assessment of biodiversity undertaken by FSI, and also relative abundance of top five NWFP species. However, FSI has not yet attempted assessment of NWFRs of the country, except the bamboo resources (text box below). Bamboo resource assessment will be used for strategic planning for sustainable management and tapping their potential in generating more employment opportunities for skilled and unskilled workers. Bamboo is also considered important component for the government's plan of doubling farmers' income. The resource inventories need to be based on the area and spatial distribution of commercially important bamboo species, which should be mapped with availability of population skilled in bamboo processing. This exercise will help find the potential bamboo processing zones in the country.

²²The **Shannon-Wiener** diversity **index** is a measure of diversity that combines species richness (the number of species in a given area) and their relative abundances.



Estimation of bamboo resources of India by FSI

Apart from the biennial assessment reports of the forest cover in the country, FSI began including a separate chapter on bamboo resources since 2011. A comparison of ISFR of 2011 and 2019 reveals that bamboo bearing forest area in the country has increased by 15 percent (from 139,577 to 160,037 sq.km. in the respective years). The reports also provide state-wise data of bamboo areas into five categories - pure, dense, scattered bamboo, bamboo present with clumps completely hacked, and bamboo regeneration areas. Based on the inventory data, ISFRs also compute state-wise numbers of green, dry, and decayed bamboo culms along with associated green weights. Total number of bamboo culms and green weight in ToF area has also been estimated.

Although ISFRs do not mention how the bamboo bearing forest area is being assessed, it is perhaps based on the proportion of inventoried sample plot (with RFA/green wash areas) having bamboo and the recorded forest area. Even though ISFRs also don't mention estimation errors, the increase in the bamboo bearing forest area seems well within the range of errors of estimation.

The existing literature shows that NWFR assessment methodologies are typically timber-inventory methods and are often context specific tailored to the situations such as types of species or other local conditions. In India, there have been several studies about NWFR resources that follow either area-specific or species-specific methodology. Some studies have focused on NWFR assessments, which are discussed in the following sections.

b. Estimation of *Decalepishamiltonii* in 4 districts in Andhra Pradesh



Mishra and Naidu (2014) estimated the population of a shrub named *Decalepishamiltonian* important NWFP tuber species in the forests of Chittoor district in Andhra Pradesh. Using 'adaptive cluster sampling' along the Horvitz – Thompson estimator, they found that this method can be replicated for other species with similar distributions. They also concluded that precise inventory coupled with productivity assessment is required to standardize NWFP management prescriptions.

c. ITTO Pre-project in Maharashtra²³

Under International Tropical Timber Organization Project (Pre-project) on Sustainable Management of NWFP in Maharashtra, a quantitative assessment of NWFP herbs, shrubs and trees, and qualitative assessment (identification) of widely used, widely traded and important plant based NWFPs (excluding tendu leaves), was conducted in four divisions²⁴ across 50 villages.

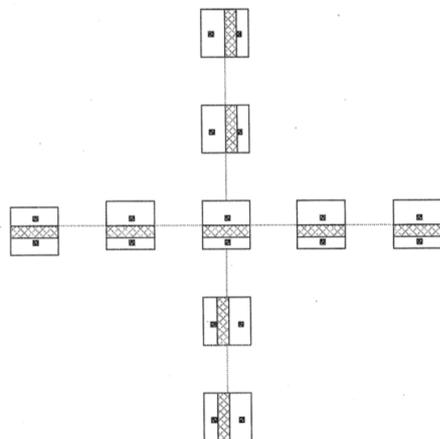


Figure 2: A nine-plot sampling methodology adopted under ITO pre-project for NWFP assessment

Qualitative assessment (identification) of widely used, traded and important plant based NWFPs was based on PRA and RRA approaches, and additional information was collected from records, reports and other publications. Quantitative data were collected by laying sample plot in clusters (of nine plots of 10 x 10 m) in forest compartments adjoining each sample village with a

²³International Tropical Timber Organization, 2006, Pre-Project Report No. PPD 5/00 Sustainable Management of NWFP in Maharashtra, India

²⁴ These divisions were: Sawantwadi, Alibag, East Melghat, and Wadsa

sampling intensity of 0.1% (by area). Trees of 15 cm girth at breast height were counted along with saplings and woody climbers. In addition, shrubs, herbs, tubers, and rhizomes were counted in 5 x 5 m subplots. A total of 295 species were identified, which were categorized based on their importance. The results found 211 species for household use, 167 tree species for medicinal use, and 77 species for income generation. Based on the level of importance, 139 species were considered of high importance in one or more villages and 100 of medium importance. Among 295 species, 21 species were listed as important in all the four divisions. Five species: jamun (*Syzygiumcumini*), mango (*Mangiferaindica*), mahul (*Madhucalatifolia*), amla (*Embllica officinalis*) and beeba (*Semecarpusanacardium*) were considered as important in more than 34 of the 50 villages. In all four divisions, the most widely used and traded NWFPs were jamun, mango, mahul, amla, wavidung (*Embellia,besaa*)harida(*Terminalia chebula*), honey.



The study documented standard post-collection and harvesting practices followed in the study area. Damage to trees for collection of fruits like amla, and collection of unripe fruits was also observed. No pattern of conservation or regeneration in uprooting was seen in the study villages. Retention of seed material (tubers, rhizomes, fem culms) was found to be inadvertent, rather than being planned. The study emphasized the need to evolve management strategies to maintain, and if possible, enhance harvest levels and to ensure that harvesting is sustainable and not at the expense of important ecological processes. It may pertinent to mention that nearly 70% of plant collection involves destructive harvesting since parts like roots, bark, rhizome, stem and whole plant, are used.

d. Assessment of MFP/Medicinal plants in Chhattisgarh under EU project²⁵

Chhattisgarh MFP Federation conducted its first ever assessment of NWFN resources during 2007-08 under a European Union funded "Non-timber Forest Produce based Employment Oriented Project". The objectives included Identification of forest product rich areas, productivity assessment and promotion of endangered species. The following methodology was adopted:

Sample plots in 2 x 2m grid (3.55 km distance) were laid out with pillar posting at the grid center and the four corners at 22.36 m distance from the center in N E S W directions forming square plot of 31.62 m measuring 0.1 ha. Further five 2 x 2 m plots were laid one at the grid center and one each at the mid points of four diagonals for regeneration survey, and 4 x 4 m plots at the mid points of diagonals for counting of MFP/medicinal plants -herbs, shrubs,

climbers, and grasses.

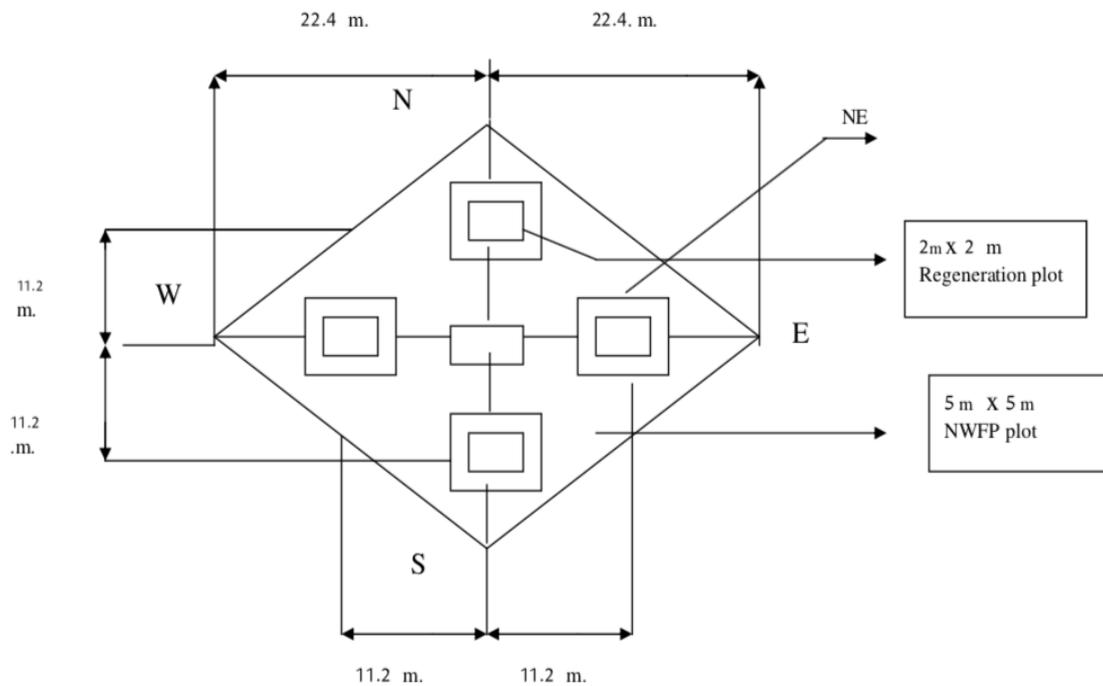


Figure 3: An illustration of sampling methodology adopted under European Union-funded "Non-timber Forest Produce based Employment Oriented Project"

In all, 2582 and 2789 sample plots were laid out during the years 2007 and 2008 respectively. Data collection was done during 15 September to 15 November, so as to capture maximum number of medicinal plants, using the below mentioned forms:

1. Sample plot info
2. Tree counts 0.1 ha plot: > 20 cm GBH in young, medium, and mature with name of species and type (structural timber, semi structural, fuel wood etc.)
3. Regeneration 2 x 2 m plots
4. Shrubs and climbers
5. Herbs and grasses 5 x 5 m plots
6. Medicinal plants
7. Bamboo clumps 0.1 ha plot number with species name

A total of 453 species were found, of which 303 could be identified by the state forest department (SFD) staff and remaining 150 were identified through experts of Botanical Survey of India. At the state level, average number of trees was estimated to be 342.06 tree per ha. Species wise average number of trees per ha is given as follows:

- Timber species: Sal –*Shorea robusta*(79.93), Karra– *Cleistanthus collinus*(39.18), Sahaja – *Terminalia tomentosa*(29.51), Dhaura – *Anogeissus latifolia*- (24.08), Teak – *Tectona grandis*(9.44), Bija Sal – *Pterocarpus marsupium*(8.67) , Tinsa –*Ougeniadalbergiodes*(6.44), Salai– *Boswelliasarata*(5.62), Haldu –*Haldinacordifolia*(2.07)
- Non-timber species: Char – *Buchanania lanzen*(19.44), Tendu – *Diospyros melanoxylon*(17.58), Mahua – *Madhucalatifolia*(11.61), Amla– *Phyllanthus emblica*(9.30), Harra– *Terminalia chebula*(4.67), Kusum – *Schleichera oleosa*(0.60) Amaltas– *Cassia fistula*(2.41), Palash – (2.45), Baheda– *Terminalia bellirica*(1.21), Mode –*Lanneacoromandelica*(10.01), Kasai – *Pongamiapinnata*(2.90,) Girchi–*Caseariagraveolens*(2.64), Sehera(1.41), Khair– *Acacia catechu*(1.32).

In addition to tree species, there were 26 shrubs species, including nine commercial species, 43 species of herbs and grasses including 22 commercial species, 32 climbers including 14 commercial species were identified.



The total density of shrub species was estimated to be 590.66 per hain 2007 and 496.37 per hain 2008. Similarly, density of climber species was 887.54 per ha in 2007 and 729.78 in 2008, and that of herbaceous spp. and grasses was 10921.65 per ha in 2007, and 13003.32 per ha in 2008. The study has not looked into the reasons for changes in the plant density during the study period. The study also recommended promotion of Arjun (*Terminalia arjuna*), Bel (*Aegle marmelos*), Lodh(*Symplocos racemosa*), Dahiman(*Cordia macleodii*), the species of medicinal value, whose availability was found to be low. The study also gathered forest division was availability of NWFP species. CGMFP Federation is using these findings in optimizing its collection and marketing strategy.

Chhattisgarh State Minor Forest Produce (Trading and Development) Co-operative Federation

CGMFP Federation, an organization of the Government of Chhattisgarh is functioning in the state with an objective of giving benefits to forest dwellers in collection and trade of MFPs. The federation coordinates collection and processing of specified NWFP (for which the state government has trade monopoly), *tendu* leaves, and several non-specified NWFPs.

The federation has a three-tier structure, the apex body at the state level, 31 forest produce cooperative district unions at district level with DFO as an ex-officio MD, and 901 primary FP cooperative societies comprising actual collectors of NWFPs. Net income from trading NWFP is being transferred to the primary forest produce societies. Around 5500 women SHGs are associated in procurement through 3500 village level procurement centers, 866 collection centres, and primary processing and value addition through 139 *van dhankendras* (being established under the Pradhan Mantri Van Dhan Yojana, that is being implemented by the federation in the state). The NWFP based micro enterprises such as Lac cultivation, processing of *mabul* leaves, *chironjee* seeds, oilseeds, tamarind, amla, medicinal plants, honey, herbal food etc set up earlier under the EU funded project are being merged in the van dhankendras.

The federation has established six NWFP marts where non-specified NWFPs are collected and processed by primary cooperative forest produce societies, SHGs, and other local collectors are traded. The federation also promotes in-situ conservation, non-destructive harvesting, value-addition, processing and marketing of NWFPs to provide maximum benefits to the local communities. The federation is marketing herbal products under the brand name Chhattisgarh Herbals.

e. TERI's study on MSP for MFPs²⁶

The Energy and Resources Institute (TERI) undertook a study entitled “Baseline survey to evolve methodology for fixation of minimum support price under the scheme of mechanism for marketing of MFP through MSP and development of value chain for MFP”. The study, sponsored by TRIFED, covered nine states namely, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Andhra Pradesh, Telangana, and Rajasthan. As a part of this study, abundance and sustainability potential of some important NWFP tree species yielding myrabolans, sal leaves, salseeds, tamarind, chironji, gum karaya was estimated (TERI 2017). This has been done based on potential habitat of these species as per the area under relevant forest types/sub-types and average abundance obtained from working plan data and primary vegetation surveys, and secondary literature. The findings of the survey are summarized as follows (Table 4):

²⁶This author was one of the reviewers in the study.

Table 4: Potential of MFPs studied by TERI

#	MFP	Total potential abundance (ha/no. of trees)	Total potential/sustainable yield	Sustainability
1	<i>Chironjee(Buchanania lanzan)</i>	3.47 mha	Sustainable potential yield of chironjee pods is 350 million tonnes	harvest is unsustainable; around 30% should be left on trees
2	Gum karaya (<i>Sterculiaurens</i>)	0.45 million trees	1,000 tonnes	Tree should be rested every third year for sustained yield
3	<i>Harra(Terminalia chebula)</i>	4.03 mha 11.91 million trees	Total potential yield is 0.66 million tonnes	Protection of saplings is needed for enhancing regeneration
4	<i>Karanj(Pongamia pinnata)</i>	9.1 million karanj trees	Potential yield is 0.56 million tonnes karanj seeds	Mainly cultivated by farmers and planted by the forest department
5	Lac (<i>Kusumi and Rangeeni</i>)	Kusum (47 million), Palash (387 million), and Ber (76 million)	Total production is 16,978 tonnes	Large potential of host trees not yet tapped for lac cultivation
6	<i>Mahua (Madhuca longifolia)</i> seeds	880 million trees	88 million tonnes of mahua seeds	Sustainable potential yield is about 61 million tonnes of mahua seeds
7	Sal (<i>Shorea robusta</i>) leaves	6.19 mha About 19.8 million trees can be used for plucking leaves	3.2 million kg leaves are potentially exploitable	Only 30% leaves should be harvested from trees
8	Sal (<i>Shorea robusta</i>) seeds	6.19 mha 0.39 billion sal trees	4.75 million tonnes of seeds	Regeneration of sal trees needs to be focused.
9	Tamarind (<i>Tamarindus indica</i>) seeded	0.85 million trees	55,800 tonnes of tamarind	Mainly cultivated by farmers

STRATEGY FOR MANAGEMENT OF NWFRS

Based on the existing literature, as reviewed in the above sections, it is evident that the efforts have largely been focused on documenting NWFP related collection practices, marketing mechanisms, value addition, development of new products, cultivation practices etc. The above sections highlight that perhaps with the exception of Chhattisgarh, there has been no national or state level survey of NWFP resources in the country despite their importance being recognized and acknowledged repeatedly. A comprehensive resource assessment of NWFPs for effective and sustainable management is required. This is not only important for biodiversity conservation but also for long term livelihood sustenance for tribal and rural communities. There is also a need to assess overall demand and supply of NWFPs. A comprehensive NWFP resource assessment²⁷ has to answer the following key questions:

- Identifying the areas highlighting the type of NWFPs available, their potential along with the areas being managed under approved working/management plans. This should also include NWFP rich non-forest and cultivation areas.
- Determining regeneration/replenishment rate;
- Methods for calculating sustainable collection/harvest levels;
- Estimation of current demand and its trend and need and feasibility of promotion for cultivation to bridge the gap between demand and supply.
- Monitoring protocols to determine the efficacy management and cultivation practices including harvesting methods and quantities collected/harvested.

For any NWFR assessment to be meaningful, the following steps are necessary:

1. Prioritizations and classification according to products or end uses. Even though end users tend to ignore the product source, but this can facilitate tracking of the life of the produce in the market. This can also be useful in determining their importance in national and international economies.
2. Classification of NWFPs according to (i) life form i.e. herbs, shrubs, climber, trees, (ii) plant part collected/harvested – reproductive propagules (fruits, nuts/seeds); plant exudates (sap, resins); vegetative structures (whole plant, twigs, leaves, flowers, bark, roots/tubers). This is necessary to account for the important ecological processes while developing and standardizing sustainable management practices.
3. Actual assessment of resources including mapping areas with good presence NTFPs identified for survey. This exercise should provide the per hectare number of tree-stems in various age and diameter classes or number of shrubs/herbs/grasses/climbers, status of established regeneration ranked as good, moderate, or poor, as per the ecological

²⁷ Evaluation of some aspect of the resource based on information - quantity and quality of the resource, market issues, or socio-economic issues.

requirement.

4. Standardization²⁸ of collection of traditional, scientific, and sustainable harvesting and collection²⁹ practices according to the plant parts, including post collection practices for drying, storage, and local level processing.
5. Methods for fixing annual sustainable harvest limits.
6. Development of Sustainability standards for NWFRs – independent/third party certification.
7. Improving the marketing mechanism and promotion of local value addition.
8. Evolving a system of issue of “Certificate of Origin” in place of transit permit issued by the gram panchayat/sabha or forest department, as the case may be to facilitate hassle free movement of NWFP from the collection areas to any destination in the country.

As a preliminary step, it would be worthwhile for the states to look into the NFI - sample plot data collected by FSI to explore the possibility of their analysis in conjunction with forest type maps and forest cover density maps to generate preliminary NWFR maps. This exercise can be instrumental in identifying gaps in the assessment such as the need to include more species of commercial/local importance and RET species, increase the number of sample plots to generate more precise maps of NWFRs, and to assess the availability of NWFPs.

Srivastava and Anitha (2010) have demonstrated the utility of satellite remote sensing data and GIS in generating the NTFP maps by integrating the forest type, forest density, NTFPs and total economic value maps of the study area i.e. Pune Forest division, Maharashtra. These maps show the distribution of non-timber species having potential economic uses. The study concluded that this approach will facilitate establishment of a “functional NWFR survey system”. Along with creation of functional resource survey system, it is also necessary to establish a monitoring mechanism to periodically assess the status of NWFRs in various regions and also at national level resulting in both growth data, potential yields, and actual yield of priority and RET/niche species. This will facilitate evolving strategic and timely management interventions aiming at sustainability of the resources, including protecting the area from the drivers of degradation, improved management practices for enhancing regeneration etc.

There is also an urgent need to collate available methods for harvesting and collection, primary processing, and local storage of key NWFPs. This information can be used to standardise the practices and publish them in local languages with pictorial depictions for the local communities. This will enable non-destructive collection of NWFPs resulting in sustaining livelihoods of forest dependent communities.

²⁸ BIS standards (IS 9978 : 1991) have been brought out for gradation of Kendu Leaves produced in Odisha.

²⁹ Sustainable collection/harvest: the collection/harvest that can be done from a area (one management unit may be a forest block, range, or division) in a sustainable manner, which is either determined in advance using a yield model and prescribed in management plans or at least a method of determination of quantities at the beginning of each collection/harvest season (due to periodicity/cycle of good years).

For improving the marketing and local value addition of NWFPs, the existing soft and hard infrastructure created under different initiatives, including the clusters under externally aided projects must be integrated with the Prime Minister Van DhanYojna. Under this yojana, it is proposed to establish 50,000 “Van DhanVikasKendras” in the tribal areas of the country to ensure the availability of primary processing and value addition for forest produce(Tribal Cooperative Marketing Federation Ltd (TRIFED) 2018).

Continued R&D efforts are also necessary for ensuring optimal and efficient use of extracted NWFPs to meet domestic needs and to facilitate exports. State forest departments need to play a key role and ensure synergetic collaboration with universities, training and research institutions for steering the conservation and management of NWFPs.

It is necessary that the present forest management practices needs to shift towards NWFPs and other ecosystem services in addition to timber-centric approach to provide maximum livelihood support to the local communities. The MOEFCC has to play a crucial role in ensuring that the NWPC (2014) is adopted for management of all forest areas in the country, and approval of working plans is done only after careful technical scrutiny by its regional offices. Effective monitoring of the implementation of working plans based on objective and measurable indicators is necessary to achieve the long-term objectives of the management of forests.

However, continued extraction of NWFPs to meet the growing demand of the Industry is bound to result in resource depletion and loss of biodiversity. Identification of rich NWFR areas and their independent/third party and mandatory “sustainability certification” seems a necessity to prevent resource depletion. Its timely implementation can help avoid the further loss from resource depletion. The scheme of MSP should also be linked to collection from certified NWFRs, adoption of standard collection, and post-collection primary processing protocols. This will ensure sustainability of resource for long-term livelihood support to forest dependent communities. Additionally, focused programs for cultivation (with good agricultural practices) of the selected NFWRs may be undertaken as per the need to fulfill the high market demand. Similar steps are being undertaken in the case of medicinal plants under the NMPB, and bamboos under the National Bamboo Mission.

Network for Certification and Conservation of Forests (NCCF) has initiated a process of development of an Indian sustainability standard for NWFRs by adopting a multi-stakeholder and consultative process³⁰. The standards propose to cover legal, environmental, social, economic aspects of NWFRs and involve extensive consultations with key stakeholder groups including representatives from various international organizations, central ministries, state forest departments and corporations, MFP federations, industries, traders, NGOs, and independent experts. The adoption of these standards is bound to address the various issues related to conservation, management and responsible utilization of these resources for sustainable livelihoods of forest dependent communities.

³⁰ NCCF has already developed Forest Management Standard, duly endorsed by the Programme for the Endorsement of Forest Certification (PEFC) and thus has international recognition. More than 4 lakh ha. forest area covering 44 forest divisions in Uttar Pradesh have already been certified under NCCF-FM standard.

CONCLUSION

The above discussion makes it evident that NWFPs have a major contribution not only in the lives of millions of poor tribal and rural people living in the vicinity of forests but also supporting forest based economy in the country by providing raw material for various industries domestically and internationally. However, in the absence of systematic compilation of collection database of NWFPs, it is difficult to estimate the actual contribution of NWFPs to national or state economy. Although the government of India has taken many steps such as establishing NMPB for conservation and augmenting local medicinal plants and aromatic species of medical significance and has recently launched a scheme of Minimum Support Price for several NWFPs, there is no national level assessment of NWFPs. It is high time to evolve a “National Non-wood Forest Produce Policy” comprising strategies for conservation of NWFRs and efficient utilization of NWFPs for augmenting sustainable livelihoods of forest dependent communities.

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ANNEXURE - 1

Normally Traded Commodities

Forest Species		Cultivated Species	
<i>Acacia nilotica</i>	Gum	<i>Bambusaarundinacea</i>	culms
<i>Achyranthes aspera</i>	Whole plant leaf fruit	<i>Bambusapalida</i>	culms
<i>Alternanthera sessilis</i>	aerial part	<i>Bambusanutans</i>	culms
<i>Azadirachtaindica</i>	Leaf, fruit	<i>Bambusapolymorpha</i>	culms
<i>Bacopa monnieri</i>	whole plant	<i>Bambusa vulgaris</i>	culms
<i>Boerbaviadiffusa</i>	leaf whole plant	<i>Dendrocalamushamiltonii</i>	culms
<i>Calotropisgigantea</i>	Flower	<i>Dendrocalamusbrandisii</i>	culms
<i>Calotropisprocera</i>	leaf latex	<i>Dendrocalamusstrictus</i>	culms
<i>Carissa carandas</i>	fruit seed	<i>Melocannabambusoides</i>	culms
<i>Cassia fistula</i>	Flower fruit bark		
<i>Cassia tora</i>	seed fruit leaf		
<i>Centellaasiatica</i>	Whole plant, leaf		
<i>Cissusquadrangularis</i>	Stem		
<i>Citrulluscolocynthis</i>	Fruit root		
<i>Cuscutareflexa</i>	whole plant		
<i>Cymbopogoncitratu</i>	Leaf		
<i>Cyperusrotundus</i>	Root		
<i>Cyperusscariosus</i>	Root		
<i>Ecliptaprostrata</i>	whole plant		
<i>Evolvulusalsinoides</i>	whole plant		
<i>Grewiaasiatica</i>	fruit seed		
<i>Leucas aspera</i>	whole plant		
<i>Nerium indicum</i>	Leaf		
<i>Pedaliu murex</i>	Fruit		
<i>Phyllanthus amarus</i>	whole plant		
<i>Phyllanthus emblica</i>	Fruit		
<i>Pongamiapinnata</i>	Seed		
<i>Sidacordifolia</i>	whole plant root seed fruit		
<i>Solanum nigrum</i>	whole plant, root		
<i>Solanum pubescens</i>	leaf, fruit		
<i>Solanum xanthocarpum</i>	whole plant		
<i>Sphaeranthus indicus</i>	Wholeplant, inflorescence		
<i>Syzygiumcumini</i>	fruit seed		
<i>Tephrosiapurpurea</i>	leaf root seed fruit		
<i>Terminalia catappa</i>	seed fruit leaf		
<i>Tribulusterrestris</i>	Fruit		
<i>Vinca minor</i>	Leaf		
<i>Vitex negundo</i>	seed		
<i>Vitex trifolia</i>	leaf		
<i>Woodfordiafruticosa</i>	Flower		
<i>Ziziphusjuzuba</i>	Fruit		
<i>Ziziphusmauritiana</i>	Fruit		

ANNEXURE - 2

List of MFPs for which GoI have notified minimum support price

Sl.	MFP	Sl.	MFP
1	Tamarind (with seed)	26	Janum dried seeds
2	Wild Honey	27	Dried Amla pulp
3	Gum Karaya	28	Marking nut
4	Karanj seed	29	Soap nut
5	Sal seeds	31	Bhava seed (<i>Amaltas, Cassia fistula</i>)
6	Mahua seeds	31	Arjuna bark
7	Sal Leaves	32	Kokam dry
8	Chironji Pods (with seeds)	33	Giloe
9	Myrabolan (<i>T.chebula</i>)	34	Kaunch seed
10	Rangeeni Lac, Kusumi Lac	35	Chiraita
11	Kusum Seeds	36	Vayabidang
12	Neem Seeds	37	Dhavaiphool (<i>Woodfordia floribunda</i>)
13	Puwad seeds(<i>Cassia tora</i>)	38	<i>Nux vomica</i>
14	Baheda (<i>Terminalia belirica</i>)	39	Ban tulsi
15	Hill Broom grass	40	Kshirni (<i>Hemidemus indicus</i>)
16	Drishikakai Pods	41	Bakul (<i>Mimosopseengi</i>)
17	Bale pulp	42	Kutaj dried bark (<i>Holarhenapubescens</i>)
18	Nagarmotha	43	Noni/Aal dried (<i>Morindacitriifolia</i>)
19	Shatavari roots	44	Sonapatah/Syonak pods (<i>Oroxyxyolnindicum</i>)
20	Gudmar/Madhunashini	45	Chanothi seeds (<i>Abrusprecatorius</i>)
21	Kalmegh	46	Kalihari dried tubers (<i>Gloriosa superba</i>)
22	Tamarind De-seeded	47	Makoi dried fruits (<i>Solanum nigrum</i>)
23	Guggal	48	Amapg plant (<i>Achyranthes aspera</i>)
24	Mahua Flowers Dried	49	Sugandhmantri roots/tubers (<i>Homalomenaaromatica</i>)
25	Tejpatta		



NCCF, a Network for Certification and Conservation of Forests, was established in 2015, for augmenting globally aligned sustainable standards for natural resources and promote responsible usage. NCCF is constantly striving to improve environmental, economic and social aspects of sustainable management of natural resources with lower carbon and ecological footprints. NCCF is supported by multiple stakeholders including representatives of forest-based industries, government organizations, and qualified auditor to regime and quantify sustainable standards.

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