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Proceedings of Brainstorming Workshop

Strengthening of Forestry Extension System in India

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Proceedings of Brainstorming Workshop
**Strengthening of Forestry
Extension System in India**

under
Ecosystem Services Improvement Project

14 July 2023



Indian Council of Forestry Research and Education

(An Autonomous Body of Ministry of Environment, Forest and Climate Change, Government of India)

P.O. New Forest, Dehradun - 248006 (INDIA)





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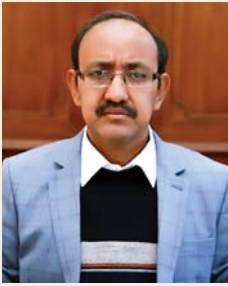
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Foreword



Forests in India are a significant source of sustenance for tribal and vulnerable populations living inside and on the fringes of the forests. Forests also play a critical role in supporting biodiversity which constitutes a good part of income generation for the forest fringe communities. As a result of anthropogenic pressure on natural resources, the scale and impact of land degradation and desertification are severe in the country. Unlike agricultural crops, the economic returns from tree crops are generally realised late. Also, the absence of regularised market, assured price of the produce, transit rules and regulations make it difficult to motivate the farmers to venture into tree planting as an entrepreneur. Due to long gestation period of tree crops and lack of vibrant extension activity calendar, the success in forestry extension has not been as per the expectations.

The World Bank is supporting Ecosystem Services Improvement Project (ESIP) in selected landscapes of Madhya Pradesh and Chhattisgarh with an overall objective to improve forest quality, sustainable land management and NTFPs benefits for forest dependent communities. ESIP supports the goals of Green India Mission by demonstrating models for adaptation-based mitigation through sustainable land and ecosystem management and livelihood benefits.

In the aforesaid background, ICFRE organized a brainstorming workshop on 'Strengthening of Forestry Extension System in India' with the aim to share forestry extension experiences of ICFRE, ICAR, State Forest Departments and to get the views and ideas of experts for developing suitable strategies and action plan for strengthening of forestry extension system in India.

I am thankful to the invited speakers, panelists and delegates for their participation in the workshop and sharing their experiences. I appreciate the efforts of scientists, consultants and staff of Biodiversity and Climate Change Division, Directorate of International Cooperation, ICFRE and all team members of workshop organizing committees for successful organization of the workshop. Efforts made by the editors and rapporteurs for bringing out the proceeding of workshop in an articulate manner are highly appreciated.

Dated: 28 July 2023

(A. S. Rawat)

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Abbreviations Used

ADG	:	Assistant Director General
APCCF	:	Additional Principal Chief Conservator of Forests
ATARI	:	Agricultural Technology Application Research Institute
CARB	:	California Air Resources Board
CCF	:	Chief Conservator of Forests
CSR	:	Corporate Social Responsibility
DCF	:	Deputy Conservator of Forests
DDG	:	Deputy Director General
DFO	:	Divisional Forest Officer
ESIP	:	Ecosystem Services Improvement Project
FSI	:	Forest Survey of India
HESCO	:	Himalayan Environmental Studies and Conservation Organization
HoFF	:	Head of Forest Force
ICAR	:	Indian Council of Agricultural Research
ICAR-IISWC	:	ICAR- Indian Institute of Soil and Water Conservation
ICFRE	:	Indian Council of Forestry Research and Education
ICFRE-AFRI	:	ICFRE- Arid Forest Research Institute
ICFRE-ERC	:	ICFRE- Eco-Rehabilitation Centre
ICFRE-FRI	:	ICFRE- Forest Research Institute
ICFRE-HFRI	:	ICFRE- Himalayan Forest Research Institute
ICFRE-IFB	:	ICFRE- Institute of Forest Biodiversity
ICFRE-IFGTB	:	ICFRE- Institute of Forest Genetics and Tree Breeding
ICFRE-IFP	:	ICFRE- Institute of Forest Productivity
ICFRE-IWST	:	ICFRE- Institute of Wood Science & Technology
ICFRE-RFRI	:	ICFRE- Rain Forest Research Institute
ICFRE-TFRI	:	ICFRE- Tropical Forest Research Institute
ICT	:	Information and Communication Technologies
IGKV	:	Indira Gandhi Krishi Vishwavidyalaya
ITC	:	India Tobacco Company
KVKs	:	Krishi Vigyan Kendras
MFP	:	Minor Forest Produce
MoEFCC	:	Ministry of Environment, Forest and Climate Change
MoEFCC-IRO	:	MoEFCC- Integrated Regional Office
MoU	:	Memorandum of Understanding
MP	:	Madhya Pradesh
NGOs	:	Non-Governmental Organizations
NIHE	:	Govind Ballabh Pant 'National Institute of Himalayan Environment'

NTFPs	:	Non-Timber Forest Products
PCCF	:	Principal Chief Conservator of Forests
PMVDY	:	Pradhan Mantri Van Dhan Yojana
QPM	:	Quality Planting Material
RKVY	:	Rashtriya Krishi Vikas Yojana
SAMETI	:	State Agriculture Management & Extension Training Institute
SAUs	:	State Agricultural Universities
SFD	:	State Forest Department
SLEM	:	Sustainable Land and Ecosystem Management
TGM	:	Tree Growers Mela
TOF	:	Trees Outside Forests
ToT	:	Training of Trainers
TREE-D	:	Transformational Restoration for Ecological and Economic Development
VVKs	:	Van Vigyan Kendras
WG	:	Working Group
ZTM-BPDU	:	Zonal Technology Management- Business Planning & Development Unit



Executive Summary

About 300 million population in the country are directly or indirectly depending on forests for their livelihood. Due to high degree of dependence on the forest, the per capita availability of forest land in India is one of the lowest in the world. Forests are not only a significant source of sustenance for tribal and vulnerable populations living inside and on the fringes of the forests but also play a critical role in supporting biodiversity which constitutes a good part of income generation for the forest fringe communities. Due to high anthropogenic pressure on natural resources, the impact of forest degradation is severe. Degraded forest landscapes become more vulnerable to invasion by invasive species leading to further degradation, loss of productivity and biodiversity. In order to meet the demands of the communities and also the national targets and international commitments, combating degradation of land becomes important. Indian Council of Forestry Research and Education (ICFRE) and its institutes for the past more than three decades have been working for long term ecological stability, sustainable development and economic security through conservation and scientific management of forests by undertaking studies in different aspects of forestry. However, forestry extension is not robust as required may be due to long gestation period of tree species, lack of assured buy-back system, lack of sufficient funds, lack of vibrant calendar of forestry extension activities etc. Evaluation study on functioning of the existing Van Vigyan Kendras (VVKs) has highlighted some of the gaps which require brainstorming to strategize extension activities for dissemination of the technologies, package of practices, models, clones, varieties and products developed by ICFRE to the end users/ stakeholders.

The World Bank has supported Ecosystem Services Improvement Project (ESIP) with an overall objective to improve forest quality, sustainable land management and non-timber forest products (NTFPs) benefits for forest dependent communities in selected landscapes of Madhya Pradesh and Chhattisgarh. ESIP supports the goals of Green India Mission by demonstrating

models for adaptation-based mitigation through sustainable land and ecosystem management and livelihood benefits. ICFRE as one of the project implementing agencies of ESIP, implemented the components on measurement and monitoring of forest carbon stocks, capacity building of State Forest Departments and scaling-up of sustainable land and ecosystem management (SLEM) best practices to prevent land degradation and desertification and to increase above-ground forest carbon stocks. The brainstorming workshop on 'Strengthening of Forestry Extension System in India' was organised on 14 July 2023 at ICFRE, Dehradun under ESIP with a motive to share forestry extension experiences of ICFRE, Indian Council of Agricultural Research (ICAR), State Forest Departments and to get the views and ideas of experts for identification of suitable strategies and actions for strengthening of forestry extension system in India. Participants from Ministry of Environment, Forest and Climate Change (MoEFCC), the World Bank, ICFRE, ICAR, State Forest Departments, S&T Organisations, Academic & Training Institutions, Krishi Vigyan Kendras, NGOs, Forest-based Enterprises/ Cooperatives, Wood-based Industries, Mining Companies, Tree Growers and Farmers participated in the workshop. Four Working Groups (WG) targeting the stakeholders' specific forestry extension requirements were formed for group exercises and group discussion in the workshop viz. WG 1: Forestry extension for State Forest Department; WG 2: Forestry extension for farmers and tree growers, and deliberation on scope of extension *w.r.t.* amendments in seed rules etc.; WG 3: Forestry extension for forest-based enterprises, wood-based industries and mining companies, and deliberation on development of synergies with Van Dhan Yojana focused on value addition to NTFPs and WG 4: Forestry extension/ knowledge sharing for academic & training institutions, key ministries/ departments, S&T organisations, and deliberation on capacity constraints faced by nurseries of ICFRE's institutes. The four working groups were formed with about 20 participants in each group.

During the opening session of the workshop presentations on the extension strategies of ICFRE, ICAR, Haryana State Forest Department, Madhya Pradesh State Forest Department and formation of working groups and expectation from the group exercises and discussion were made. The first part of group exercise was focused on “Identification of issues & challenges, gaps and needs of forestry extension” and the second part was focused on “Development of suitable strategies and action plan for strengthening of forestry extension system”. The facilitators of each

group made a brief presentation in their respective groups highlighting the existing forestry extension system and expectation from the Working Group. After due deliberations by each working group, the outcomes of the group exercises were presented by the group facilitators in the plenary session.

Recommendations of the Workshop: Following recommendations were synthesized from outcomes of the group exercises and discussions of four working groups of the workshop:

Issues and Challenges for Strengthening of Forestry Extension	Strategies for Strengthening of Forestry Extension	Actions for Strengthening of Forestry Extension
1). Strengthening of infrastructure, manpower and lack of capacity building of the staff for forestry extension of SFDs and ICFRE Institutes		
<ul style="list-style-type: none"> Lack of focused vision and strategy for forestry extension 	<ul style="list-style-type: none"> Development of Focussed vision and strategy for forestry extension 	<ul style="list-style-type: none"> Preparation of Forestry Extension Action plan(s) for stakeholders for implementation of Forestry Extension Strategy Implementation of Forestry Extension Action Plan(s)
<ul style="list-style-type: none"> Policy for transfer of technologies/ practices in the field of forestry 	<ul style="list-style-type: none"> Policy Guidelines to be in place for transfer of technologies/ package of practices 	<ul style="list-style-type: none"> Actions for transfer of technologies/ practices in the field of forestry as per the Policy Guidelines Application of proper communication platforms for transfer of technologies/ package of practices
<ul style="list-style-type: none"> Insufficient infrastructure for forestry extension activities 	<ul style="list-style-type: none"> Development of infrastructure (modern nurseries, demonstration plots, testing laboratories etc.) 	<ul style="list-style-type: none"> Setting up of Technology Incubation Centres with appropriate funding at research institutions Establishment/strengthening of modern nurseries and demo plots at ICFRE institutes and State Forest Departments (SFDs)
	<ul style="list-style-type: none"> Strengthening of Van Vigyan Kendras 	<ul style="list-style-type: none"> Implementation of recommendations of the study on Strengthening of Van Vigyan Kendras
<ul style="list-style-type: none"> Non-availability of land for research and for technology demonstrations (forestry extension) with research institutions 	<ul style="list-style-type: none"> Provision for providing lands for forestry extension to the research institutions by SFDs 	<ul style="list-style-type: none"> Allotment of lands to the research institutions for the purpose of forestry extension activities
<ul style="list-style-type: none"> Lack of extension specialists and social scientists in ICFRE 	<ul style="list-style-type: none"> Engagement of extension experts/ professionals and social science expert and staff 	<ul style="list-style-type: none"> Recruitment of experts/ professionals and social science scientists in ICFRE
<ul style="list-style-type: none"> Man-power constraints in ICFRE and SFDs 	<ul style="list-style-type: none"> Strengthening of Extension Division/ Wings of SFDs and research institutions 	<ul style="list-style-type: none"> Regular recruitment of vacant positions in the SFDs and ICFRE

<ul style="list-style-type: none"> • Lack of trained and motivated extension personnel in ICFRE and SFDs • Lack of regular capacity building programmes for the frontline staff of SFDs 	<ul style="list-style-type: none"> • Organisation of capacity building programme for the extension staff of ICFRE and frontline staff of SFDs 	<ul style="list-style-type: none"> • Conduction of training need assessment exercises • Develop training modules for strengthening the capacity of extension staff in research institutions and SFDs • Develop online training modules in you-tube channel for forestry extension • Organisation of trainings/ capacity building programmes for staff of the Extension Wings of SFDs and ICFRE
	<ul style="list-style-type: none"> • Building of institutional support for forestry extension programmes 	<ul style="list-style-type: none"> • Execution of formal courses/ specialization of forestry extension in forestry universities
2). Awareness generation, communication & knowledge sharing and networking for forestry extension		
<ul style="list-style-type: none"> • Poor community participation in the forestry programmes 	<ul style="list-style-type: none"> • Motivating stakeholders for taking up new technologies, package of practices and best practices in forestry 	<ul style="list-style-type: none"> • Documentation of success stories, package of practices and best practices (in multilingual formats) in the field of forestry for sharing with stakeholders
<ul style="list-style-type: none"> • Limited awareness in SFDs and local communities about new and innovative technologies and practices in forestry 	<ul style="list-style-type: none"> • Awareness generation and developing effective mechanism for knowledge sharing • Application of Information and Communications Technology (ICT) as modern extension tool • Documentation and dissemination of extension best practices and sharing 	<ul style="list-style-type: none"> • Exposure visits of nurseries producing QPM including collection of seeds • Knowledge sharing in public domain through social media platform (ICT extension platforms) • Publication and printing of extension material in simple vernacular languages • Publication of findings of forestry research project in open access journals
<ul style="list-style-type: none"> • Lack of effective communication and coordination mechanism between SFDs, research institutions, academic institutions, training institutions and industries for sharing of knowledge 	<ul style="list-style-type: none"> • Two-way communication (Lab to land and vice versa) for strengthening forestry extension • Development of roadmap for networking of research, academic and training institutions for knowledge sharing and transfer of technologies 	<ul style="list-style-type: none"> • Participation of research institutions in business expos, trade fairs etc. • Organization of regular Silviculture Conference • Organisation of Annual Forestry Extension Conference • Organization of regular stakeholders meet to discuss the forestry research and extension needs and sharing of research findings
	<ul style="list-style-type: none"> • Mechanism for sharing of ICAR extension infrastructure facilities for forestry extension • Networking of Van Vigyan Kendras and Krishi Vigyan Kendras 	<ul style="list-style-type: none"> • Effective implementation of MoU for utilization of ICAR extension facilities including networking of KVVs and VKVs for forestry extension by ICFRE and SFDs. • Periodical monitoring and reviews (indicator based) of the extension activities

3). Funding mechanism for forestry extension		
<ul style="list-style-type: none"> ● Lack of sufficient fund for forestry extension and capacity building 	<ul style="list-style-type: none"> ● Provision of sufficient regular funding for forestry extension activities and capacity building programmes ● Provision of compulsory extension component with sufficient funds in a research project for implementation of the extension activities 	<ul style="list-style-type: none"> ● Annual activities calendar to be framed for dissemination of technologies and capacity building programmes ● Execution of the extension activities of the research project as per the work plan
4). Policy and regulatory issues for promotion of tree outside forests for forestry extension		
<ul style="list-style-type: none"> ● Complex felling and transit regulations for tree species growing on non-forest areas and private lands 	<ul style="list-style-type: none"> ● Stakeholders awareness generation about the latest rules and guidelines for felling and transit of forest produce to promote forestry activities outside the forest areas. 	<ul style="list-style-type: none"> ● Submission to the Government for liberalizing felling and transit regime for tree species grown in non-forest and private lands
<ul style="list-style-type: none"> ● Lack of policy on certification of forest produces 	<ul style="list-style-type: none"> ● Development of certification mechanism/ policy for planting materials and forest products 	<ul style="list-style-type: none"> ● Protocols and standards for certification of forest products, forest seeds and planting stocks
5). Production of quality planting materials and certification of forest products for forestry extension		
<ul style="list-style-type: none"> ● Non-availability of quality planting materials (QPMs) of forestry species 	<ul style="list-style-type: none"> ● Development of QPMs of forestry species 	<ul style="list-style-type: none"> ● Standard operating procedures and standards for production of QPM of forestry species
<ul style="list-style-type: none"> ● Lack of certification of forest nurseries, forest produces and wood products 	<ul style="list-style-type: none"> ● Development of standards for accreditation of forest nurseries for production of QPMs of forestry species ● Certification of planting materials, forest produces and wood products 	<ul style="list-style-type: none"> ● Development of minimum seed standards for forestry species ● Development of domestic certification system and facility
6). Marketing mechanism of forest products for forestry extension		
<ul style="list-style-type: none"> ● Lack of proper markets and value chain for NTFPs ● Lack of value addition and proper packaging of the forest products ● No provision for Minimum Support Price (MSP) for NTFPs and other forest products 	<ul style="list-style-type: none"> ● Policy guidelines for marketing of NTFPs ● Policy guidelines for introduction of MSP for NTFPs and other forest products 	<ul style="list-style-type: none"> ● Development of value addition for NTFPs, and forward and backward market linkages for NTFPs and other forest products in line with Pradhan Mantri Van Dhan Yojana ● Online platform for marketing NTFPs and other forest products



Background

In India, about 300 million population is directly or indirectly depending on the forests, most of them are rural poor, with small land holdings and limited livelihood options. With such high degree of dependency on the forest, the per capita availability of forest land in India is one of the lowest in the world. Forests in India are a significant source of sustenance for tribal and vulnerable populations living inside and on the fringes of the forests. Forests also play a critical role in supporting biodiversity which constitutes a good part of income generation for the forest fringe communities. As a result of anthropogenic pressure on natural resources, the scale and impact of forest degradation are severe. Degraded forest landscapes are more prone to invasion by invasive alien species, which compete with native species and lead to further land degradation, productivity reduction and biodiversity loss. Managing land that is undergoing degradation and desertification, is therefore a significant priority in the context of achieving India's national targets, international commitments related to Nationally Determined Contribution, Land Degradation Neutrality, and Sustainable Development Goals. The Indian Council of Forestry Research and Education (ICFRE) with its nine research institutes and six Centres has the mission "to generate, advance and disseminate scientific knowledge and technologies for ecological security, improved productivity, livelihood enhancement and sustainable use of forest resources through forestry research and education". In this endeavour, ICFRE for the past more than three decades have been working for long-term ecological stability, sustainable development and economic security through conservation and scientific management of forest ecosystems by undertaking studies in different aspects of forestry. This has resulted in production of high yielding improved varieties of some of the fast-growing species, development of agroforestry models of different species for different agroclimatic zones of the country, development of bio-boosters to boost the growth of seedlings in the nursery, development of harvesting techniques of bamboos, development of ways and means for sustainable harvesting of non-timber forest produces, development of restoration

models for mined out areas etc. All these efforts of ICFRE and its institutes are making contribution to meet the national targets of bringing one third area of the country under forest and tree cover besides conforming to targets of Sustainable Development Goals and Land Degradation Neutrality and Nationally Determined Contribution.

Unlike agricultural crops, the economic returns from tree crops are generally realised late. Also, the absence of regularised market, assured price of the produce, transit rules and regulations make it difficult to convince the farmers to venture into tree planting as an entrepreneur. Consequently, the utility of improved clones or varieties of commercially important trees fail to scale up despite the high economic return they are expected to make. Agriculture crops find their way straight to the farmers at the remotest place of the country with vibrant extension service delivered through the network of Krishi Vigyan Kendras for dissemination of technical knowhow, quality seeds or planting materials and onsite demonstration tests besides programmes aired on All India Radio and national TV Channels like Krishi Darshan with far reaching impacts. ICFRE with its main stakeholder- the State Forest Department in majority of the states have signed memorandum of understanding of leveraging their complimentary competences and sharing of resources, has been making consistent efforts to disseminate its research findings to the farmers. ICFRE has also signed a memorandum of understanding with Indian Council of Agricultural Research (ICAR) and collaborating with Krishi Vigyan Kendras (KVKs) to effectively involve rural communities not only in afforestation activities but also making them understand livelihood support that forestry sector can generate. ICFRE has also established 41 Van Vigyan Kendras (VVKs) through its nine research institutes for dissemination of its research findings with active support of the State Forest Departments and KVKs to the stakeholders by organising training and demonstration programmes and exposure visits. ICFRE has also established Demo villages for extending the technologies from lab to land. Performance and

usefulness of these villages need to be discussed so that further action to strengthen this program could be taken.

However, due to long gestation period of tree crops, lack of assured buy-back and lack of vibrant extension activity calendar with continuity of the programme to convince the stakeholders, success has not been as per the expectations. An evaluation of the functioning of the existing Van Vigyan Kendras in ICFRE has highlighted some of the gaps which require brainstorming to strategize the extension activities for transfer of technologies, clones/ varieties, products/ models developed by ICFRE and use by the stakeholders.

The World Bank is supporting Ecosystem Services Improvement Project (ESIP) in selected landscapes of Madhya Pradesh and Chhattisgarh with an overall objective to improve forest quality, sustainable land management and NTFPs benefits for forest dependent communities. ESIP supports the goals of Green India Mission by demonstrating models for adaptation-based mitigation through sustainable land and ecosystem management and livelihood benefits. Strengthening of the VVKs is one of the activities under ESIP. Accordingly, a study was conducted to evaluate working and effectiveness of VVKs established in different states in fulfilling the objectives of forestry extension services to enable technologies from lab to land and make practicable suggestions to improve upon the working and effectiveness of VVKs in future. ICFRE organised a national workshop on Agroforestry and Farm Forestry for Sustainable Land and Ecosystem Management in the month of January 2023 under ESIP. One of the recommendations of the workshop related to forestry extension was to develop a mechanism for knowledge sharing and its dissemination for extension of agroforestry related research findings, best practices, success stories from lab to land, and to strengthen the VVKs. The brainstorming workshop on Strengthening of Forestry Extension System in India was organised on 14 July 2023 at ICFRE, Dehradun under ESIP with a motive to share forestry extension experiences of ICFRE, ICAR, State Forest Departments and to get the views and ideas of experts for developing suitable strategies and action plan for strengthening of forestry extension system in India.

Participants from MoEFCC, the World Bank, ICFRE, ICAR, State Forest Departments, S&T Organisations,

Academic & Training Institutions, Krishi Vigyan Kendras, NGOs, forest-based enterprises/ cooperatives, wood-based industries, mining companies, tree growers, farmers etc. participated in the brainstorming workshop. Following four Working Groups targeting the stakeholders' specific forestry extension need were formed for group discussion and group exercises in the brainstorming workshop:

- Working Group 1: Forestry extension for State Forest Departments
- Working Group 2: Forestry extension for farmers and tree growers, and deliberation on scope of extension w.r.t. amendments in seed rules etc.
- Working Group 3: Forestry extension for forest-based enterprises, wood-based industries and mining companies, and deliberation on development of synergies with Van Dhan Yojana focused on value addition to NTFPs
- Working Group 4: Forestry extension/ knowledge sharing for academic & training institutions, key ministries/ departments, S&T organisations, and deliberation on capacity constraints faced by ICFRE nurseries

With presence of 94 delegates from State Forest Departments, S&T Organisations, Krishi Vigyan Kendras, Universities, the World Bank, wood-based industries, NGOs and farmers; each Working Group consisted of about 20 participants representing the different stakeholders. Working Groups conducted group exercises and discussion related to issues and challenges, gaps and needs of forestry extension with respect to the targeted stakeholders. The Working Groups identified strategies and actions for strengthening the forestry extension in India. Each Working Group was supported by one Facilitator for fruitful outcomes of the group discussion and exercises. Display boards, working table, meta cards, flip charts, marker pens etc. were provided for group exercise to each Working Group. Facilitator of the Working Group initiated the group exercise. After completion of the group exercises and discussion, facilitator of each Working Group made a presentation before the participants of the workshop on the findings of the group exercise/ discussion for further deliberation and finalization in the Plenary Session of the workshop. Agenda of the brainstorming workshop is placed at Annexure I and list of the participant is placed at Annexure II.



Opening Session

Dr. Sudhir Kumar, Dy. Director General (Extension), ICFRE in his welcome and introductory remarks informed the gathering that extension in ICFRE is more than three decades old, even during 1990s ICFRE under the World Bank funded FREE project had demonstrated various technologies to the stakeholders. Realising the importance of the extension, Extension Division in each institute was constituted and satellite centres were opened during the period. The research outcomes are extended to the stakeholders/ end users through various extension programs. The extension strategies are updated periodically incorporating new product concept with the changing scenario and match stakeholder needs

and for more effective dissemination of research results, it is proposed to further improve the extension process by strengthening of VVKs and by signing of MoU with KVKs; increase in frequency of TGM (Tree Grower Mela/ IIM (Industry-Institute Meet); establishment of Incubation Centres for technologies; preparation of database of beneficiaries for developing long term association for green development and social media outreach. He said that the brainstorming workshop on Strengthening of Forestry Extension System is being organised with the objective to develop suitable strategies and action plan for strengthening of forestry extension system in India. He also elaborated on the structure and agenda of the workshop.



Dr. Anupam Joshi, Senior Environmental Specialist, the World Bank, in his welcome remarks said that forests of India contribute less than 2% to the country's GDP however, more than 300 million people in India depend on forests for their livelihoods. Forests are resilient natural capital as they play important role in protecting and supporting livelihoods of local communities and also serving as vital safety nets during disasters and crises. Besides providing food, energy, water and shelter, they also act as buffers to mitigate the impact of climate change and extreme weather events. Forests provide large number of goods and ecosystem services for the sustenance of humankind. Continuous supply of the green water for present and



future need will depend on the health of the forests. Advancement in carbon modelling is required to know the carbon sequestration potential of the forests. Concept of extension forestry is difficult but there is a need to make forestry extension more effective. India is world leader in agricultural crop production and same is also required in the forestry sector. He also stated that systematic survey of NTFPs and their value addition with value chain are required to fetch higher prices by the forest dependent communities. Agroforestry can play an important role in achieving the NDC target

of forestry sector. Forward and backward linkages for NTFPs and agroforestry produces need to be developed for enhancing income of the farmers and forest fringe communities. Forestry extension can roll out in the country for benefit of more than 3 million community members and also contribute for conservation of forest and natural resources. He also stated that the deliberations and outcomes of the brainstorming workshop on Strengthening of Forestry Extension System in India will be useful in the strengthening of forestry extension in the country.

Sh. A.S. Rawat, Director General, ICFRE in his address apprised the gathering that ICFRE and its institutes for the past more than three decades have been working for long term ecological stability, sustainable development and economic security through conservation and scientific management of forests by undertaking studies in different aspects of forestry. All these efforts are making contribution to meet the national targets of bringing one third area of the country under forest and tree cover, besides, conforming to the targets of Sustainable Development Goals and Land Degradation Neutrality and Nationally Determined Contribution. He also highlighted that the long gestation period of tree crops takes it longer to realize the economic returns besides the absence of regularized market, assured price of the produce, transit rules make it difficult to motivate the farmers to take up tree planting as an entrepreneur. ICFRE with its main stakeholder, the State Forest Department, in majority of the states have signed memorandum of understanding of leveraging their complimentary competences and sharing of resources, has been making consistent efforts to disseminate its research findings to the farmers. He also highlighted the activities done by ICFRE under the World Bank funded Ecosystem Services Improvement



Project and a study conducted to evaluate working and effectiveness of VVKs established in different states in fulfilling the objectives of forestry extension services to enable technologies from lab to land and make practicable suggestions to improve upon the working and effectiveness of VVKs in future. He said that the final outcome of the brainstorming workshop on Strengthening of Forestry Extension System in India will be useful in providing research backstopping to different stakeholders for meeting national targets and international commitments related to forest sector of the country.



Presentations of the Workshop: Following five presentations were made during the opening session of the workshop:

1. ICFRE's Extension Strategies: Dr. Geeta Joshi, ADG (Media & Extension), ICFRE, Dehradun
2. ICAR's Extension Strategies: Dr. Bankey Bihari, Principal Scientist, ICAR-Indian Institute of Soil and Water Conservation, Dehradun
3. Extension Strategies of Haryana Forest Department: Sh. Jagdish Chander, Principal Chief Conservator of Forests & HoFF, Haryana State Forest Department
4. Extension Strategies of Madhya Pradesh Forest Department: Sh. Ankit Pandey, DCF, Madhya Pradesh State Forest Department
5. Formation of Working Groups and Expectation from the Group Exercises and Discussion: Dr. R. S. Rawat, Project Manager, ESIP, ICFRE

Dr. Geeta Joshi, Assistant Director General (Media and Extension), ICFRE made a presentation on "ICFRE's Extension Strategies". She discussed in detail about the journey of ICFRE extension strategies formulated in 2000, 2010 and 2018. Dr. Joshi talked about the major thrust areas, target groups, mode of dissemination of research and extension schemes. While talking about the conventional extension activities, she emphasised on the awareness campaigns (exhibitions, melas, awareness programmes, radio/TV talks and print media), Prakriti (a scientist-student connect programme), seminars, symposium, workshops and conferences organised, museums, museums cum interpretation centres, repositories, photo gallery and digitization of herbarium and insectarium. She also discussed about the centralized extension schemes focusing on VVKs, networking of VVKs and KVKs, demonstration villages and tree growers mela. She also informed that as new extension initiatives,

Technology Demonstration Centers have been set up, mobile apps have been developed, direct to consumer scheme has been modified, documentaries have been prepared and information has been uploaded on social media platforms for maximum outreach. Inadequate manpower for extension and irregular and insufficient fund flow were highlighted as the main challenges to the forestry extension. While talking about future plan, she highlighted that coordinated approach need to be developed by integrating state-of-the-art methods to improve the utility and visibility of the research outcomes through strengthening of VVKs, increase in frequency of Tree Growers Melas/ Industry-Institute Meets, Institute-specific Extension Programmes, trainings of personnel involved in forestry extension activities, adequate and regular fund flow for extension activities, and User-friendly IT based extension and mobile based advisory.



Dr. Bankey Bihari, Principal Scientist, ICAR-Indian Institute of Soil and Water Conservation, Dehradun made a presentation on “ICAR’s Extension Strategies”. He apprised the gathering about the agriculture technology transfer /extension schemes in India. He talked about the Krishi Vigyan Kendras being coordinated by Agricultural Technology Application Research Institute (ATARI). He also

talked about the technology development/ testing / refinement and transfer process, and other capacity building institutions such as Trainer’s Training Centres, Extension Education Institutes and National Institute of Agricultural Extension Management. He emphasised on community participation and rapport building for effective implementation of the extension strategy.



Sh. Jagdish Chander, Principal Chief Conservator of Forests & HoFF, Haryana State Forest Department made a presentation on Extension Strategies of Haryana State Forest Department. He deliberated on Extension Forestry, Forestry Extension and Extinction Forestry. He highlighted that there is a need to keep in mind the international and national requirements. He also presented the global scenario of forests and reason for their vanishing and the challenges faced by the forests. He also presented the forest scenario in Haryana. He emphasised that nearly half of the forests in Haryana are along railway tracks, roads and canals. Roadsides, canal sites, railway lands,

municipal parks and urban areas, schools, colleges and universities, govt. offices and institutional lands, hospital compounds, historical buildings, industrial areas, grain markets and sub-urban areas are major areas where extension forestry is undertaken in the state. He apprised that Forest Publicity and Extension Division is working in Haryana since 1980 and various awareness programmes are undertaken through publications, films, workshops, quiz etc. for the farmers, teachers and students. While highlighting the challenges of the Extension Forestry, he also discussed the role of ICFRE in Extension Forestry in the state of Haryana.



Sh. Ankit Pandey, DCF, Madhya Pradesh State Forest Department made a presentation on the Extension Strategies of Madhya Pradesh State Forest Department. He discussed about the social forestry circles and operational nurseries. He also talked about the extension forestry schemes, projects and research schemes and social forestry nurseries. Trainings on

nursery management and forestry extension, field visits and institution visits, symposiums organised by Madhya Pradesh State Forest Department were also elaborated. He also informed the gathering about the Nursery Management Information System developed by the department.



Dr. R. S. Rawat, Project Manager, ESIP, ICFRE made a presentation on Formulation of Working Groups and Expectations from the Group Exercises and Discussion. He presented the formulation of four Working Groups targeting the stakeholder's specific forestry extension needs for group discussion and group exercises:

Working Group 1: Forestry extension for State Forest Departments

Working Group 2: Forestry extension for farmers and tree growers, and deliberation on scope of extension w.r.t. Seed Rules etc.

Working Group 3: Forestry extension for forest-based enterprises, wood-based industries and mining

companies, and deliberation on development of synergies with Van Dhan Yojana

Working Group 4: Forestry extension/ knowledge sharing for academic & training institutions, key ministries/ departments, S&T organisations, and deliberation on capacity constraints faced by ICFRE nurseries

Each Working Group consisted of about 20 participants representing the different stakeholders. He also presented the expectations from the group exercises on the issues and challenges, gaps and needs, suitable strategies and actions for strengthening of forestry extension.







Working Group Exercise and Discussion Session

The first part of group exercise was focused on “Identification of issues and challenges, gaps and needs of forestry extension” and the second part was focused on “Development of suitable strategies and actions for strengthening of forestry extension system”.

The outcomes of the group exercise after due deliberations in the groups were presented by the group facilitators during the plenary session. Group wise activity details and outcomes are as under:

Working Group 1: Forestry Extension for State Forest Departments: This Group comprised of following participants:

S. No.	Name of the Participant	S. No.	Name of the Participant
1.	Sh. R. K. Dogra, DDG (Administration), ICFRE	12.	Sh. Alok Kumar Tiwari, DCF, Chhattisgarh SFD
2.	Sh. Pankaj Agarwal, Deputy Director General of Forests, MoEFCC-IRO	13.	Dr. R.S. Rawat, Project Manager, ESIP, ICFRE
3.	Sh. P. P. Singh, APCCF (Publicity & Extension), Uttar Pradesh SFD, Lucknow	14.	Sh. Sushant Kumar, ADG (Administration), ICFRE
4.	Dr. Nitin Kulkarni, Director, ICFRE-TFRI, Jabalpur	15.	Sh. Ankit Pandey, DCF, Madhya Pradesh SFD
5.	Sh. Monish Mullik, PCCF (Retd.), Uttarakhand SFD	16.	Mrs. Anjana Suchita Tirkey, DCF, ICFRE-IFP, Ranchi
6.	Dr. V. K. Varshney, Scientist-G, ICFRE-FRI	17.	Sh. Jatender Singh, Scientist-D, ICFRE
7.	Dr. P.S. Rawat, ADG (RP), ICFRE	18.	Dr. Gaurav Mishra, Scientist-D, ICFRE
8.	Dr. Santan Barthwal, Scientist-G, ICFRE-FRI	19.	Sh. N.P.S. Nain, Consultant, ESIP- ICFRE
9.	Dr. A.K. Sharma, Professor and Programme Coordinator, KVK, Dhakrani	20.	Sh. Mahaling, Head, Extension Division, ICFRE-FRI (Group Facilitator)
10.	Dr. Arun Pratap Singh, Scientist-G, ICFRE-FRI	21.	Dr. Md Shahid, Consultant, ESIP- ICFRE (Rapporteur)
11.	Dr. V. P. Panwar, Scientist-F, ICFRE-FRI		

Working Group 1 identified following issues, challenges and gaps for strengthening the forestry extension:

Issues	Challenges	Gaps
<ul style="list-style-type: none"> Lack of focused strategy and vision for forestry extension Man-power constraints in State Forest Departments (SFDs) Lack of trained and motivated extension personnel with SFDs No dedicated Division with SFDs for forestry extension 	<ul style="list-style-type: none"> Insufficient infrastructure for forestry extension activities Building institutional support for forestry extension programmes Non-availability of land for research with research institutions Insufficient funds for capacity building of frontline staff of SFDs 	<ul style="list-style-type: none"> Non-availability of quality planting materials and SOPs for developing QPM No MSP for forest produces Lack of validated planting stock/ methodologies/ technologies No proper documentation of already extended/ developed package of practices

- Lack of funds for forestry extension.
- Lack of capacity building for extension personnel of SFDs
- Lack of awareness and capacity building of SFDs in management of nurseries
- Lack of effective communication mechanism and liaisoning among SFDs and research institutions
- Lack of certification of forest produces
- Lack of proper markets for forest produces
- Lack of awareness in SFDs about new innovative technologies in the forestry
- Complexity in the procedures for felling of trees and transportation (Transit Permit) in many states
- Motivating stakeholders for taking up forestry activities and reluctance among stakeholders to adopt new technologies.
- Developing markets for forest produces
- Insufficient funds for development of certification mechanism/ standards for forest produces
- Long gestation period for validation of technologies/ methodologies/ models
- Long administrative channel for communicating issues to the experts
- No mechanism of regular meetings for sharing of problems and research findings
- Poor inter-sectoral linkages between ICFRE institutes, ICAR and SFDs
- Communication gap and lack of knowledge sharing system

Working Group 1 also identified following needs, strategies and actions for strengthening the forestry extension:

Needs	Strategies	Actions
● Availability of QPM	● Documentation and dissemination of extension best practices and sharing	● Regular interface between research organizations and SFDs
● Alternate forest-based livelihood option	● Application of Information and Communications Technology (ICT) as modern extension tool	● Recruitment of extension professionals in SFDs and ICFRE
● Sharing of success stories and best practices for scaling up	● Certification of planting materials and forest produces	● Adoption of bottom-up participatory approach in forestry extension activities of SFDs and research institutions
● Establishment of incubation centres in research institutions for hand-holding	● Allotment of lands to the research institutions for extension activities	● Training and capacity building, information dissemination and collaborative research
● Allotment of sufficient budget for extension activities	● Setting up of Technology Incubation Centres with appropriate funding at research institutions	● Provision of funds for extension activities
● Regular dialogues between research institutions and SFDs	● Mechanism for sharing of ICAR extension infrastructure facilities for forestry extension	● Publication and printing of extension material in simple vernacular languages
● Buy-back arrangement for the farmers' tree produce	● Periodical or regular capacity building programme for the extension workers	● Organization of regular Silviculture Conference
● Accreditation of forest nurseries and certification of planting materials	● Recruitment/ engagement of extension experts/ professionals and social science expert in a project mode	● Publication of forestry research results in open domain.
● Strengthening the capacity of extension workers in research institutions and SFDs	● Annual Forestry Extension Conference for research institutions and SFDs to showcase new technologies and knowledge, and sharing thereof	● Action for liberalizing felling and transit regime for tree species grown in non-forest and private lands
● Mechanism for sharing of research outcomes on annual basis	● Liberalizing felling and transit regime for tree species grown in non-forest areas and private lands	● Knowledge sharing in public domain through digital social media platform
● Recruitment of professional/ extension specialists in extension wings	● Initiation and execution of SFDs demand driven research projects from the financial supports from SFDs	● Execution of formal courses/ specialization of forestry extension in forestry universities
● Development of digital platform in forestry extension		● Effective implementation of MoU for utilization of ICAR extension facilities for forestry extension by research institutions and SFDs.
● Organization of regular stakeholders meet to discuss research issues and extension		
● Availability of land for technology demonstrations (forestry extension)		



Working Group 2 (Forestry extension for farmers and tree growers, and deliberation on scope of extension w.r.t. amendments in seed rules etc.): This Group comprised of the following participants:

S. No.	Name of the Participant	S. No.	Name of the Participant
1.	Sh. M. R. Baloch, Director, ICFRE-AFRI, Jodhpur	11.	Dr. Sanjay Singh, Scientist-G, ICFRE-ERC, Prayagraj
2.	Dr. C. Kunhikannan, Director, ICFRE-IFGTB, Coimbatore	12.	Sh. A. K. Sinha, In -Charge, IT Division, ICFRE
3.	Dr. Ratnaker Jauhari, DDG (Research), ICFRE	13.	Sh. Pingale Bhanudas Narayan, DCF, ICFRE
4.	Ms. Richa Misra, Head, Silviculture Div., ICFRE-FRI	14.	Ms. Vijaya Ratre, DCF, ICFRE-FRI
5.	Dr. Dinesh Kumar, Scientist-G, ICFRE-FRI	15.	Sh. Sudhir Kumar, Scientist-C, ICFRE
6.	Dr. Manisha Thapliyal, Scientist-G, ICFRE-FRI	16.	Dr. Manoj Kumar, Scientist-C, ICFRE
7.	Dr. Sanjay, Professor Agronomy, KVK, Dhakrani	17.	Sh. Narayan Swamy, Secretary, Coimbatore Herbal and Tree Growers Association, Coimbatore
8.	Dr. Bankey Bihari, Principal Scientist Ag. Extn., ICAR-IISWC, Dehradun	18.	Sh. Abhay Rod, Bhoomi Natural, Shamli

9. Dr. S.S. Paliyal, Principal Scientist & Head, KVK, Dhaulakuan	19. Sh. R. Bisen, Consultant, ESIP, ICFRE
10. Sh. Muthu Prasad, Scientist-B, ICFRE	20. Dr. S. Saravanan, Head, Extension Division, ICFRE-IFGTB, Coimbatore (Group Facilitator)
11. Mr. Puran Bartwal, People's Science Institute, Dehradun	21. Dr. Arun Thakur, Consultant, ESIP, ICFRE (Rapporteur)

Working Group 2 identified following issues, challenges and gaps for strengthening the forestry extension:

Issues	Challenges	Gaps
<ul style="list-style-type: none"> • Non-availability of quality planting materials (QPM) for farmers and tree growers • Lack of sufficient fund for forestry extension • Lack of certified nurseries • Absence of market linkages • Lack of value addition, supply chain distribution and proper packaging of forest produces • Poor community participation in forestry programmes • Insufficient trained manpower in forestry extension • Lack of technical know-how and listing of site-specific species • Complicated felling and transit rules for tree species 	<ul style="list-style-type: none"> • Development of minimum seed standards for forestry species • Availability of site-specific species for plantation • Effective mechanism for knowledge sharing • Protection of plants from fire, grazing etc. • Non-effective market mechanism • Strengthening the laboratories of research institutions as per the available accreditation standards 	<ul style="list-style-type: none"> • Non-availability of standards and authorised agencies for certification • Non-availability of quality planting materials of forestry species • No trained manpower for extension • Communication gap between scientist and farmers/ tree growers • Poor community participation in the forestry programme • Insufficient publicity of technologies and practices developed so far and their transfer to lands • No action plans for forestry extension for farmers • Insufficient market for forest produces

Working Group 2 identified following needs, strategies and actions for strengthening the forestry extension:

Needs	Strategies	Actions
<ul style="list-style-type: none"> • Sufficient funds availability for extension • Requirement of standard operating procedures and standards for production of quality plating materials • Establishment of demo plots for forestry extension • Trained manpower for forestry extension • Effective use of print and electronic media to publicize the technologies and practices developed • Functional Van Vigyan Kendras • Separate section for forestry seeds in Seed Rules • Regular interaction between farmers/ tree growers and scientists • Digital platform and multilingual extension materials for sharing of knowledge 	<ul style="list-style-type: none"> • Strengthening of Van Vigyan Kendras • Networking of VVKs with KVKs • Strengthening of Extension Division/ Wings of the SFDs and research institutions • Viable, location specific and profitable technological packages • Development of market linkages • Periodical monitoring and reviews (indicator based) of the extension activities • Promotion of agroforestry and farm forestry through relaxation in timber harvesting and transit rules, and product traceability, certification and carbon credits 	<ul style="list-style-type: none"> • Functional MoUs with SFDs and SAUs • Handholding support to progressive farmers • Participatory monitoring mechanism • Organisation of regular trainings • Multilingual ICT extension platforms • Development of certification system



Working Group 3: Forestry extension for forest-based enterprises, wood-based industries and mining companies, and deliberation on development of synergies with Van Dhan Yojana focused on value addition to NTFPs: This Group comprised of the following participants:

S. No.	Name of the Participant	S. No.	Name of the Participant
1.	Dr. Sudhir Kumar, Dy. Director General (Extension), ICFRE	12.	Dr. Vinay Kant Misra, ADG (Edu & Recruitment Board), ICFRE
2.	Dr. Rajib Kr. Borah, Director, ICFRE-RFRI	13.	Dr. Vishavjit Kumar, Scientist-E, ICFRE
3.	Dr. Rajesh Sharma, ADG (BCC), ICFRE	14.	Dr. Shilpa Gautam, Scientist-E, ICFRE
4.	Dr. Charan Singh, Principal Scientist, ICAR-IISWC, Dehradun	15.	Ms. Ismita Nautiyal, Scientist-E, ICFRE
5.	Dr. N.K. Upreti, Scientist- G, ICFRE-FRI	16.	Dr. Krishna Giri, Scientist-D, ICFRE
6.	Dr. Vineet Kumar, Scientist-G, ICFRE-FRI	17.	Dr. Manish Kumar, Scientist-B, ICFRE
7.	Dr. N. Bala, Scientist-G, ICFRE-FRI	18.	Sh. Gajendra Rajput, Wood Technologist Association, Yamunanagar
8.	Dr. Geeta Joshi, ADG (Media & Extension), ICFRE	19.	Sh. Ashok Sharma, Archidply Industries Limited, Rudrapur
9.	Dr. P.K. Gupta, Scientist-G, ICFRE-FRI	20.	Dr. Manoj Kumar Dubey, Head, Extension Division, ICFRE-IWST (Group Facilitator)
10.	Dr. Jagdish Singh, Scientist-G, ICFRE-HFRI	21.	Dr. Nepolion Bohra, Consultant, ESIP, ICFRE (Rapporteur)
11.	Dr. Charan Singh, Scientist-F, ICFRE-FRI		

Working Group 3 identified following issues, challenges and gaps for strengthening the forestry extension:

Issues	Challenges	Gaps
<ul style="list-style-type: none"> Limited awareness among stakeholders 	<ul style="list-style-type: none"> Adoption of new technologies and processes by wood-based industries 	<ul style="list-style-type: none"> Lack of participation of stakeholders in extension programs

- Less availability of quality planting material (QPM)
- Certification of forest and wood products
- Legal and procedural hurdle regarding felling and transport of trees growing on non-forest areas and private lands
- Price fluctuations of tree crop due to gap in demand and supply
- Viable market place for forest products
- Policy for marketing of agarwood etc.
- Adoption of international standards for wood preservation
- Involvement of farmers and industries in forestry research and extension
- Lack of awareness among farmers
- Ineffective coordination mechanism between the research organizations and industries
- No marketing channel for value-added products of bamboo
- No SOP for restoration of mined out areas in public domain

Working Group 3 also identified following needs, strategies and actions for strengthening the forestry extension:

Needs	Strategies	Actions
<ul style="list-style-type: none"> • Diversification of species for industrial use • Exploring fast growing species for agroforestry • Two-way communication (Lab to land and vice versa) for strengthening forestry extension • Interlinkages between wood science, agroforestry and tree improvement • Online platform for marketing raw materials for wood-based industries • Replacement of imported hard wood with indigenous one • Sharing of knowledge with stakeholders • Relaxation in rules for felling and transport of trees growing on non-forest areas and private lands 	<ul style="list-style-type: none"> • Awareness generation of stakeholders • Development of standards for forest and wood products • Development of quality planting material • Capacity building of the stakeholders • Development of forward and backward market linkages for forest and wood products • Certification of forest and wood products • Development of infrastructure (modern nurseries, demonstration plots, testing laboratories etc.) • Value addition of NTFPs • Relaxation in felling and transportation rules for tree species grown outside the forests areas for promotion of forest and wood-based industries 	<ul style="list-style-type: none"> • Frequent Industry-Institute/ Academia Meet • Active involvement of industries in project formulations. • Sharing of knowledge and technologies • Participation in business expos, trade fairs etc. • Strengthening testing infrastructure • Development of domestic certification system and facility • Development of standards at par international ones • Reviewing and upgrading existing technologies • Improvement in the technologies for processing of agroforestry species • Diversification of species. Identification of short rotation species for plywood and panel industry • Non-license agreement with industries for production of material in large scale • Demonstration plot on panchayat land • Linkage between farmers, industry and other stakeholders • Development and assessment of AF models • Strong market linkage and transparent system • Training on commercialization of technology to Scientists/ Officials • Processing, value addition and marketing value of NTFP in line with Pradhan Mantri Van Dhan Yojana

