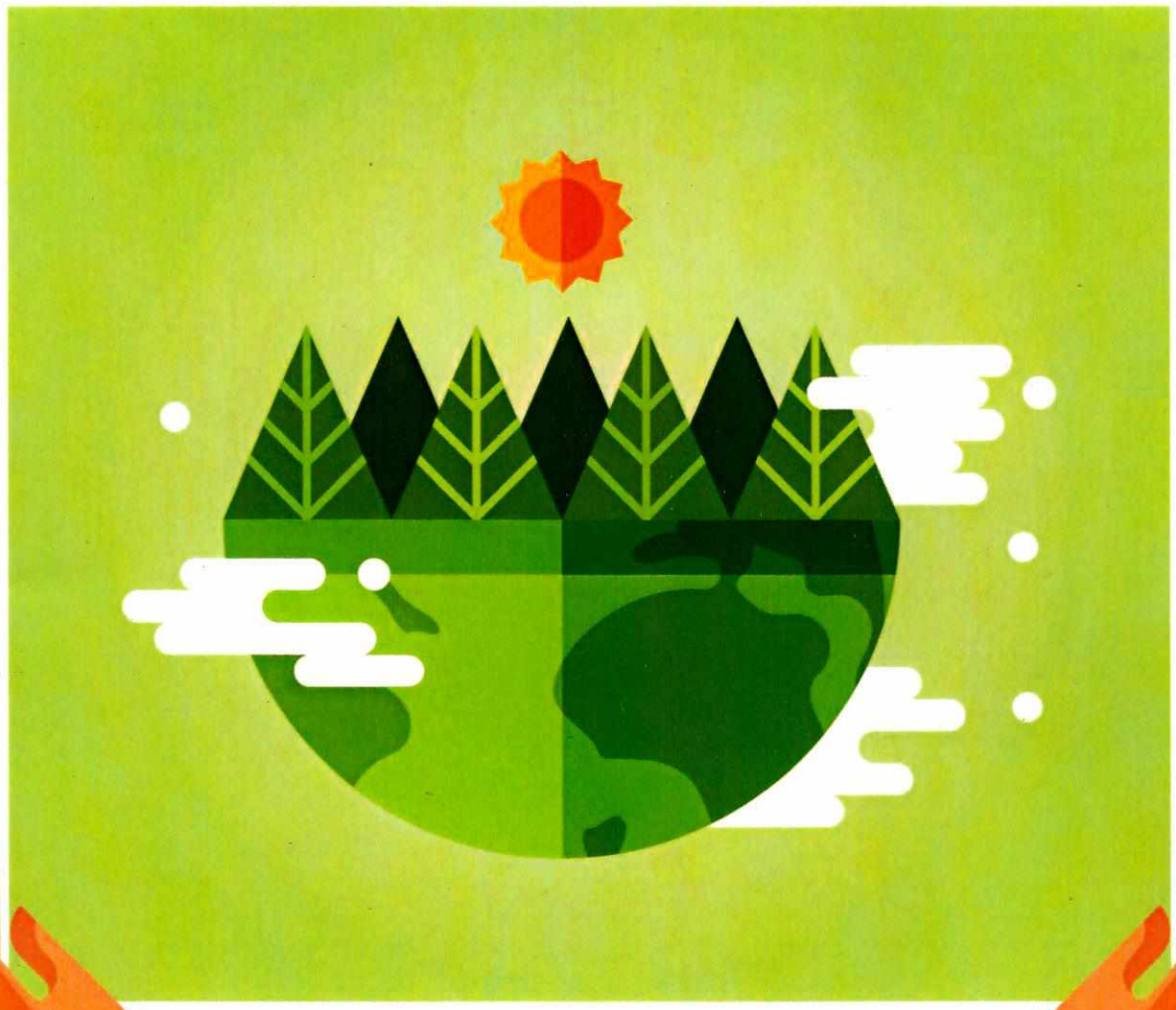
STRENGTHENING FORESTRY RESEARCH FOR ECOLOGICAL SUSTAINABILITY AND PRODUCTIVITY ENHANCEMENT



Scheme prepared by

Indian Council of Forestry Research and Education (ICFRE), Dehradun

For funding under

NATIONAL COMPENSATORY AFFORESTATION FUND (NCAF)

Submitted to

Ministry of Environment, Forest and Climate Change, New Delhi

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PREFACE

ICFRE with its pan India presence through its nine institutes and five centres with jurisdiction over select states have strength of undertaking research through its scientific and technical manpower in consonance with increase in forest productivity by attending to the issues of contemporary importance. There is a lot of scope to undertake research in the areas of Climate Change, managing and eradication of invasive and alien species, developing high yielding varieties and clones of forestry species, improved seed technology, developing wood based composites, carrying out research in forest soil health, forest hydrology, management of fire and generating data base of demand and supply of fuelwood, fodder etc which directly or indirectly shall help extend the green cover, double the farmers income, increase the forest productivity, managing invasive and alien species etc. Also with contemporary developments in the area of climate change, agro-forestry, bio-diversity, forest management, there is a need to undertake Research studies of various aspects of forest related policies.

In the past, many technologies have been developed by ICFRE for the benefit of various stake-holders including the farmers. All those technologies need to be extended to the users for which an extension strategy of ICFRE has been developed. Also to build the capacity of its scientific, technical and administrative personnel to conduct research falling in line with national priorities and international commitments, to strengthen and implement the extension strategy and to undertake various studies in areas of Forest Policy Research, an HR development plan has been developed.

Under Compensatory Afforestation Fund Act, 2016, 'National Compensatory Afforestration Fund' has been set up and one of the objective (Chapter II, section 5b(iii)) is to support specific schemes approved by the governing body of the National Authority. The 'scheme' includes any institute, society, centre of excellence in the field of forest and wildlife, pilot schemes, standardization of codes and guidelines and such other related activities for forestry and wild life sector. The section (Chapter II, section 5b(iii) of the National Compensatory Afforestration Fund has the provision of providing funding to organization like ICFRE.

The present scheme namely "Strengthening forestry research for ecological sustainability and productivity enhancement" is proposed to be funded under Compensatory Afforestation Fund Act with a total outlay of Rs. 313.67 crores with activities spread over next three to six years. The scheme shall help achieve the objectives of increasing the forest cover, increase the forest productivity, increase the farmers' income, sequester additional carbon and improve the quality of forest research in the country.

(Dr. Suresh Gairola)
Director General
Indian Council of Forestry Research & Education

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CHAPTER 1

The Scheme

Strengthening forestry research for ecological sustainability and productivity enhancement

The Scheme

Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement

1. Introduction:

The forests of India are the most important natural resources serving us economically, ecologically and socially. With a cover of about 23% of geographical area of the country, forests in India, meet the sustenance and livelihood needs of people living in and around the forests in about 1,73,000 villages. They are the centers of rich biodiversity and repositories of genetic wealth, besides serving a host of protective, productive, regulative and accessory functions through the goods and services they provide. These include provisioning services, such as wood, NTFP, fuel, fodder, water, grazing, tourism, wildlife protection and life support; regulating services such as flood moderation, carbon sequestration and health of soil, air and water regimes; supporting such other services necessary for the production of ecosystem services, biodiversity, nutrient cycling and primary production including pollination and seed dispersal, besides many other ecological and socio-economic impacts such as on productivity of farm yield and domestic cattle.

However, many developmental projects, such as construction of dams and roads, mining and industrial projects require diversion of forest land. Any diversion of forest land for developmental purposes has its effect not only on environment, but also on the long-term ecological stability, sustainable development and economic security of the country. The impacts may vary from physical, chemical, biological to cultural and socio-economic. To strike a right balance between diversion of forest land for development and ecological sustainability, levies are imposed on development projects to compensate for the loss of forest ecosystem services that will require long gestation periods for restoration of such services at alternative sites. The 'National Compensatory Afforestation Fund' has, therefore, been established to compensate for the loss of tangible as well as intangible benefits from the forest lands that have been diverted for non-forest use. Such funds are proposed to be used for activities such as afforestation, regeneration and restoration of forest ecosystems, forest management, protection, infrastructure development, wildlife conservation and management, and other allied activities, with the underlying objective of augmenting good green cover with sustainable use of resources for ecological security.

2. Scientific perspective to expand good green cover

Putting in place a scientific perspective is essential to achieve the prime objective of expansion of good green cover, since the augmentation of ecosystem services through sustainably managed forests is a core of the of the CAMPA Act 2016 and the CAF rules, 2018. It may be mentioned here that at present, the NPV is computed using twelve major parameters that are primarily affected and are measurable to some extent, which include, fodder, timber, fuel wood, NTFP, pollination & seed dispersal, Soil conservation, Water recharge & purification, gene pool conservation and carbon sequestration. It must be

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emphasised, however, that although a natural forest diverted for developmental projects, may not be fully compensated in terms of loss of biodiversity, and other ecosystem goods and services, yet there is immense potential to augment the services of forests in other areas through a range of activities.

Restoration of ecosystem services loss/ compromised is a challenging task and requires integrated scientific and technological inputs. Since State Forest Departments and other agencies are mainly concentrated on the operational part of the forestry, scientific and technological inputs to restore the ecosystem services are to be provided by specialized scientific organizations having expertise in domain fields. A synergy between the two is required to restore and improve ecosystem services. The objectives of such synergy have to be faster recovery of the ecosystems and productivity enhancement. The important inputs required for this purpose are:

1. Improved and innovative plantation and natural forest restoration technologies.
2. Production of quality planting material of important species for enhancing productivity of forests & tree crops.
3. Building resilient forests & ecosystems through climate change mitigation and adaptation interventions.
4. Forest Protection interventions through management of pest and diseases, soil health, forest fire and invasive species for improving the survival in restored areas.
5. Silvicultural interventions, including seed technology and nursery management.
6. Livelihood generation through bio-prospecting, transfer of appropriate technologies, capacity building and extension support.
7. Policy research interventions, valuation of forests, assessment of demand of forest goods and services.
8. Capacity building of masses especially forest dependent communities to adopt best forestry practices.
9. Human resource development of managerial, scientific and technical personnel to achieve the stated objectives.

Robust scientific technologies, therefore, are required to be developed and used so that ecosystem services lost/ compromised are recovered and improved in shortest possible time. This, in longer term, may also help in reduction in time duration used for calculating NPV i.e., rotation of each unit of classification used for calculating NPV. Also, the damages due to infrastructural and developmental projects, such as hydroelectric projects, public works, welfare projects, and rehabilitation of displaced people, are minimized through technological interventions.

3. Indian Council of Forestry Research and Education (ICFRE):

The Indian Council of Forestry Research and Education (ICFRE), Dehradun, is an apex body in the National Forestry Research System to undertake need based futuristic forestry research to meet the emerging challenges in the field. The Council has been undertaking research to resolve forestry research problems and extending the research outputs to various stakeholders like industry, State Forest Departments, farmers etc. Presently ICFRE through its nine institutes and five research centers is dedicated to undertake forestry research and to extend the outcome to various stake-holders by means of various mechanisms through its extension strategy with its committed scientific and technical personnel. The council has necessary

infrastructure and dedicated scientific human resource to provide scientific and technical support in recouping and improving the ecosystem services lost / compromised.

4. Title of the Scheme:

The intervention of ICFRE will be on diverse disciplines of forestry research, policy and extension, through dedicated funding. The ICFRE, therefore, proposes a dedicated scheme entitled **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** under the 'Compensatory Afforestation Fund Act, 2018, dedicated towards addressing the requirements of creation and strengthening of ecosystem services and sustainable use of resources through various scientific and technological interventions.

5. Objectives of the Scheme:

1. To undertake research aimed at enhancing the health and productivity of natural forests and plantations for augmenting ecosystem goods and services.
2. To undertake research aimed at efficient and sustainable resource use through value addition and development of appropriate technologies.
3. To establish a comprehensive national programme for conservation and development of Forest Genetic Resources.
4. To undertake policy research in forestry sector to analyze the policy gaps and determine concordant policies.
5. To undertake capacity building programmes for stakeholders, including forestry personnel, communities, tree growers and forest based industries
6. To undertake an exclusive outreach programme taking research and technology to users through a comprehensive extension strategy.

6. Components of the Scheme:

The Scheme will have the following six components:

i. **All India Coordinated Research Projects (AICRPs)**
ii. **National Programme for Conservation and Development of Forest Genetic Resources (FGR)**
iii. **Policy studies under Centre for Forest Policy Research**
iv. **Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy**
v. **Operationalisation of Forestry Extension Strategy and Action Plan of ICFRE**
vi. **Operationalization of Human Resource Development Plan of ICFRE**

7. Brief description of various components of the scheme is as under

7.1 All India Coordinated Research Projects (AICRPs):

AICRPs are defined as projects, where more than one research institute and disciplines are collectively involved to address a research issue in a holistic and comprehensive manner. The emphasis is on networking of resources, capabilities and core competencies of participating institutions. All such projects are inter-institutional and inter-disciplinary. Over the last one year, ICFRE has developed All India Coordinated Research Projects (AICRPs)

following a rigorous process of formulation and evaluation and has brought synergy through collaboration amongst ICFRE institutes and also with institutes outside ICFRE. These AICRPs are multidisciplinary, multi-institutional and multi-locational in nature having wider spread across the country.

A wide range of AICRPs have been formulated on production of high yielding clones & varieties of selected species including bamboo, invasive alien species, seeds testing and storage technology of forestry species, biofertilizers & bio-pesticides, forest soil, forest fire, combating desertification, wild fruits species, NTFP, assessment of water requirement by forest trees, assessing and mitigating the demand of timber, fuelwood and fodder, valuation of forests, green GDP, climate change research, long term ecological studies, evaluation of ecosystem services, bio-prospecting, developing eco-friendly wood based technologies etc.

7.2 National Programme for Conservation and Development of Forest Genetic Resources (FGR):

Genetic diversity provides the fundamental basis for evolution of forest species and has enabled forests and trees to adapt to changing and adverse conditions for thousands of years, resulting in a unique and irreplaceable portfolio of forest genetic resources. It ensures that forests can survive, adapt and evolve under changing environmental conditions and is, therefore, essential to maintain the vitality of forests. Despite their fundamental importance, forest genetic resources are under threat, especially due to forest degradation and climate change.

The field of forest genetic resources is undergoing significant changes. Traditionally concerned with technical issues of genetic conservation, tree improvement and seed supply, the scope of genetic management is expanding to include ecosystem services. Scientific advances in biotechnology and legal developments concerning exchange of genetic resources bring new possibilities and challenges, which require development of an enabling policy environment. Conservation and documentation of FGR is, therefore, extremely important and essential and the component aims at addressing the different aspects of FGR in a phased manner.

7.3 Policy studies under Centre for Forest Policy Research:

Clear policies on the management and use of forests are crucial to ensure conservation and sustainable use of the resource. Forest policy research addresses issues related to the setting of goals to meet the needs and aspirations of the stakeholders and establishing strategies and instruments for implementation. However, in general, in the forestry sector, development of policy research has not been given due recognition. Forest policies are affected by development of several constrains, such as intrinsic weaknesses of the policy, conflicts with other policies, inadequacies of instruments and institutions resulting in weak enforcement, and lack of awareness resulting from insufficient knowledge and information. These cause gaps between policies and ground reality, resulting in failure to address the underlying causes, adversely affecting sustainable forest management, and leading to continued forest loss and degradation. Thus, in a bid to equip the planners and managers with inputs to make suitable changes to the policies and to take informed decisions, a Centre for Forest Policy & Research (CFPR), established at ICFRE, proposes to undertake studies in

different areas of forestry sector on short term basis to support the Government in taking informed policy divisions.

7.4 Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy:

REDD+ is primarily a forestry based climate change mitigation option. On behalf of MOEF&CC, ICFRE has developed National REDD+ strategy and the same has been approved by the Ministry. Through this programme, ICFRE will support the capacity building of the State Forest Departments for preparation of the State REDD+ Action Plans. The capacity building programme will also create awareness on REDD+ related issues, key concepts, analysis of COP decisions on REDD+ and their relevance to India.

7.5 Operationalisation of Forestry Extension Strategy and Action Plan of ICFRE:

Though lot of research has already been done, but the link between the lab & land in case of forestry has been weak, while the outcomes of forestry research in the form of knowledge & technologies are awaiting an exclusive outreach programme to benefit the actual users. As a result of years of research work, the Council has a rich tally of innovative technologies/ processes to its credit. Some of these technologies are being transferred to the stakeholders through various forums. The Council endeavors to strengthen transfer and dissemination of appropriate forest based technologies through its comprehensive 'Extension Strategy and Action Plan', which shall take care of the awareness to masses, taking technology to stakeholders, establishing pilot demo plantations, nurseries etc. This extension plan shall help increase the green cover, increase the income of farmers and sequester additional carbon by farmers undertaking planting through Agro-forestry, all the while reducing dependence on natural forests.

7.6 Operationalization of Human Resource Development Plan of ICFRE:

The adequately trained human resource can help to optimize the use of ecosystems services and biodiversity values by the society to address local as well as global challenges such as environmental protection, forest livelihoods, expand market mechanism, climate change etc. This will also help to ensure the incorporation of ecosystem services in the development planning in all the sectors. Capacity building of human resource on continuous basis to appraise the manpower with the latest development is, therefore, extremely important for bringing in new innovations, preparedness to handle new challenges and improving the work ethos. ICFRE is working in an environment where the demand of forestry sector to address challenging problem is increasing. To improve the ability of its work force and updating the knowledge of its scientists, technical and administrative staff, the HRD plan of ICFRE, will adequately enable and equip them to address the challenges. In addition, 'Green Skills Development' programmes will be conceptualized and operationalized.

8. Justification for the Scheme under the Compensatory Afforestation Fund Act 2018:

A dedicated funding source on a long term basis is required to address the larger issues related to restoration and improvement of ecosystem services. This scheme will provide adequate funds and financial security in the hands of ICFRE to address the research, policy

and extension issues of national importance related to recouping the ecosystem services of diverted forest land by developing a synergy between diverse manpower available within and outside ICFRE to address the issues in the holistic manner by involving expertise from different fields. The interventions of ICFRE will not only help in recouping the ecosystems, but will also improve the pace of the process. The funds received by ICFRE from the Government (MOEF&CC) for research, education and extension under regular budget are enough only to address specific small research projects and are insufficient to address the issues on a larger scale and on long term basis.

The demand for goods and services from forest ecosystems will keep on increasing, especially with the increasing population and growing economy. This necessitates proportional increase in carrying capacity of forest and agriculture sectors. Development of new productive varieties, conservation of genetic resources, treatment of salt affected - waterlogged areas, combating desertification, improving soil health, preventing forest fire, controlling spread of invasive, optimizing water and nutrient efficiency, creating additional carbon sink, technological innovation to add value to forest produce are the parameters that will be addressed through this scheme. The scheme and its components are so designed that it helps in addressing the issues ecosystem improvement. The focus is on livelihood, improving productivity of important species including bamboo, seed technology, bio-prospecting, fodder, fuel wood, invasive, soil health, fire, water and nutrient budgeting, climate change mitigation, carbon sequestration, capacity building, forest resource conservation etc.

9. Project Cost:

The project cost for the six components shall be Rs. 313.67 crores

10. Period of the Scheme:

The period of the scheme would be 5 years, i.e., 2018-19 to 2024-25 (60 months). Each programme/ sub-programmes /project is output driven and is of 3 to 5 years duration. Rigorous monitoring of the programmes will be done by ICFRE by involving domain experts. There will also be a mid-term evaluation by MoEF&CC through external experts

11. Deliverables of the Scheme:

- The research aimed at enhancing the health and productivity of natural forests and plantations will help to augment the availability of goods and services in a holistic manner. The value addition and development of appropriate technologies, products and processes will enable efficient and sustainable resource use at local as well as national level.
- The national programme for conservation and development of forest genetic resources will help to create a sound knowledge base for survival and adaption, especially in light of impacts of climate change on genetic diversity.
- The policy research on various aspects of forestry will help to assist the government in taking informed decisions through determination of concordant policies and recognition of complementary actions fostering inter-sectoral dialogue.

- The capacity building and skills development programmes for stakeholders, including forestry personnel, communities, growers and industries will help to create an able cadre of stakeholders. This will empower and enable them to have a crucial role in the decision making processes related to sustainable development and environmental conservation. This will also help to Increase the stakeholder participation in forestry decision making by networking between individuals, institutions and regions and by developing long term partnerships, which is an effective and important strategy in resolving natural resource management problems.
- The exclusive outreach programme taking research and technology to users through a comprehensive 'Forestry Extension Strategy' will help to facilitate continuous forward-backward flow of information between researchers, administrators, tree growers, forest managers and resource users. It will create a long-term process to facilitate the extension of research outputs, thus contributing to the growth of the forestry sector, that is consistent with the national priorities for conservation and sustainable use of forest resources.

CHAPTER 2

Executive Summary

Executive Summary

Today forestry research is confronted with biggest challenge of this age, the CLIMATE CHANGE, the challenge to sequester Carbon by 2.5 to 3 billion tonnes additionally by the year 2030 as per the NDC. Also the challenge is to fulfill the demand of forest Products at the same time to increases the green cover to 33% of the Geographical spread of the country at the same time improving the Forest productivity which is one of the lowest in the world, compared to the world average and doubling the farmers' income. Biodiversity Conservation is another emergent area, in wake of the apparent climate Change

ICFRE, an autonomous organization under MoEF&CC is mandated to develop holistic forestry research through planning, promoting, conducting and coordinating research on all aspects of forestry. ICFRE took its present form in 1986 for undertaking forestry research, education and extension needs of the country. ICFRE has been undertaking research to resolve forestry research problems and extending the research outputs to various stakeholders like industry, State Forest Departments, farmers etc. Presently ICFRE through its nine institutes and five research centers is dedicated to undertake forestry research and to extend the outcome to various stake-holders by means of various mechanisms through its extension strategy with its committed scientific and technical personnel.

Forestry research is unique and different from agricultural research in its subjects being the trees with long gestation period compared to agricultural crops. It is a happy sign and a satisfying proposition that despite the ever bulging population, the forests in India have registered an upward trend as per State of Forest Report 2017. The credit goes to the Forest Managers for successfully managing and protecting the forest wealth from natural enemies like fire and other anthropogenic factors and the Scientists who have been successful in developing clones and varieties for the agroforestry areas and the enterprising Farmers who have expanded the green cover beyond the forest areas, that is trees outside forests. Varieties of poplars, eucalypts, *Casuarinas, Dalbergia* and *Melia* released in the past, by ICFRE have changed the face of agroforestry. It is ICFRE which had taken Poplars to Southern Bihar, which is growing beyond its naturalized domain, bringing in a revolution in the farmers income. It is ICFRE which has identified and introduced *Flemingia* as an alternate host for cultivation of Lac Insect. Thus helping farmers practicing agroforestry increase their income in parts of Jharkhand. It is ICFRE which had introduced Sandalwood to the states of Punjab, Rajasthan and in the North. It is ICFRE which has been entrusted with preparing the DPR for treatment of the entire catchment of Ganga River spread over five states and further also ICFRE in the process of preparing concept note for the DPR preparation of all the major rivers of the country. ICFRE had been the brain behind the Working Plan code of 2014. ICFRE has been negotiating with the International Agencies when it comes to International Climate Change deliberations. It was ICFRE which undertook detailed discussions in International foram to add Plus in the REDD+, indicating the inclusiveness of conservation and sustainable development of the forests. It is ICFRE which has been the fountain head of the REDD+ Strategy for the country and which is instrumental in preparing the National Action Plan to implement REDD+ strategy for India.

ICFRE has recently adopted to undertake research by formulating All India Coordinated Research Projects (AICRPs) thus bringing in synergy through collaboration amongst other ICFRE institutes and also institutes outside ICFRE.

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The Institutes under ICFRE located in different eco-climatic areas, in collaboration with other institutes of ICAR, DST, DBT etc. shall undertake works of AICRPs. A wide range of AICRPs are proposed on production of high yielding clones & varieties of selected species, assessing and mitigating the demand of timber, fuelwood and fodder, to undertake climate change, Evaluation of Ecosystem Services, Bio-prospecting, developing eco-friendly biofertilizers & bio-pesticides etc.

The facility on Forest Genetic Resources need be established to know the status of biodiversity of a given region at a given point of time to assess the change and take appropriate action accordingly. For this purpose, two coordinating institutes viz. FRI in North and IFGTB in the South are proposed which shall be coordinate as lead Institutes, with all other ICFRE Institutes contributing to the assigned activities.

In a bid to equip the planners and managers with inputs to make suitable changes to the policies and to take informed decisions, A Centre for Forest Policy & Research has recently been established at ICFRE by the MoEF&CC. It is proposed to undertake studies in different areas of forestry sector on short term basis.

REDD+ is primarily a forestry based climate change mitigation option. On behalf of MOEF&CC, ICFRE has developed National REDD+ strategy and the same has been approved by the Ministry. The capacity building programme will create awareness on REDD+ related issues, key concepts, analysis of COP decisions on REDD+ and their relevance to India

Though lot of research has already been done, but the link between the lab & land in case of forestry has been weak while the outcome of forestry research in the form of Knowledge & Technologies are awaiting to reach the actual users. As a result of years of research work, the Council has a rich tally of innovative technologies/processes to its credit. Some of these technologies are being transferred to the stakeholders through various forums. The Council endeavors' to transfer and disseminate their technologies through its Directorate of Extension at Dehradun. ICFRE has developed an Extension Strategy which shall take care of the awareness to masses, taking technology to stakeholders, establishing pilot plantations, nurseries etc. This extension plan shall help increase the green cover, increase the income of farmers and sequester additional carbon by farmers undertaking planting through Agro-forestry.

Furthermore the activities envisioned above shall be difficult to accomplish, without a trained manpower. To achieve the target of updating the knowledge of its scientists, technical and administrative staff, ICFRE has prepared a HRD plan which is for a limited period thus equipping them with the latest developments in the field of Forestry Research, may it be climate change, nano-technology or Bio-technology etc. A scheme on "**Strengthening the forestry research for ecological sustainability and productivity enhancement**" encompassing Forestry Research, Centre of Excellence on Forest Genetic Resources, Centre for Forest Policy Research, Extension Strategy and HRD plan of ICFRE has been formulated with the following components:

1	All India Coordinated Research Projects (AICRPs)	Rs. 198.00 crores
2	National Program for conservation and development of FGR	Rs. 51.99 crores
3	Studies under Centre for Forestry Policy Research	Rs 3.26 crores
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy	Rs. 1.20 crores

5	Operationalisation of Forestry Extension Strategy and Action Plan for ICFRE	Rs. 47.88 crores
6	Operationalization of Human Resource Development Plan of ICFRE	Rs. 11.34 crores
	TOTAL	**Rs. 313.67 crores**

All India Coordination Research Projects: This components of the scheme contains a total 31 research projects of which 13 are species based (*Casuarina, Bamboo, Santalum album, Eucalyptus, Pterocarpus santalinus, Tectona grandis, Dalbergia sissoo, Tamarindus indica, Madhuca longifolia, Poplars, Azadirachta indica, Dalbergia latifolia and Gmelina arborea*) and 18 are subject area specific (Dielectric heating based system wood products, nano-technology in wood science, IAPS, seed technology, assessment of demand and supply timber-fuelwood-fodder, valuation of forest GDP, forest fire, bio-prospecting of lesser known forest plants, tree fodder, silvicultural interventions, water budgeting, bio-pesticide, bio-fertilisers, forest soil health card, combating desertification, long term monitoring of forest, wild edible fruit species, NTFP).

National Program for conservation and development of Forest Genetic Resources (FGR):
This component aims at documenting and conserving FGR of the country in a phased manner. FGR constitutes a very important sub-set of biodiversity and are essential for adaption and the evolutionary process of forests and trees. FGR is also important for resilience and productivity.

Policy studies under Centre for Forestry Policy Research:
In a bid to equip the planners and managers with inputs to make suitable changes to the policies and to take informed decisions, a Centre for Forest Policy & Research (CFPR) has been established at ICFRE by the MoEF&CC. It is proposed to undertake studies in different areas of forestry sector on short term basis.

Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy:
REDD+ is primarily a forestry based climate change mitigation option. Through this component, ICFRE will build the capacity of the State Forest Departments for preparation of the State REDD+ Action Plans.

Operationalisation of Forestry Extension Strategy and Action Plan of ICFRE:
The Council endeavors to transfer and disseminate their technologies through its Directorate of Extension at Dehradun. ICFRE has developed a 'Forestry Extension Strategy and Action Plan' which shall take care of the awareness to masses, taking technology to stakeholders, establishing pilot plantations, nurseries etc. This extension component shall help increase the green cover, increase the income of farmers and sequester additional carbon by farmers undertaking planting through Agro-forestry.

Operationalization of Human Resource Development Plan of ICFRE:
ICFRE is working in an environment where the demand of forestry sector to address challenging problem is increasing. For improve the ability of its work force and updating the knowledge of its scientists, technical and administrative staff, ICFRE has prepared a HRD plan which is for a limited period thus equipping them with the latest developments in the field of Forestry Research, may it be climate change, nano-technology or Bio-technology etc.

The year wise projections of budget of these components are detailed below:

Sl. No.	Component	Project Year (60 months)					Total* (in Lacs)	Budget required for balance period of 2018-19
		1st	2nd	3rd	4th	5th		
1	All India Coordinated Research Projects (AICRPs)	**5565**	**5126**	**3511**	**2812**	**2739**	**19800**	**2151**
2	National Program for conservation and development of FGR	**2406**	**842**	**711**	**634**	**605**	**5199**	**1141**
3	Studies by Center for Forest Policy Research (CFPR) of ICFRE	**114**	**53**	**53**	**53**	**53**	**326**	**60**
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans"	**56**	**64**	**-**	**-**	**-**	**120**	**46**
5	Operationalization of Human Resource Development Plan of ICFRE	**41**	**308**	**287**	**249**	**248**	**1134**	**41**
6	Operationalisation of Forestry Extension Strategy and Action Plan for ICFRE	**1056**	**818**	**978**	**938**	**998**	**4788**	**420**
TOTAL		**9239**	**7211**	**5504**	**4685**	**4643**	**31367**	**3852**
* = Figures rounded off to nearest Lac Rs.								

A management cost of 20% of the total cost of in all the AICRPs is proposed to have three components (5% will be used for the monitoring of the projects, 5% as over head cost and remaining 10% as institutional charges to ICFRE and other organizations involved in the project). Over head cost of 5% will be used to factor in costs of enhancement of fellowship, addition of new components / institutes during the course of project, cost steering committee meetings / inception workshops, extension of technologies from the projects and any additional requirement during the course of the project like filing of IPR and other extension material/ activities related to the projects. This management cost of 20% has also been added to other project based components from 2 to 4 as detailed in table above.

The funding of the scheme has been proposed under the Compensatory Afforestation Fund Act with a total outlay of Rs. **313.67** crores. Year wise requirement of budget for each activity is given in Annexure-I. Annexure II details about the fund requirement for the remaining part of financial year 2018-19. Annexure III details the budget for 2019-2020 which includes balance of first year carried forward to second year plus requirement of second year. The activities are proposed for 3-5 years (36 months to 60 months).

The subsequent Chapters highlight the scheme proposed for funding, under provision 5b(iii) of Chapter II of Compensatory Afforestation Fund Act.

CHAPTER 3

Research Proposals of National Importance

Research Proposals of National Importance

3.1 All India Coordinated Research Projects (AICRPs)

ICFRE has made concerted efforts in furthering the cause of forestry research resulting in significant achievements and development of a strong scientific forestry research base in the country. However such efforts were mostly based on small projects taken up by ICFRE institutes depending on funds availability. Bigger projects of holistic nature involving diverse manpower available in ICFRE and other organizations could not be taken due to uncertainty in continuous and long term funding. The R&D works however should provide solution to the research problems in terms of a complete package, thus addressing most of the aspects through an integrated holistic approach.

For addressing forestry research issues of national importance in a holistic manner by utilizing ICFRE strengths and that of other organizations in the country, guidelines were framed for developing All India Coordinated Research Projects (AICRPs) and was released in August 2017. The scope of AICRPs is to develop output driven multidisciplinary programs for addressing priority species and research areas based proposal of national concern, wherein subject matter specialists from various disciplines join hands to achieve targeted outputs.

The guidelines of AICRPs cover, rigorous steps at conceptualization and formulation stages before being finally approved by Research Policy Committee (RPC) of ICFRE, the meeting of which is held annually by ICFRE under the Chairmanship of DG ICFRE. Each AICRP has gone through technical evaluation 5-6 times before being finally approved by XVII RPC 2018 held on 27-28 February 2018. The projects are now ready for which MOEF&CC is approached for funding under CAMPA for support under National Compensatory Afforestation Fund (NCAF).

Thirty three subject areas / species were short listed after a lot of deliberation. National Project Coordinators (NPCs) in the domain were identified from the among the scientists of ICFRE and was assigned the task of preparing the concept note and project involving other scientists, which were then subjected to scrutiny by Project Advisory Group (PAG), Project Expert Group (PEG) and then finally by RPC.

Twenty two projects were finally presented in the RPC and approved. Remaining projects were subjected to further scrutiny and were developed in due course. Brief of the same 31 projects is given here (AICRP 1 to AICRP 31). Justification of the projects along with duration, budget requirement, objectives and deliverables are given here. These AICRPs are multidisciplinary involving diverse manpower from different institutes (both ICFRE and other organizations outside ICFRE). They will require strict monitoring from ICFRE headquarters as per guidelines of AICRPs by involving both internal and external experts. It is proposed to consider a management cost of 20% of the total cost of all the AICRPs which is proposed to have three components (5% will be used for the monitoring of the projects, 5% as over head cost and remaining 10% as institutional charges to ICFRE and other organizations involved in the project). Over head cost of 5% will be used for any additional requirement during the course of the project like filing of IPR and other extension activities related to the projects. Table at Annexure -I gives the annual budget requirement of all the AICRPs along with total requirement. Justification of the AICRPs along with duration, project outlay, objectives and major deliverables are also given here.

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3.1.1 AICRP-1: Increasing farm income through selection and deployment of high-yielding clones and seed sources of *Casuarina* for different planting environments and end use applications.

***Duration of the Project*:** 5 years

***Total Budget Outlay*: Rs. 356.06 lakhs**

Justification for the Project:

ICFRE has also so far released 19 high-yielding clones of *Casuarina* with different superior characters like fast growth, wind-hardiness, drought tolerance and ability to grow in sodic soils. Six clones which showed the highest potential for commercialization have also been registered with the Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), GoI to secure the intellectual property rights under the provisions of PPVFRA 2001. The new clones on an average yield 20 tonnes more pulp wood per hectare than the currently cultivated clone (CJ-1). At the prevailing price of pulpwood (Rs.4000 per metric tonne), a farmer gets an additional income of around Rs.80,000/- per hectare in a rotation period of 3-4 years.

Despite the high potential of the newly developed clones and seed varieties, the extent of their cultivation is limited to only about 10% of the total area planted with *Casuarina*. It is essential that the cropping area of new varieties is increased to at least 30% in the next few years to convert their genetic potential into economic gain for farmers and industries. This expansion is mainly limited by the following research gaps which will be addressed in this AICRP on *Casuarina*.

(i) The varieties released so far have been field-tested in a limited geographic area (mostly in Tamil Nadu). Multilocational testing is necessary to deploy such genetically improved and evaluated material for large-scale deployment in other climatic zones.
(ii) Since planting of *Eucalyptus* is banned in some states and a few others are considering similar ban, *Casuarina* is currently regarded as one of the alternatives to *Eucalyptus*. However, such approach/ strategy necessarily require testing of *Casuarina* in erstwhile *Eucalyptus* areas.
(iii) Special environments like salt-affected, waterlogged areas and other wastelands need to be stocked/ planted with suitable varieties/ clones/ germplasm through adequate testing of accessions in such areas.
(iv) The new varieties required to be evaluated for a range of economically important qualities besides growth and stem form like calorific value, pulp yield and lignin content to match them with different end uses like poles, pulpwood and fuelwood.
(v) New end uses like functioning as nurse plants for sandal trees needs research on interaction between the two species to determine the correct match in different planting locations.

Objectives of the project:

The objectives of this AICRP are formulated to fulfill the identified research needs so that the most adaptable and high yielding varieties of *Casuarina* are planted in large areas leading to increased farm income for farmers and secured raw material supply to industries.

1. To evaluate selected accessions for suitability to coastal, inland, waterlogged, salt-affected areas and other problem environments

2. To screen accessions for suitability to grow as nurse plants in Sandal plantations and as an alternative crop for Eucalyptus
3. To assess water and nutrient use efficiency of accessions and develop a package of cultivation practices for each of them
4. To evaluate wood properties of new accessions for matching with different end uses
5. To develop and field test new hybrid combinations to select advance generation planting material for future deployment

Deliverables from the Project:

1. Release of site and end use specific clones/ seed source for each of planting environment and desired products and services. Widening the genetic base of varieties available for cultivation.
2. Ensuring self-sufficiency of elite germplasm to cater to the needs of target states in each of participating institute. Show casing the germplasm assemblage to popularize the new varieties among farmers and industries.
3. Expanding the number of licensees for commercial propagation and to increase the cropping area of new varieties through large-scale multiplication.
4. Promoting *Casuarina* as an alternative to Eucalyptus. Following the ban of Eucalyptus cultivation in the state, the Karnataka Forest Development Corporation has to find an alternative plantation crop for nearly 42,000 Ha which is currently under Eucalyptus cultivation. Similar extent of area is currently cultivated with Eucalyptus in Andhra Pradesh and Tamil Nadu.
5. It is expected at least 50,000 ha will be planted with varieties developed through this AICRP during the 5 years after completion of the project in the target states excluding Andhra Pradesh and Tamil Nadu. The total value of wood produced in these plantations would be around Rs.3000 crores calculated at the current pulpwood price of Rs.4000/- per tonne. Assuming a minimum of 20% is contributed by the superior varieties developed by the AICRP; additional income alone would be around Rs.600 crores from the plantations.
6. New varieties of *Casuarina* will provide several environmental services like reclamation of salt-affected and waterlogged areas, protecting agricultural crops and human habitations through windbreaks and shelterbelts. They will also improve productivity of niche crops like sandal through synergistic effect. Being a nitrogen-fixing tree, it will improve overall soil fertility through biological nitrogen fixation and decomposition and recycling of litter fall.

Summary of Budget estimate (Rs in Lakhs)

Head of Expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary (JPF-6; FA-3)	15.12	15.12	16.56	16.56	16.56	79.92
Consumables	5.50	6.75	7.00	7.25	7.50	34.00
Travel	10.00	10.00	12.50	7.50	7.50	47.50
Field Research	11.80	22.00	13.50	13.75	14.25	75.30
Contingencies	7.00	7.00	7.00	7.00	7.00	35.00
Non-Recurring	0.00	0.00	0.00	0.00	0.00	0.00
Equipment	25.00	0.00	0.00	0.00	0.00	25.00
Total	**74.42**	**60.87**	**56.56**	**52.06**	**52.81**	**296.72**
Management cost @20%	14.88	12.17	11.31	10.41	10.56	59.34
Grand Total	**89.30**	**73.04**	**67.87**	**62.47**	**63.37**	**356.06**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Testing and deployment of clones and seed sources of *Casuarina* for different planting environments and end-use applications	74.42	60.87	56.56	52.06	52.81	296.72
Management cost @0.20%	14.88	12.17	11.31	10.41	10.56	59.34
Grand Total	89.30	73.04	67.87	62.47	63.37	356.06

Augmentation of ecosystem services:
The high yielding *Casuarina* clones will increase productivity of plantation and thus help in higher carbon sequestration. Increasing the extent of *Casuarina* plantation and replacing the existing ones with improved varieties will enhance farmers' income. Alternative species to eucalyptus where eucalyptus planting has been banned will be available. Studies on water and nutrient use efficiency will optimize the requirements and help in decision making. Environmental services like reclamation of salt-affected and waterlogged areas, protecting agricultural crops and human habitations through windbreaks and shelterbelts. They will also improve productivity of niche crops like sandal through synergistic effect. Being a nitrogen-fixing tree, it will improve overall soil fertility through biological nitrogen fixation and decomposition and recycling of litter fall. Improved quality of seedling seed orchard, clonal seed orchard will be available. In addition to timber requirement of fuel wood will also be addressed.

[Key words: *Casuarina equisetifolia, C. junghuhniana*, improved quality seedling seed orchard, clonal seed orchard, high-yielding clones of *Casuarina,* salt and draught, wind-hardiness, tolerance ability, registration of high yielding varieties, increasing the extent of plantation from 10% to 30%, improved varieties and clones, achieve NDC targets, increasing framers income etc., increased productivity, crop diversification, additional carbon sequestration]

3.1.2 AICRP-2: All India coordinated research project on bamboo

Project Duration: *A 10-year Program to be implemented in two phases of 5 years each.*
Phase I: 5 years
Phase II: 5 years

Total Budget Requirement for <u>Phase I (five years)</u>: Rs. 2801.21 Lakhs

Justification for the Project:
Consistent supply of bamboo is the main key for the growth and development of bamboo based industrial sector. The National Mission on Bamboo Technology and Trade Development has assessed the current demand for various applications as 27 million tonnes against the existing availability of 13.47 million tonnes in India. The average per hectare annual productivity of bamboo in India is about 1tonne/ha which is much less than the world's average.

AICRP on Bamboos has been formulated with the aim of taking forward the substantial research and development efforts of the past 30 years consolidating results from all the previous initiatives, convert them into practical guidelines for implementation in bamboo planting programmes, apart from enhancing the level of gain from such inputs. The proposed programme components and activities have been specifically designed for addressing priority areas of bamboo improvement, production, products and conservation in the country. Multiplication

models for the selected bamboo germplasm will be developed for the proper deployment and utilization of this valuable resource. The project is multi-institutional and multidisciplinary in approach with 10 ten year duration and initially the action plan of the first phase (5 year duration) has been prepared on commercially important bamboo species viz. *Dendrocalamus strictus* (that grows in the dry deciduous forest in our country covers at-least 45% of total bamboo growing areas in India), *Melocanna baccifera* (grows in North East India occupies 20% of the area), *Bambusa bambos (*covers 13% of total area), *B. vulgaris, B. tulda, B. nutans, B. balcooa, D. hamiltonii, D. stocksii, D. brandisii, Ochlandra travancorica, Schizostachyum dullooa, Thyrsostachys oliveri , D. somdevai* and hill bamboo.

Objectives of the project:

1. Genetic improvement through identification of superior clumps, their mass multiplication and ex-situ conservation for higher productivity
2. Development of package and practices for better clump management, harvesting and domestication through agroforestry
3. Development of bamboo seed storage protocols, and strategies for management of pre and post flowering resources through flowering prediction models
4. Analysis of bamboo phylogeny; genetic diversity and population structure for taxonomic identification and genetic conservation
5. Development of processing /preservation and seasoning techniques for bamboo to increase durability.
6. Development of Bamboo composites and evaluation of bamboo germplasm for structural, strength and pulp properties.
7. Development of strategies for management of pests and diseases, extension and technology transfer

Major Deliverables

1. Availability of improved planting stock of bamboos to the stakeholders
2. Improvement in productivity and form of bamboo plantations
3. Clump management technique developed and demonstrated for bamboo extraction for optimizing yield.
4. Conservation and improved management practices for bamboo genetic resources
5. Technology development for value addition of bamboos
6. Strength classification and pulping characteristics of bamboo species redefined
7. Bamboo seed storage protocols developed
8. Agro-forestry models for important bamboo species developed
9. Better understanding on bamboo taxonomy, phylogeny and genetic diversity
10. All India Bamboo Flowering Database with Monitoring & Prediction system developed

Summary of Budget estimate (Rs. in lakhs)

Institutes	Budget requirement (Rs. In lakh)					Total (Rs. In lakh)
	Year 1	Year 2	Year 3	Year 4	Year 5	
FRI, Dehradun	191.22	127.14	128.59	115.99	111.89	674.83
TFRI, Jabalpur	77.66	40.16	40.66	39.06	36.96	234.50
IWST, Bangalore	136.8	76.4	76.75	64.98	62.38	417.31
IFGTB, Coimbatore	39.58	33.58	33.58	32.08	30.08	168.90
AFRI, Jodhpur	13.84	8.84	8.84	8.84	8.84	49.20
RFRI, Jorhat	149.73	95.73	96.23	91.88	88.93	522.50

HFRI, Shimla	42.16	12.16	13.16	13.16	13.16	93.80
IFP, Ranchi	63.66	26.66	27.66	27.66	27.66	173.30
Total	714.65	420.67	425.47	393.65	379.9	2334.34
Management cost @20%	**142.93**	**84.13**	**85.09**	**78.73**	**75.98**	**466.87**
Grand total	**857.58**	**504.80**	**510.56**	**472.38**	**455.88**	**2801.21**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Genetic improvement, propagation and ex-situ conservation of bamboo resources	316.39	114.44	121.29	116.24	116.24	784.60
2: Improved silvicultural practices for increased productivity stand management and harvesting	21.04	23.04	21.04	16.64	14.24	96.00
3:Development of bamboo based agro forestry models for different agro climatic zones of India	43.57	33.67	33.67	27.82	27.47	166.2
4: Integrated pest and disease management	40.53	32.53	33.03	29.73	27.73	163.55
5: Genetic Resource Characterization, phylogenetic analysis and ethno botanical studies on bamboo	112.20	87.20	87.20	87.20	79.20	453.00
6: Management strategies for pre and post flowered bamboo resources	61.68	57.68	57.68	51.68	50.68	279.4
7: Technology Development for value addition	65.06	29.93	29.38	22.16	22.16	168.69
8: Extension, technology transfer and capacity building	45.96	33.96	33.96	33.96	33.96	181.80
NPC Coordination Expenses	8.22	8.22	8.22	8.22	8.22	41.10
Total	714.65	420.67	425.47	393.65	379.90	2334.34
Management cost @20%	142.93	84.13	85.09	78.73	75.98	466.87
Grand Total	857.58	504.80	510.56	472.38	455.88	2801.21

Augmentation of ecosystem services:

The project will help in taking forward substantial past research by converting them into practical guidelines for immediate gains in bamboo planting. Genetic improvement, quality planting stock, seed storage and pre and post flowering management will improve bamboo growing areas. It will also enhance the bamboo productivity of commercially important bamboo species. Clump management practices and domestication will help famers. Technology developed will improve the product quality. A major parameter of NPV will be addressed.

[**Key words:** improved planting stock of important bamboo species, Improvement in productivity, value addition, seed storage protocols, Technology development, Agro-forestry models, National Bamboo Mission, value addition, enhancement of farmers income, bamboo genetic resources]

3.1.3 AICRP-3: Conservation, improvement, management and promotion of sandalwood (*Santalum album*) cultivation in India

Duration of the project: 5 years

Total budget Outlay: Rs 778.60 Lakhs

Justification for the Project:

There has been increase in the number of farmers willing to take up cultivation and also corresponding increase in the total area under cultivation in the non-traditional areas in states like Gujarat, Rajasthan, Maharashtra, Telangana, Andhra Pradesh, and Madhya Pradesh. Interest in cultivation in states of North East like Assam, Tripura, and Manipur besides states like Punjab and Himachal Pradesh was also seen. Sandalwood has great potential in agroforestry because it is less demanding climatic and edaphic requirements. Attempts have been made to introduce this species in commercial plantation scale with horticultural species as long term secondary hosts. However, information on mixed cropping of horticultural crops with sandalwood is scanty, and if successful, may enhance the domestication in horticultural plantation, especially in semiarid regions of the country. It is proposed to conduct studies on parasitic relationship and related growth performance in sandalwood primary host consortium under nursery conditions and also screen different horticulture species as secondary host for sandalwood using stable isotope (^{15}N) under nursery conditions.

There is paucity of information on distribution and diversity of sandal natural populations. Surveys in Andhra Pradesh, Orissa, Maharashtra, Rajasthan, Madhya Pradesh and Gujarat have recorded few populations of sandal that have been naturalized in these regions. It is not known whether these populations are naturalized genetically, or are they diverse populations or have they have been dispersed from the southern peninsular region. Genetic diversity studies will help to unravel this confusion and the results will expectedly help in better management and conservation strategies for this species.

Screening for the variability in the heartwood, sapwood and oil content in between these naturalized genetically diverse populations is proposed in the study is essential for conservation and improvement of the species. There have been no efforts till date to develop genome-wide stringent marker system for diversity assessment and marker assisted selection. An effort to implement marker assisted selection for oil content and heartwood production is also lacking. The present project focuses on developing genomic resources for identifying genome-wide markers and developing a base for future marker assisted selection in the species.

In sandalwood agroforestry systems, the effects of external management inputs on growth and subsequent heartwood formation have not been documented across different agro-climatic zones. A proper package of practices on commercial cultivation needs to be developed and promoted using suitable extension techniques. All these will fall in the ambit of the proposed project.

Objectives of the project:

1. Conservation and improvement in *Santalum album* Linn.
2. Management of sandalwood cultivation for optimizing returns
3. Assess heartwood formation and chemistry of oil

Major Deliverables from the project:

- Generation of genomic resources in sandalwood and developing an online platform.
- Cataloging of genome–wide molecular markers for future marker assisted breeding

- Development of online genome browser to access the assembled sandalwood genome sequence and annotated information.
- Package of practice for commercial sandalwood cultivation
- Establishment of sandalwood germplasm banks, establishment of sandalwood agroforestry trials as MLT and production of sandalwood QPM

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	1 Year	2 Year	3 Year	4 Year	5 Year	Total
Recurring						
Salary	41.80	41.96	44.24	44.24	44.24	216.48
Consumables	25.35	29.15	22.45	20.55	14.05	111.55
Field Research Expenses	16.40	34.10	31.10	24.24	24.70	130.54
Travel	14.85	19.25	13.30	10.10	8.90	66.40
Contingencies	48.00	18.00	0.00	0.00	0.00	66.00
Non-recurring						
Equipment & Accessories	10.40	8.80	13.35	12.10	13.22	57.87
Total	156.80	151.26	124.44	111.23	105.11	648.84
Management cost @20%	31.86	30.25	24.89	22.25	21.02	129.77
Grand Total	188.16	181.52	149.32	133.47	126.13	778.60

Augmentation of ecosystem services:
Sandalwood is a high value timber of commercial importance which is also valued for its oil content. It is now being planted outside the traditional zone of sandal and farmers are showing interest in its plantation. The project will help in conservation, domestication, cultivation in horticultural and agroforestry fields. Quality planting material and host management will improve the productivity. Issues of gene pool conservation and livelihood generation will be addressed.

[Key words: *Santalum album*, quality planting material, sandalwood agroforestry, commercial sandalwood cultivation, host management, conservation]

3.1.4 AICRP-4: Eucalyptus Improvement

Duration of the project: 5 years

Total budget outlay: Rs. 456.11 lakhs

Justification for the Project:
Eucalyptus is the widely planted tree species in India with an area of about 4 million hectares. Presently, about 80 different species of Eucalyptus has been introduced for testing their adoptability and growth potential in our country however only few species of Eucalyptus are widely grown. Although, grown for multiple end uses, its utility is dominated by its use as pulpwood.

Apart from the existing demand for pulpwood, there is a huge potential for Eucalyptus for growing it as a long term tree crop for timber. Secondary timber requirement in the country is met from the areas where the rainfall is above 1000 mm. Species that can grow well in rainfall below 1000 must be identified and introduced to meet the timber requirement. A large number of species has been already introduced during the past two centuries and there are possibilities for

identification of species suitable. Possibilities also exist for reintroduction of selected species of Eucalyptus for timber in semi arid tropics.

The project aims at improving the yield of Eucalyptus plantations through selection of widely adapted clonal varieties and production of genetically superior seeds. Hybridization between the selected genotypes will be carried out for higher growth and vigor. Base population for the breeding program will be enriched with few more germplasm and the existing germplasm will be screened for better end use. Biotechnological approaches will be explored to identify molecular markers for wood formation and production of transgrafts for salt and insect tolerance. The project is also envisaged to understand the water and nutrient use efficiency of Eucalyptus clones, to popularize clonal varieties and to assess the impact of the introduced clonal varieties.

Objectives of the project:

1. To identify the superior Eucalyptus clones across different regions.
2. Identification of genotypes for reclamation of waterlogged and saline land through bio-drainage.
3. To improve the growth vigour and adoptability of genotypes through inter-specific hybridization.
4. To identify and introduce new germplasm/species to suit various climatic conditions and end uses.
5. To establish Progeny tested Clonal Seed Orchard for production of quality seeds.
6. To generate *Eucalyptus* transgenics/ transgrafts with enhanced salt and insect tolerance for confined field trials.
7. Identification of secondary development specific mRNAs and polymorphism in their target sites for cataloging new molecular markers for wood formation in *Eucalyptus tereticornis*.
8. To understand the water and nutrient requirement of Eucalyptus.
9. To popularize new clonal varieties and assess the impact of the introduced clonal varieties.

Major deliverable from the project:

- Clones tolerant to waterlogged and or saline soils will be identified
- Catalogue of potential markers tagging wood formation for future marker informed breeding in *Eucalyptus*
- All India tested 1st generation clones
- New germplasm for *E. pellita, E. urophylla, etc.*
- Progeny tested quality seeds
- Impact ICFRE released clones will be known
- All India tested 2nd generation clones
- Transgrafts that show enhanced salt tolerance
- High water and nutrient use efficient clones
- Tested hybrid clones

Summary of Budget estimate (Rs in Lakhs)

Head of expenditure	1 Year	2 Year	3 Year	4 Year	5 Year	Total
Recurring						
Salary	26.63	25.92	29.90	19.92	33.20	135.57
Consumables	23.05	31.60	20.55	10.50	10.00	95.70
Travel	10.40	15.70	11.25	7.50	8.02	52.87

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Contingencies	16.10	20.50	12.55	7.50	7.00	63.65
Non-recurring						
Equipment & Accessories	32.30	0.00	0.00	0.00	0.00	32.30
Total	108.48	93.72	74.25	45.42	58.22	380.09
Management cost @20%	21.70	18.74	14.85	9.08	11.73	76.02
Grand Total	130.18	112.46	89.10	54.50	69.87	456.11

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Clonal testing	19.86	46.36	39.78	30.03	43.99	180.02
2: Genotypes for waterlogged soils	20.76	8.51				29.27
3: Development of hybrids	7.67	5.75	4.69	4.16	6.41	28.68
4: Introduction of new germplasm	7.67	6.17	4.41			18.25
5: Establishment of CSO	8.17	7.42	6.91	5.41	1.5	29.41
6: Development of transgenics	10.84	5.19	5.07	5.82	6.32	33.24
7: Identification new molecular markers	21.65	3.52	2.91			28.08
8: Understand the WUE and NUE	5.42	4.42	3.66			13.5
9: Popularize new clonal varieties	6.44	6.38	6.82			19.64
Total	108.48	93.72	74.25	45.42	58.22	380.09
Management cost @20%	21.70	18.74	14.85	9.08	11.73	76.02
Grand Total	130.18	112.46	89.10	54.50	69.87	456.11

Augmentation of ecosystem services:
The project will provide high quality clones, quality seeds and knowledge on water and nutrient use efficiency of eucalyptus. Increased productivity will provide additional timber, fuelwood improve farmer's income. Clones for use in water logged and salt affected areas will also be available. Progeny tested Clonal Seed Orchard will be established. Carbon sequestration potential will increase.

[Key Words: *Eucalyptus*, superior Eucalyptus clones, production of quality seeds, waterlogged and salt tolerant clones, water and nutrient use efficiency, increased productivity]

3.1.5 AICRP-5: Development of dielectric heating based processing technologies for solid-wood, Bamboo, and their composites.

Duration of the Project: Four years

Total Budget Outlay: Rs. 270.65 lakhs

Justification for the Project:
Dielectric heating (DH) has received significant attention in recent past for drying of agriculture produce, disinfestations of grains, food processing, etc. due to its higher efficiency, easy controlling and environmentally friendly nature. Dielectric heating includes both radio frequency (RF) waves and microwaves (MW). The technology has been extended to wood processing in many developed countries with commercial acceptance.

There is a need to have concentrated efforts in developing efficient and indigenous wood processing technologies as the many multinational wood based industries are investing in India. Understanding the design and system requirements for dielectric heating is the key for efficient processing of ligno-cellulosic materials. The properly designed system will help in modernizing wood/bamboo based Industries in the country and bringing them at par with other parts of the world. The technology has huge potential in phyto-sanitation of wood and wood products. Since India is a signatory of 'International Standards for Phytosanitary Measures No. 15' (ISPM-15), it is imperative to develop technological capabilities on dielectric heating for Phyto-sanitation of wood and wood based materials particularly packaging material. This will have large implication in export and import of wood based products.

With the rapid growth in bamboo based industry in the country, there is need to develop proper bamboo processing technologies for eco-friendly protection of bamboo, bamboo drying, bending and straightening of bamboo. Research and development in alternate heating protocols in wood/bamboo based composite is also very limited. Application of DH technology may open new avenues in efficient wood modification to improve the dimensional stability and decay resistance thus improving the service life of wooden products.

Objective of the Project:

- To develop dielectric heating (radio frequency and microwave) based wood/bamboo processing technologies.
- Developing protocols for application of dielectric heating in wood and bamboo based composite preparation for improved efficiency and product quality.
- Evaluating the value addition and cost benefits /commercial aspects of the DH based processes.

Major Deliverables from the Project:

- Development of RF based system for drying and phyto-sanitation of wood and bamboo.
- New approaches for bending and straightening of bamboo.
- Development protocols for adhesive curing using RF/MW system.
- Development of RF based moisture measuring system for wood.

Summary of Budget estimate (Rs in Lakhs)

Head	Year I	Year II	Year III	Year IV	Total
Recurring					
Salary	8.40	9.60	10.47	8.07	**36.54**
Consumable	4.50	3.50	2.50	2.50	**13.00**
Travel	2.50	2.50	2.50	2.50	**10.00**
Contingency	10.00	7.50	7.50	6.00	**31.00**
Non recurring					
Equipments and accessories	55.00	70.00	10.00	-	**135.00**
Total	**80.40**	**93.10**	**32.97**	**19.07**	**225.54**
Management cost@20%	16.08	18.62	6.59	3.81	45.11
Grand Total	**96.48**	**111.72**	**39.56**	**22.88**	**270.65**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Total
1: Design and develop RF and MW based wood/ bamboo processing systems	51.36	26.77	7.35	4.93	90.41
2: Developing RF based Phyto-sanitation protocols for wood/bamboo	1.00	30.75	1.50	2.00	35.25
3: Optimization of the resin curing using RF waves for panel products (FRI)	9.40	4.60	4.60	4.00	22.6
4: Developing protocols for bamboo straightening and/ or bending using microwaves	3.00	22.00	2.00	1.00	28.00
5: Green dimensional aspect in wood turning of plantation grown timbers (FRI)	8.36	4.07	0.00	0.00	12.43
6: Developing moisture measurement system for wood/bamboo	0.00	0.00	11.50	2.00	13.5
7: Developing protocols for chemical modification using DH based heating	2.50	2.00	2.69	2.16	9.35
8: Optimizing MW treatment for improving treatability of wood (FRI)	4.78	2.91	3.33	2.98	14.00
9: Evaluating the value addition and cost benefits/ commercial aspects of the process	0.00	0.00	0.00	0.00	0.00
Total	**80.40**	**93.10**	**32.97**	**19.07**	**225.54**
Management cost @ 20%	16.08	18.62	6.59	3.81	45.11
Grand Total	**96.48**	**111.72**	**39.56**	**22.88**	**270.65**

Augmentation of ecosystem services:
Dielectric DH) and microwave (MW) based heating system for wood and bamboo for seasoning, phyto-sanitation and adhesive curing will improve energy efficiency, product quality of timber/ bamboo. Traditionally steam heated kilns are used for timber drying; methyl bromide is used for fumigation of timber; and the curing adhesives in wood composite is dome through hot plates heated by heating system. The carbon footprints of these technologies are high. DH and MH will reduced the carbon foot prints by reducing the energy requirement, time period, pressing temperature and resulting in better product.

[**Key words:** Dielectric heating, Radio frequency and microwave use in wood science, new technology for timber and bamboo seasoning, phyto-sanitation, adhesive curing in composites, wood uses]

3.1.6 AICRP-6: Value addition of wood and wood based composites using nanomaterials

Duration of the project: 4 years

Total Budge outlay: Rs. **223.2** lakhs

Justification for the Project:
Nanoscience is an emerging field which deals with the manipulation of objects whose at least one dimension size is on the nanometer scale (1-100 nm). Because of very large surface area and

dominance of quantum effects, nano size materials exhibit properties which are very different from macro sized material. Nanotechnology has potential applications in many sectors of the forest product research, including wood protection, composites, paper and packaging, construction and value addition. However, systematic research is needed to explore potential of this emerging technology in forest products. Preliminary work on evaluation of certain nano metal oxides for wood protection and using nanomaterials for development of nano-composites has been carried out. Nano scale additives in resin can potentially improve the properties (like thermal stability, flame retardance, water resistance etc.) of the resin/ adhesives. These changes in properties of resin can affect the physical and mechanical properties of the composite and/or finger-joints.

In this proposal, the potential of nano fillers as preservatives, additives to resins/ adhesives for improving different properties of wood and wood composites will be investigated. Low durability wood will be treated with nano based preservatives and impregnated with nano material dispersed resins/ monomers and properties of impregnated wood will be evaluated.

The increasing environmental concerns and difficulties in disposal of composite material based on synthetic fibers and matrix has necessitated development of bio-based and eco-friendly solutions. This project envisages developing completely biodegradable composite by exploiting the superior mechanical properties of both natural fibers and nanocellulose. The composite material will be tested for physical properties, mechanical properties, thermal insulation, electrical insulation, visco-elastic behavior, bio-degradation and moisture adsorption behavior.

Objectives of the project:

1. To develop nano-material embedded ecofriendly wood preservatives
2. Value-addition of low density woods and wood composites by using nano-filler embedded monomer/resin
3. To develop nano cellulosic fibre filled composites

Major Deliverables from the Project:

- Nano-material based wood preservative formulation.
- Value addition of low durability wood and wood composites.
- Noble composites from cellulosic nanofibers and other biopolymers with packaging and non-structural applications.

Summary of Budget estimate (Rs in Lakhs)

Head of expenditure	1st Year	2nd Year	3rd Year	4th year	Total
Recurring					
Salary (I JRF and 1FA)	17.9	17.9	19.1	16.1	71.0
Consumables	8.5	8.0	6.0	5.0	27.50
Travel	2.50	3.0	2.50	2.0	10.0
Contingencies	8.50	10.0	9.0	9.0	36.50
Non- recurring					
Equipment & Accessories	41.0				41.0
Total	**78.4**	**38.9**	**36.6**	**32.1**	**186**
Management cost @20%	**15.68**	**7.78**	**7.32**	**6.42**	**37.2**
Grand Total	**94.08**	**46.68**	**43.92**	**38.52**	**223.2**

Component wise budget summary (Rs. in lakhs):

Component	Year 1	Year 2	Year 3	Year 4	Total
1: To develop nano-material embedded eco-friendly wood preservatives	6.56	6.9	6.82	6.82	27.1
2: Value-addition of low density woods and wood composites by using nano-fillers embedded monomer/ resin	55.26	25.10	22.94	18.44	121.00
3: Nano cellulosic fibre filled composites	16.56	6.9	6.82	6.82	37.1
Total	**78.38**	**38.9**	**36.58**	**32.08**	**186**
Management cost @20%	**15.68**	**7.78**	**7.32**	**6.42**	**37.2**
Grand Total	**94.08**	**46.68**	**43.92**	**38.52**	**223.2**

Augmentation of ecosystem services:
Developing wood products which are eco-friendly and reduce carbon foot prints are needed today. Nano-materials have opened many new options in the field of wood science. In this nanotechnology will be used to develop new preservatives, improve the properties of low density woods and composites. The efforts will not only provide eco-friendly options but will also improve the quality of products and lower the cost of production.

[Key Words: nanoscience, nano-material, value addition, nano wood preservatives, nano based resins, new applications, impregnated wood, durability]

3.1.7 AICRP-7: Assessment and monitoring of Invasive Alien Plant Species (IAPS) in India and formulation of strategies for management of key Species in different regions of the country

Duration of the project: 5 Years

Total budget outlay: Rs. 455.98 lakhs

Justification for the Project:
The National Biodiversity Action Plan (2008) of the country emphasized the need for regulation of introduction of invasive alien species and their management and restore the adversely affected ecosystems. The project would help in scientific understanding of and formulation of management strategies and long term monitoring of in different parts of the country through participatory processes and institutional mechanism of the targeted species (*Lantana camara, Prosopis juliflora, Mikania micrantha* and *Acacia mearnsii*) that are being covered in this project.

The present proposal has been prepared with the aim to develop site-specific and cost-effective measures control and management of key IAPS which will be useful for preparing the national strategy and management plan on IAPS.

According to India's National Biodiversity Target 4, invasive alien species and pathways are identified and strategies to manage them are developed so that population of prioritized invasive alien species is managed by 2020. National strategy and management plan on IAPS in the country are yet to be formulated. Further status, extent and pattern of invasion by IAPS in the country are poorly documented and there is no baseline information for predicting the future trends and effects of management interventions. Therefore, there is an urgent need to assess

IAPS and develop appropriate strategies for their management and control which will definitely be helpful in ensuring the ecological security of the country.

The project would address the issue of restoration of the degraded ecosystem from the invasion of IAPS, and would ultimately enhance the natural processes of forest regeneration including forest carbon stocks.

Objectives of the project:

(i) To assess the spatial extent of selected IAPS using Remote sensing and GIS
(ii) To assess the various ecological impacts of selected IAPS in the country
(iii) To predict the future spread of selected IAPS using Species Distribution Models
(iv) To explore bioprospecting and other utilization potential of selected IAPS
(v) To develop cost effective methods for eradication and control of selected IAPS
(vi) To develop restoration models for the invaded areas and develop a compendium on IAPS in collaboration with the SFDs

Major Deliverables from the project:

(i) Documentation of IAPS across the country
(ii) Spatial extent of invasion of key IAPS
(iii) Information on ecological impacts
(iv) Predicted future distribution of selected IAPS
(v) Bio -pesticides and useful products
(vi) Measures for control and management of selected IAPS
(vii) Restoration models for the invaded areas
(viii) Compendium on management of selected IAPS

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	37.08	37.08	39.84	39.84	40.44	194.28
Consumables	7.00	6.00	6.25	5.50	6.60	31.35
Travel	13.05	14.55	14.35	11.75	8.75	62.45
FRE (Contingencies)	10.45	11.95	10.5	10.5	7.75	51.15
Contingencies	0	0	0	0	0	0
Non- Recurring (Equipment)	31.15	3.15	2.25	2.7	1.5	40.75
Total	98.73	72.73	73.19	70.29	65.04	379.98
Management cost @ 20%	19.75	14.55	14.64	14.06	13.01	76.00
Grand Total	118.48	87.28	87.83	84.35	78.05	455.98

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Mapping, monitoring and management strategies of key Invasive Alien Plant Species in different regions of the country	98.73	72.73	73.19	70.29	65.04	379.98
Total	98.73	72.73	73.19	70.29	65.04	379.98
Management cost @20%	19.75	14.55	14.64	14.06	13.01	76.00
Grand Total	118.48	87.28	87.83	84.35	78.05	455.98

Augmentation of ecosystem services:
Documentation, spatial extent of prominent IAPS, ecological impacts and prediction of future distribution is important for formulating the policies for their control and management to improve the regeneration of degraded forests and in improving the ecosystem services. Measures for control and management of selected IAPS, restoration models for the invaded areas, compendium on management and bio-pesticides and useful products will be available from the project. Targeted species of *Lantana camara, Prosopis juliflora, Mikania micrantha* and *Acacia mearnsii* are being covered in this project.

[**Key words:** Invasive Alien Plant Species (IAPS), documentation, spatial extent, ecological impacts, eradication, control, restoration models, future prediction, forest regeneration, IAPS management]

3.1.8 AICRP-8: Conservation and productivity improvement of Red sanders (*Pterocarpus santalinus* L.f.)

Duration of the project: Five years

Total budget outlay: Total outlay- Rs. 434.79 Lakhs

Justification for the Project:
Several studies on various aspects of research on Red sanders like reproductive biology, ecology, growth behavior, regeneration, population dynamics, non-detriment findings (NDF) etc., have been taken up. However, there is no systematic improvement programme in the species to improve the heartwood content, which is the main economic product of the species. There are no seed production areas or seed orchards to meet the demand for quality planting stock in the species. There are some knowledge gaps so far as research needs of the species is concerned. Large scale cultivation of Red sanders on private lands is the way forward for meeting the timber demands and for conservation of natural populations of the species. There is ample scope of raising plantations, in areas both within and outside the species' natural range, with improved genetic material and improved silvicultural practices, which, in the long run, will be able to bridge the gap between demand and supply of Red sanders timber. This, in turn, will reduce pressure on the natural resources of the species and ensure its long term sustainability and conservation.

The Foreign Trade Policy of India prohibits export of Red sanders in any form. On one hand there is a thriving International market and on the other hand there is no supply from the legal sources, which in turn fuelling its illegal trade. Despite the aforesaid legislations for conservation of Red sanders, the species is under tremendous pressure. Looking at the grim scenario, the expert committee (EC) constituted under National Biodiversity Authority (NBA) has recommended for a separate set of simplified procedures for cultivation, felling, transit and trade of cultivated Red sanders. The committee has recommended for creating a condusive environment for large scale cultivation of Red sanders, and meeting domestic and international demands from cultivated sources. This likely change in policy scenario is going to create an opportunity for the tree farmers of Andhra Pradesh, Telangana, Tamil Nadu and Karnataka. There is ample scope of raising plantations on degraded dry lands, both within and outside the species' natural range, with improved genetic material and improved silvicultural practices, which in the long run, will be able to bridge the gap between demand and supply of Red sanders timber. With this in the background, an AICRP is proposed.

Objectives of the project:

Short term (First phase)

i. To establish base populations of Red sanders with germplasm from natural populations.
ii. To select plus trees of Red sanders and lay multilocational progeny trials.
iii. To refine and develop silvicultural techniques for Red sanders.
iv. To develop molecular resources and techniques for Red sanders.

Long term (Second phase)

v. To convert progeny trials of Red sanders into seedling seed orchards for production of genetically superior seeds.
vi. To take up advance generation selection works from base populations and first generation seed orchards.

Major deliverables from the project:

a. Genetically superior plus trees for deployment
b. Field gene banks for *ex situ* conservation of *P. santalinus*
c. Refined techniques for clonal multiplication of superior genotypes of *P. santalinus*
d. Biofertilizers for improving productivity in *P. santalinus*
e. A non-destructive technique to assess heart wood formation in *P. santalinus*
f. Molecular markers for *P. santalinus* genetic resource management
g. A database of stable isotope (13C/12C) composition for Red sanders

Summary of Budget estimate (Rs. in lakhs)

Head of Expenditure	Year1	Year2	Year3	Year4	Year5	Total
Recurring						
Salary:(10 JRFs/SRF, 01 Field assistant)	18.621	24.828	27.804	26.784	26.784	124.821
Consumables	20.0	20.0	20.0	16.0	15.0	91.0
Travel	9.5	9.5	9.0	8.5	8.5	45.0
Field Research	5.5	5.5	5.5	15.5	11.5	43.5
Contingencies	5.0	5.0	5.0	6.5	6.5	28.0
Non-recurring						
Equipment & accessories	30.0	0.0	0.0	0.0	0.0	30.0
Total amount for all institutes	88.6	64.8	67.3	73.3	68.3	362.3
Management cost @20%	17.72	12.97	13.46	14.66	13.66	72.46
Grand Total	106.35	77.79	80.76	87.94	81.94	434.79

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Establishment of base populations	12.15	5.58	5.87	11.12	10.23	44.95
2: Mapping of Red sanders populations	1.00	1.00	1.00	0.00	0.00	3.00
3: Establishment of progeny trials	17.23	16.21	16.51	23.52	19.40	92.85
4: Establishment of vegetative multiplication garden	0.00	0.00	1.00	1.00	1.00	3.00
5: Refinement of protocols for clonal multiplication of *P. santalinus* and mass multiplication of superior *P. santalinus* phenotypes.	9.63	10.22	10.52	10.52	10.52	51.40

6: Identification of superior strains of AM fungi, Rhizobium and Phosphobacteria and their mass culture for Red sanders.	16.84	8.84	8.84	8.84	8.84	52.20
7: Generation of molecular resources in *P. santalinus* for estimation of genetic diversity, structure, and molecular characterization of plus trees.	15.79	6.38	6.68	6.18	6.18	41.20
8: Evaluation of heartwood formation in *P. santalinus* using Electric Resistance Tomography	3.77	3.77	3.77	0.00	0.00	11.30
9: Stable isotope (13C/12C) composition study in Red sanders	12.23	12.82	13.12	12.12	12.12	62.40
Total	**88.62**	**64.83**	**67.30**	**73.28**	**68.28**	**362.32**
Management Cost @20%	**17.72**	**12.97**	**13.46**	**14.66**	**13.66**	**72.46**
Grand Total	**106.35**	**77.79**	**80.76**	**87.94**	**81.94**	**434.79**

Augmentation of ecosystem services:
Red sanders (*Pterocarpus santalinus*) are under threat due its utilization potential and having localized population in the limited area of southern states. Opportunities exist for farmers to increase the availability of timber through plantation. Conservation by establishing base population from natural populations, selection and multilocation progeny trials, and refine silvicultural techniques will be done in the project. Seedling seed orchards of superior seeds and ex situ conservation, improving productivity will be addressed.

[Key words: Red sanders (*Pterocarpus santalinus*), conservation, productivity enhancement, seedling seed orchards, progeny trials, silviculture]

3.1.9 AICRP-9: Quality Teak Production: Capitalizing on Cloning

Duration of the Project: Five (5) years

Total budget outlay: Rs. 360.12 Lakhs

Justification for the Project:
The demand of Teak (*Tectona grandis*) in India is estimated to grow to 153 million cum by 2020 (95 million cum in 2010). India's annual trade volume of teak was 0.74 million cum from April 2005-March 2014 valued at 375 million USD per year. To meet the demand and supply gap and to reduce the loss of foreign exchequer, India has to gear up to meet its own timber requirement.

Average yield of teak timber per ha varies from 2.7 - 12.0 m^3/ha/yr (50 years of age) in India. Rotation age of teak in India is the largest in the world almost twice that of other countries. In many exotic locations, teak is grown on relatively short rotations, with MAI at time of harvest (15-25 years of age) between 10 and 15 m^3/ha/yr. This volume increment has been achieved mainly through clonal forestry (short cut tool for achieving genetic gain in limited span of time). Commercial scale clonal propagation protocols are in place for cost-effective production of teak propagules. Hence, quality planting stock along with good practices for short rotation teak cultivation in farmlands is needed. There is a need to enhance the productivity of teak apart from extending the plantation acreage.

The proposal aims to apply the biotechnological tool – "tissue culture" for mass production of selected material of teak. It offers an opportunity to enrich the teak genetic resources available locally by deploying regionally available clones. The multilocation tests across the country would enable identification of genetically superior trees among those initially selected on phenotype. The superior genotypes would be clonally mass-produced for developing clonal plantations.

Objectives of the project:

1. Evaluation of existing teak clonal plantations
2. Mass production of new clones and evaluation through multi-location trials
3. Disseminate package of practices for cultivation in farmlands

Major Deliverables from the project:

- Productivity impact in existing tissue culture teak clonal plantations
- Popularize teak cultivation using TC raised clonal planting stock
- Cultivation practices for teak in farmland/agroforestry conditions

Summary of Budget estimate (Rs. in lakhs)

Head	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary (5 JRF /JPF)	11.05	11.05	11.05	12.45	12.45	58.05
Consumables (M&S)	20.50	20.50	8.50	8.50	8.50	66.50
Travel	1.35	2.25	4.50	4.50	4.50	17.10
Field Research (includes skilled worker – 8)	19.10	28.90	28.90	28.90	28.90	134.70
Contingencies	1.25	1.25	1.25	1.25	1.25	6.25
Non-Recurring	0.00	0.00	0.00	0.00	0.00	0.00
Equipment including infrastructure for hardening	17.50	0.00	0.00	0.00	0.00	17.50
Total	**70.75**	**63.95**	**54.20**	**55.60**	**55.60**	**300.10**
Management cost @20%	14.15	12.79	10.84	11.12	11.12	60.02
Grand Total	**84.9**	**76.74**	**65.04**	**66.72**	**66.72**	**360.12**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1) **Quality teak production: Capitalizing on cloning**	**70.75**	**63.95**	**54.20**	**55.60**	**55.60**	**300.10**
Management cost @ 20%	**14.15**	**12.79**	**10.84**	**11.12**	**11.12**	**60.02**
Grand Total	**84.9**	**76.74**	**65.04**	**66.72**	**66.72**	**360.12**

Augmentation of ecosystem services:

The project will help in improving productivity of teak, evaluate existing clonal plantation, popularize tissue culture raised clones, cultivation practices for farmland/ agroforestry and make available clonal planting stock. Will address demand to timber.

[Key words: Teak (*Tectona grandis*), quality teak production, cloning, productivity, cultivation practices for farmland/ agroforestry, clonal planting stock, tissue culture, mass production]

3.1.10 AICRP-10: Developing seed testing and seed storage protocols of selected forestry species from diverse forest types

Duration of the Project: 5 Years

Total Budget Outlay: Rs. 508.07 lakhs

Justification for the Project:
The testing of seeds for their physical and physiological quality is a vital for tree improvement program. The increase in forestry plantation programs has brought about an increase in the number and species being raised as plantation, and in the quantity of seeds required for the same. For taking up species under plantation programmes it is importance to have an understanding and knowledge about the phenology, fruit/seed maturation, quality of the seed produced, their storage physiology and developing seed storage protocols. Also to ensure the success of the programs it is necessary to develop appropriate nursery practices for producing quality seedlings. There are many important forestry species of Himalayas, Central India, Western Ghats, North-Eastern region, arid and semi-arid regions of Western India, such studies on which have either not been undertaken or are very sparse. The study would help in screening the nature of seeds based on habitat, size, shape, moisture content at the time of seed shedding and storage behavior. The knowledge and information generated would help in devising strategy for propagation and conservation of these species. The project will have backward linkages with work done in the past, which shall be revisited and further complete seed technology package will be developed for enhancing its practical utility in plantation and conservation programmes.

Studies on pest/disease management of seeds have been included in the project.

The project envisages to develop seed technology (seed processing, handling, viability, storage physiology and developing seed storage protocols) and nursery techniques of rare, endangered and threatened and less explored but important ecologically & economically important forestry species of Himalayas, Tropical forests of Central India, Western Ghats, Arid and semi-arid regions of Western India and North-Eastern region for their utilization and conservation in future. The proposed project has many components with different objectives.

Component wise objectives of the project:
Component 1: Fruit/Seed maturity and seed collection, processing and handling
- To develop maturity indices for seed collection
- To identify the optimal developmental stage for seed collection
- Standardization of seed extraction, processing and handling

Component 2: Investigating Seed Germination behavior of forestry species from various forest types
- To assess germination behavior of seeds
- Devising pre-sowing treatments for dormancy, if any
- Standardizing techniques for seed germination of different forestry species
- Study of seed mycoflora/pests and their management

Component 3: Seed Storage physiology
- To characterize the storage physiology of seeds.
- Investigating seed storage behaviour and viability of selected forestry species for conservation of germplasm
- To estimate the parameters for prediction of viability under different seed storage conditions.

- To develop the protocol for seed storage for retention of viability.

Component 4: Correlating seed storage category with ecological parameters

- To assess seed shape, size, mass and moisture content at shedding and correlate it with seed storage behavior.
- To correlate seed storage behavior with ecological characters such as climate and vegetation type.
- To develop a model for correlating seed traits and habitat with desiccation sensitivity.

Component 5: Nursery techniques for production of quality seedlings

- To develop nursery techniques for *Betula utilis, Sorbus lanata, Prunus cerasoides, Boswellia serrata,*
- To standardize seedling quality parameters for production of quality seedlings

Component 6: Extension and Capacity building

- Preparation and Publication of Technical manuals/booklets on seed storage and propagation of different forestry species, for training programmes

Major Deliverables from the Project

- A complete package on seed technology, seed storage techniques of 77 forestry species from diverse forest types
- A model for correlating seed traits and habitat with desiccation sensitivity of seeds of 22 forestry species of Western Ghats
- Manual, information booklets on seed technology and conservation of different species

Summary of Budget estimate (Rs in lakhs)

Head of expenditure	1year	2 year	3 year	4 year	5 year	Total
Recurring						
Salary (JPFs)	23.04	23.04	25.92	25.92	25.92	**123.84**
PA	2.16	2.16	2.16	2.16	2.16	**10.80**
Consumables	15.75	16.75	17.25	16.85	17.05	**83.65**
Travel	10	10.1	10.5	11	11.1	**52.7**
Contingency	11.5	13.2	13.85	15.05	15.95	**69.55**
Non-recurring						
Equipment(Accessories & Maintenance)	76.5	1.9	1.9	1.55	1.00	**82.85**
Total	138.95	67.15	71.58	72.53	73.18	423.39
Management cost @20%	27.79	13.43	14.316	14.506	14.636	84.678
Grand Total	166.74	80.58	85.90	87.04	87.82	508.07

Component wise budget summary (Rs. in lakhs)

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1) Fruit/ Seed maturity and seed collection, processing and handling	35.50	25.00	27.00	25.00	21.00	133.00
2) Investigating Seed Germination behavior of forestry species from various forest types	35.45	12.00	12.00	12.00	8.00	79.45
3) Seed Storage physiology	35.00	12.50	13.50	12.00	10.00	83.00
4) Correlating seed storage category with ecological parameters	30.00	12.50	13.50	12.00	10.00	78.00

5) Nursery techniques for production of quality seedlings	3.00	4.15	2.50	1.53	1.50	12.68
6) Extension and Capacity building	0.00	1.00	3.58	10.00	22.68	37.26
Total	**138.95**	**67.15**	**71.58**	**72.53**	**73.18**	**423.39**
Management cost @20%	**27.79**	**13.43**	**14.316**	**14.506**	**14.636**	**84.678**
Grand Total	**166.74**	**80.58**	**85.90**	**87.04**	**87.82**	**508.07**

Augmentation of ecosystem services:
For improving the productivity of forest, availability of complete package of practices on seeds is needed. This project will fill the gaps in existing knowledge will provide complete package for important forestry species of different zones of the country.

[**Key words**: seed testing and seed storage protocols, forestry species, germination behavior, processing and handling, nursery techniques, capacity building]

3.1.11 AICRP-11: All India Coordinated Research Project on *Dalbergia sissoo*

Duration of the project: 10 years (in two phases of 5 years each) (2018–2028)

Total Budget outlay for first phase: Rs 654.84 lakhs

Justification for the Project:
Large scale mortality in Shisham is caused by two fungal pathogens *viz.*, *Fusarium solani* and *Ganoderma lucidum* causing wilt disease and root rot respectively. The Shisham based industries are not getting the raw material of required quality due to heavy Shisham mortality. The lack of information regarding hazard sites for *Dalbergia sissoo* plantation, unavailability of sustainable eco-friendly methods to treat diseased trees and unavailability of planting stock having durable disease resistance against wilt and root rot diseases warrants immediate steps to be taken up in the direction of evolving a pragmatic integrated disease management strategy.

Holistic approach can bring solution to Shisham mortality. Project proposes to identify hazard sites so that plantations can be avoided or done with caution. Treatment of dying trees with *Trichoderma* will be done. By artificial pathogen inoculation in Shisham germplasm, most virulent pathogen isolates will be identified. Resistant Shisham germplasm will be identified by using virulent isolates and the propagation facilities of resistant germplasm will be established.

Objectives of the project: The project has 5 components. The *component-wise objectives* are as below:
Component 1: Recovery of existing sick Shisham plantations by *Trichoderma* sp application
1. Screening *Trichoderma* spp. isolates against important Shisham pathogens *Fusarium solani* & *Ganoderma lucidum*
2. Identifying suitable agriculture or spent industrial waste biomass as substrate for multiplication of *Trichoderma* spp. in field and its application in field for disease management.
3. Study the effect of *Trichoderma* spp. on Shisham plant growth in nurseries.

Component 2: Hazard mapping of areas under Shisham plantation
1. Geographical information system (GIS) based MAXENT environmental niche modeling for generation of probability distribution map of *Dalbergia sissoo* (Shisham).
2. Generation of probable hazard map for Shisham mortality caused by two major pathogens *viz.*, *Fusarium solani* and *Ganoderma lucidum*, for year 2020 and year 2050

Component 3: Identifying wilt and root rot resistant *Dalbergia sissoo* germplasm through *in vitro* screening and proteomic evaluations

1. *In vitro* screening protocol of *Dalbergia sissoo* genotypes against *Fusarium solani* and *Ganoderma lucidum* infection
2. Development of protocol for extent of infection using biochemical markers

Component 4: Identifying wilt and root rot resistant *Dalbergia sissoo* germplasm by field selections followed by disease resistance evaluation under artificial epiphytotic conditions

1. Survey of shisham populations/areas for incidences of shisham mortality in the states of Bihar, Jharkhand, Madhya Pradesh, Chhatisgarh, Rajasthan, West Bengal, Uttar Pradesh, Uttarakhand, Delhi, Punjab, Haryana, Himachal Pradesh, J&K and North Eastern states.
2. Selection of genotypes/populations/areas unaffected /resistant to disease incidence
3. Raising planting stock of selected genotypes in the nursery
4. Artificial inoculation of shisham by *Fusarium solani* and *Ganoderma lucidum* for identifying disease resistant germplasm in the nursery and field.

Component 5: Multiplication and propagation of wilt and root rot resistant *Dalbergia sissoo* germplasm (*Part of component 5 will be taken up in second phase*)

1. Raising quality planting stock of resistant genotypes for afforestation programme.
2. Extension, technology transfer and capacity building

Major deliverables of the projects:

- *Trichoderma* spp. formulations for disease management:
  - Shisham wilt caused by *Fusarium solani*
  - Root rot caused by *Ganoderma lucidum*
  - Better seedling health in nursery
- Hazards maps projecting sites vulnerable to:
  - Shisham wilt disease
  - Root rot disease
- Chemical markers for rapid identification of germplasm resistant to wilt and root rot
- Virulent isolates of both pathogens identified for screening durable resistance
- Resistant planting stock against shisham mortality pathogens:
  - Shisham wilt disease
  - Root rot disease
- Multiplication Gardens of resistant *Dalbergia sissoo* germplasm

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary (JPF-12; PA-6)	30.24	30.24	33.12	33.12	33.12	159.84
Consumables	14.69	12.44	11.46	11.96	9.21	59.76
Travel	10.25	12.25	11	7.5	6	47
Field Research	23	26.5	22	21.5	20	113
Contingencies	5.5	7	7	7	8.5	35
Non-Recurring (Equipments)	131.1	0	0	0	0	131.1
Total	214.78	88.43	84.58	81.08	76.83	545.7
Management cost@20%	**42.96**	**17.69**	**16.92**	**16.22**	**15.37**	**109.14**
Grand Total	**257.74**	**106.12**	**101.50**	**97.30**	**92.20**	**654.84**

Component wise budget summary (Rs. in lakhs)

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recovery of existing sick Shisham plantations by *Trichoderma* sp application	55.42	26.48	24.59	22.61	22.33	151.43
Hazard mapping of areas under Shisham plantation	28.53	5.84	5.00	4.47	4.65	48.49
Identifying wilt and root rot resistant *Dalbergia sissoo* germplasm through *in vitro* screening and proteomic evaluations	55.49	21.38	21.00	21.24	18	137.11
Identifying wilt and root rot resistant *Dalbergia sissoo* germplasm by field selections followed by disease resistance evaluation under artificial epiphytotic conditions	26	28.96	27.24	25.34	23.04	130.58
Multiplication and propagation of wilt and root rot resistant *Dalbergia sissoo* germplasm	49.34	5.76	6.75	7.421	8.81	78.081
Total	214.78	88.43	84.58	81.08	76.83	545.7
Management cost @20%	**42.96**	**17.69**	**16.92**	**16.22**	**15.37**	**109.14**
Grand Total	**257.74**	**106.12**	**101.50**	**97.30**	**92.20**	**654.84**

Augmentation of ecosystem services:
Dalbergia sissoo is a prominent timber species of the India. The project will address recovery of diseased existing population, hazard mapping, and identify disease resistant shisham and multiply them.

[Key words: *Dalbergia sissoo,* Recovery, Shisham pathogens, Screening *Trichoderma* spp. Isolates, *Fusarium solani, Ganoderma lucidum,* hazard mapping, Identifying wilt and root rot resistant, Chemical markers, Resistant planting stock, Multiplication Gardens]

3.1.12 AICRP-12: Assessment of demand and supply of timber, fuel-wood and fodder in India

Duration of the project: 3 years

Total budget outlay: Rs. 143.70 lakhs

Justification for the Project:
To gain knowledge about the existing wood balance scenario in the country an all-India study of demand and supply of timber and fuelwood is essential. Without an objective assessment of demand and supply of these two important forest products, appropriate decisions regarding planting stock, supply of seeds and seedlings, area required to establish plantations along with species-wise targets, are difficult to determine. Long term demand estimates shall be useful in determining quantum of supply by way of regulating the plantation programmes and shall also provide input to the farm forestry.

It is important to learn about the factors influencing the demand for wood and fuel-wood and devise intervention strategies. The present study aims to address some of these issues by focusing on Karnataka. The demand for wood is assessed at four main levels: household, industry, service sectors & exports and wood is supplied through three main sources: forests, plantation and farm forestry and Imports. The outcome of the study shall also be helpful in smoothing the mechanism of price determination of timber and fuel-wood. The study shall also give valuable insights about how the trend of alternative fuel is replacing fuel-wood in rural and urban areas which ultimately may help re-assessing determinants of forest degradation and provide new estimates of dependency of a section of population on forests.

Objectives of the project:

Component 1: Demand and supply of timber

1. To estimate the current demand of timber from various utilization sources, including exports
2. To estimate the current supply of timber (in raw and value added form) from all sources, including imports
3. To identify the determinants of demand and supply of timber in raw and processed form
4. To identify the functional form of the demand and supply models for timber parameterize the model to forecast the demand and supply
5. To conduct a wood balance study to estimate the contribution of various sources to the supply of timber leading to estimation of the contribution of the forestry sector
6. To study the long term impact of substitution on the outturn of and demand for timber
7. To estimate un-recorded removals of timber as a gap between demand and supply with certain assumptions

Component 2: Demand and supply of fuel-wood

1. To estimate the current supply of fuel-wood from all sources, including imports
2. To estimate the current demand of fuel-wood from various utilization sources, including exports
3. To identify the functional form of the demand and supply models for timber parameterize the model to forecast the demand and supply
4. To study the long term impact of substitution and projected income on the outturn of and demand for timber with factoring in its substitution by alternate energy sources
5. To estimate un-recorded removals of fuel-wood as a gap between demand and supply under certain assumptions

Component 3: Demand and supply of Fodder

1. To estimate the current demand of fodder
2. To estimate the current supply of fodder from various sources
3. To identify the functional form of the demand and supply models for fodder and parameterize the model to forecast the demand and supply
4. To estimate un-recorded removals of fodder form forest areas
5. To estimate the extent of stall feeding and grazing in forest areas

Major Deliverables of the project:

(i) Estimate the current demand and supply of timber and fuel-wood with altitude factored in
(ii) Forecasts of demand and supply of timber and fuel-wood for a reasonable future for different regions and end-uses
(iii) Cross – correlations amongst the substitutes that are likely to affect the demand of timber and fuel-wood and the estimated effect under plausible scenarios

(iv)Models of estimation of demand and supply of timber and fuel-wood along with initial parameter estimates.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Total
Recurring				
Salary	21	21	21	63
Consumables	2.75	4.25	3.75	10.75
Travel	10	15	9	34
Contingencies	4	4	4	12
Non recurring	0	0	0	0
Equipment & Accessories	0	0	0	0
Total	37.75	44.25	37.75	119.75
Management cost @20%	7.55	8.85	7.55	23.95
Grand Total	45.3	53.1	45.3	143.7

Component wise budget summary (Rs. in lakhs):

Since activity is one, no component wise break up is provided

Augmentation of ecosystem services:

Timber, fuel wood and fodder are the important parameters of ecosystem services that are to recouped when forest land is diverted. Estimating demand and supply of these parameters will help in developing future strategies.

[Key words: demand and supply, timber, fuel-wood and fodder, model to forecast the demand and supply, wood balance study, estimate un-recorded removals, forest statistics]

3.1.13 AICRP-13: Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services

Duration of the project: 4 years

Total budget outlay: Rs. 315.6 lakhs

Justification for the Project:

It is important to determine the economic value of the resource in order to appreciate the importance in terms of the best known unit – money. There is a need to understand what we to lose when forests are diverted for non-forestry purposes, paving a way to objectively assess the loss and compensate thereupon, whether in terms of money or in terms of compensating the loss through afforestation and reforestation. In absence of validation of the methodologies, an attempt is necessary to standardize the methods and validate them by application for future replication. A convergence of experts is necessary to put a stamp of validity and develop a manual that is to be followed in future assessments.

Attempts have been made by various researchers to address the issue. However, the gaps on the issue are under:

- Large scale studies have not been conducted that can provide methodology and assessment at a single place.

- A variety of methods have been used and mostly not compared before arriving at the best method. Usage of a diversity of methods have also left the estimates difficult to pool into giving one value for the entire nation, indicating lack of convergence.
- Eco-system goods and services have been studied on a piece-meal basis for various areas and absence of a national-wide study is generally felt. From what has been done, it is difficult to pool in the literature to get an understanding of the services on a national scale. Also, several are limited to research papers and find it difficult to make inroads into policy framework.

Objectives of the project

1. To develop methodologies for forest valuation, both direct and indirect
2. To determine the contribution of forests to the GDP of India
3. To determine the value of ecosystem goods & services per unit area for different forest types
4. To determine the replacement cost of forests when diverted for non-forestry purposes

Major Deliverables of the project:

1. Forest-type wise estimates of eco-system goods and services
2. Physiographic zone wise estimates of eco-system goods and services
3. Manual containing methodology and algorithms to repeat such studies in future
4. Estimates of contribution of the forest and logging sector to the GDP of India by way of monetary value of the tangible benefits
5. Contribution of the forest sector to the Green GDP and satellite accounts of India by way of valuation of intangible benefits
6. A model for Payment of Ecosystem Services tested on a pilot scale

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Total
Recurring					
Salary	30	30	30	30	120
Consumables	10	8.25	8.25	9.75	36.25
Travel	24.50	21.00	17.00	15.50	78
Contingencies	7.75	7.75	7.75	5.50	28.75
Non recurring	0	0	0	0	0
Equipment & Accessories	0	0	0	0	0
Total	72.25	67.00	63.00	60.75	263.00
Management cost @20%	14.45	13.4	12.6	12.15	52.6
Grand Total	**86.7**	**80.4**	**75.6**	**72.9**	**315.6**

Component wise budget summary (Rs. in lakhs):
Since activity is one, no component wise break up is provided

Augmentation of ecosystem services:
Estimation of goods and services along with development of methodologies will help in its contribution and estimation for payment for it.

[**Key words:** Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services, methodologies for forest valuation, contribution of forests to the GDP, value of ecosystem goods and services]

3.1.14 AICRP-14: Forest Fire Research and Knowledge Management

Duration of the Project: Five Years

Total Budget outlay: Rs 659.16 Lakhs

Justification for the Project:
MoEF&CC has already identified forest fires as a driver of forest degradation. The comprehensive vital information to establish forest fire linkages with human habitation, road network, drainage network, distance to fire station, forest composition and density, slope, aspect, altitude, fuel type etc., is lacking. World Bank Report on Forest Fire, 2018 also flagged that FRI should take initiatives to develop database with Research & Development activities on Forest Fire Prevention and Management (FFPM). Hence, to bridge this knowledge gap it is imperative to work on Forest Fire Research and Knowledge Management which will address the issues and to develop research based strategies to combat the negative impact of the forest fires on biodiversity. The proposed Forest Fire Research and Knowledge Management will be of great significance in generating knowledge and capacity building to minimize the devastating impact of forest fires; to carry out research on forest fire and to develop appropriate management strategies for the forested areas which are most vulnerable to forest fires.

Generation of scientific information for effective management of forest fires related disasters in India is lacking. To address these issues, research based strategies to combat the negative impact of the forest fires on biodiversity, strengthening of knowledge base with respect to forest fire management in India is needed. With these objectives, the proposed project on Forest Fire Research and Knowledge Management will be of great significance in generating knowledge, capacity building and to minimize the devastating impact of forest fires. In addition to strengthen and manage knowledge with respect to forest fires in India, national level database will be developed. The database will provide scientific information on forest fire management issues, baseline information, scientific publications, other publications for dissemination and awareness creation.

Objectives of the project:
To carry out research for understanding the impacts of fire on the biodiversity and other forest resources and to enhance and strengthen the knowledge with respect to forest fire management in India with the objective to strengthening knowledge management and capacity building of the different stakeholders including ground staff of Forest department, the followings are the objectives of the project:

1. To conduct pilot research studies on forest fires in selected fire vulnerable landscapes.
2. Development of database on forest fires in the country.
3. Capacity building of different stakeholders on forest fire prevention and management.
4. Designing and development of strategy for national awareness campaign on forest fires.

Major Deliverables of the project:

1. Generation of Training and Awareness modules
2. Research studies on fire ecology, Creation of Database on forest fire, Training of Trainers, Designing and Development of National level Awareness Campaign, Organization of conferences
3. Database Creation on forest fire, Training of Trainers, Annual Reports, Scientific Research Reports, Data Analysis

Summary of Budget estimate (Rs. in lakhs)

Institute (Salary ,Consumables, Travel, Contingencies , Trainings, Campaign, conferences, Equipment & Accessories)	1Year	2 Year	3 Year	4 Year	5th Year	Total
1. FRI, Dehradun	37.50	39.50	35.22	26.22	22.22	160.66
2. HFRI, Shimla	16.00	16.00	14.36	11.86	9.86	68.08
3. TFRI, Jabalpur	19.00	19.00	17.72	15.22	13.22	84.16
4. IFB, Hyderabad	19.00	19.00	17.72	15.22	13.22	84.16
5. IFGTB, Coimbatore	19.00	19.00	17.72	15.22	13.22	84.16
6. RFRI, Jorhat	16.00	16.00	14.36	11.86	9.86	68.08
Total	126.50	128.50	117.10	95.60	81.60	549.30
Management cost @20% in the field	25.3	25.7	23.42	19.12	16.32	109.86
Grand Total	**151.8**	**154.2**	**140.52**	**114.72**	**97.92**	**659.16**

Component wise budget summary (Rs. in lakhs):

Components	1Year	2 Year	3 Year	4 Year	5th Year	Total
Forest fire research and management	126.50	128.50	117.10	95.60	81.60	549.30
Management cost @20% in the field	25.3	25.7	23.42	19.12	16.32	109.86
Grand Total	**151.8**	**154.2**	**140.52**	**114.72**	**97.92**	**659.16**

Augmentation of ecosystem services:
Forest is the major cause of forest degradation due to which ecosystem service are lost. This will help creating database; create awareness and capacity building in addition to pilot studies.

[**Key words:** Forest Fire, Knowledge Management, pilot research studies, database, Capacity building, fire ecology]

3.1.15 AICRP-15: Tamarind (*Tamarindus indica* Linn.): Domestication, conservation and deployment of genetic resources for sustenance and livelihood amelioration

Duration of the Project: Five years

Total Budget outlay: Rs. 199.61 Lakhs

Justification for the Project:
India is the major exporter of tamarind pulp and seeds with an annual trade worth 2.1 million US$. About 85% of tamarind produce is collected and marketed by tribal and rural people. It is a potential multipurpose forest genetic resource, awaiting large-scale domestication. Virtually every part (wood, roots, leaves, bark and fruits) has some value of commerce, particularly in the subsistence of rural people in the arid and semiarid regions of the country. Industrial use of tamarind includes extraction of polysaccharides, starch, tartarates, textile sizers, paper binders, jute weaving, rubber coagulation, adhesive making, dyeing, tanning, mordanting, and in water purification. It is an excellent minor timber, the heartwood is considered as a very durable for furniture making. In an era of climate change, tamarind being adapted to side range of agro-climatic conditions could be of potential value in large scale afforestation and avenue planting. The recent "Green-Highway" policy (2016) being implemented by the Government of India rates

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Tamarind as an important resource to its program, particularly in areas closer to habitations. The strategy is to provide livelihood support through food, fodder and wood in the arid and semi-arid regions of the country. This project envisages to appropriately match the potential genetic resources of Tamarind to stakeholders such as industrial forestry, commercial farming and multi-lane highway avenue planting.

Objectives of the Project:

1. To develop a National Registry and a National Germplasm Bank of Tamarind towards initiating systematic domestication in the country.
2. To shortlist high yielding tamarind genetic resources and deploy them with site specificity and precision silviculture methods across multi-locations in order to accomplish higher yield in avenue, farm and industrial plantations.
3. To build a National Tamarind Consortium for channelizing superior raw material from genetically improved selections to various industrial stakeholders thereby improving the overall product quality and enhancing the economy

Major Deliverables from the project:

- A National Document/Registry on the variations in Tamarind within the country in accordance to the CBD norms.
- Development of a National Tamarind Germplasm Bank that would surrogate breeding programs within the country.
- Deployment of appropriate genetic resources to matching site conditions for realizing higher tamarind pulp yield under farm forestry conditions.
- Providing know how and technicalities to MoRT, Govt. of India and NHAI authorities on deploying suitable tamarind phenotypes across the southern states.
- Aiding the Nation in developing green corridors towards protecting the National Highways (NH) road infrastructure, gaining carbon credits and revenue generation.
- Harnessing IPR to ICFRE in obtaining product and process patents concerning bio-pigments, antioxidants and bio-colorants from tamarind fruit and immature leaves.
- Development and release of Tamarind clones/varieties (registered to PPVRI or NBPGR) those are unique in quantitative and qualitative characteristics.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	8.16	8.16	8.66	8.66	8.66	42.30
Consumables (M&S)	2.00	2.	1.00	1.00	1.00	5.00
Travel	3.00	3.00	2.00	2.00	2.00	12.00
FRE	5.00	5.00	5.00	6.50	6.50	28.00
Contingencies	5.00	4.50	4.50	5.00	5.00	24.00
Non- Recurring (Equipment)	7.50					7.50
Subsumed projects budget						45.54
Total	30.66	22.66	21.16	23.16	23.16	166.34
Management cost @ 20%	6.12	7.67	8.14	5.73	5.56	33.27
Grand Total	36.73	46.00	48.85	34.40	33.38	199.61

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Evaluation of Genetic Resources 2: Short listing state wise selections and Tamarind National Registry	30.66	-	-	-	-	30.66
3: Mass multiplication of Tamarind Tested Resources	-	22.66	-	-	-	22.66
4: Establishment of National Tamarind Genetic Resource Repository (NTGRR) in Tamil Nadu.	-	-	21.16	-	-	21.10
5: Establishing one VMG in each of the states, with high performers selected in the concerned states for follow up programs in the future. Focus on products and value addition of Tamarind with industrial participation.	-	-	-	23.16	-	23.16
6: Establishment of six multi-locations trials.	-	-	-	-	23.16	23.16
Total	**30.66**	**22.66**	**21.16**	**23.16**	**23.16**	**166.34**
Management cost @20%	**6.12**	**7.67**	**8.14**	**5.73**	**5.56**	**33.27**
Grand Total	**36.73**	**46.00**	**48.85**	**34.40**	**33.38**	**199.61**

Augmentation of ecosystem services:
Tamarind is a species which provides livelihood to local population. The project will help in development in region specific clones for improving providing productivity and a good material for plantation on high ways.

[Key words: Tamarind, *Tamarindus indica*, domestication, conservation, National Registry, livelihood, National Germplasm Bank, productivity, Tamarind clones/varieties]

3.1.16 AICRP-16: Bioprospecting for industrial utilization of lesser known forest plants

Duration of the Projects: 5 Years

Total Budget Outlay: Rs. 695.56 lakhs

Justification for the Project:
Though diversity of plants in our forests is high but still a large proportion of these plants remain lesser known for lack of awareness, collection, and adaptability, inadequate research on their biology, chemistry, management, utilization and marketing aspects. Therefore, these plant species are rarely planted in afforestation and agroforestry programmes and are vulnerable and uncommon to common man. Naturally occurring chemicals of high diversity with unique properties in these lesser known forest plants (LKFPs) make them economically important feed stocks for numerous industrial products. Therefore, LKFPs have huge potential for providing subsistence and opportunity for income generation provided adaptability is taken care of, and higher yields and superior quality of produce are ensured. This can be achieved through selection of elite germplasm, and domestication through standardization of cultivation practices and mass

production of quality planting material. Increase in demand for such produce will also go hand in hand which can be made possible by their increased utilization through value addition in terms of simple, cost effective, environment friendly and field usable technologies for post harvest processing, creation of awareness among consumers and establishing forward and backward linkages for a good marketing channel.

Bio-prospecting is recognized as a key engine for developing bioeconomy. Bioeconomy is a sector estimated to be worth more than €1.5 trillion per year. Home to over 14,500 plant species in forest habitats and one of the 12 leading biodiverse countries of the world, India has strong potential and vibrant future to enter into this sector provided the country strives to bring in substantial improvement and value addition to the existing knowledge base through appropriate scientific and technological intervention. Therefore, systematic evaluation of LKFPs occurring in different agro-climatic zones of India; identification of industrially adoptable elite genotypes, and establishment of their germplasm bank and demonstration plots; ascertain industrial suitability and applicability of their produce; development of processing technology for optimal production of these produce; and extension of this outcome to stake holders for creating awareness, augmenting capacity building and technology transfer through combined effort of different institutes of ICFRE located in different agro-climatic regions and possessing different expertise are envisaged in the present project. The objectives of this project are designed to fulfill the identified research needs so that the identified industrially usable genotypes of the LKFPs are showcased and recommended for their mass multiplication and plantation on large scale for supplying of quality feedstock to the industries and enhancing rural income as well.

Objectives of the Project:

The project's overall objective is;

1. to demonstrate that increased knowledge and understanding about the lesser known forest plants (LKFPs) and
2. Strengthen institutional cooperation will upgrade the value chain of these plants.
3. Specific objectives include transformation of LKFPs into new and renewable feed stocks for production of industrial materials such as essential oils, fatty oils, dyes, gums & resins, and biofuels.

Major Deliverables from the Project:

Since the project activities are interlinked and carried forward from the year of their initiation till the year of their completion, cumulative deliverables as expected at the end of the project are given below:

1. Knowledge based products (Technical database, reports, research papers and patents)
2. Industrially adoptable elite genotypes of LKFPs as new and renewable industrial feed stocks
3. Protocols for downstream processing of industrially adoptable elite genotypes
4. Demonstrable industrial products (Essential oils, fatty oils, dyes, gums & resins and biofuels)

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	33.48	33.48	35.64	35.64	35.64	173.88
Consumables	18.50	12.50	11.50	12.00	5.50	60.00

Travel	15.00	15.25	10.50	11.50	10.50	62.75
FRE	12.00	20.50	20.50	20.50	22.50	96.00
Contingencies	4.00	4.00	4.00	6.00	6.00	24.00
Non- Recurring (Equipment)	163.00	0	0	0	0	163.00
Total	245.98	85.73	82.14	85.64	80.14	579.63
Management cost @ 20%	49.20	17.15	16.43	17.13	16.03	115.93
Grand Total	**295.18**	**102.88**	**98.57**	**102.77**	**96.17**	**695.56**

Component wise budget summary (Rs. in lakhs)

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1) Selection of LKFP species and their Prioritization	34.99	0	0	0	0	34.99
2) Survey, evaluation of the prioritized LKFPs and identification of their elite genotypes	210.99	48.49	0	0	0	259.48
3) Evaluation and identification of the industrially adoptable elite genotypes	0	37.24	82.14	0	0	119.38
4) Development of protocols for downstream processing of industrially adoptable elite genotypes	0	0	0	34.32	40.57	74.89
5) Data analysis and compilation of results						
6) Extension of the project outcome	0	0	0	51.32	39.57	90.89
7) Report writing and recommendation						
Total	245.98	85.73	82.14	85.64	80.14	579.63
Management cost @ 20%	49.20	17.15	16.43	17.13	16.03	115.93
Grand Total	**295.18**	**102.88**	**98.57**	**102.77**	**96.17**	**695.56**

Augmentation of ecosystem services:
Development of technologies and bio-prospecting for lesser known species will generate additional livelihood for population affected by forest land diversion

[Key words: LKTS, lesser known forest plants, bioprospecting, utilization, environment friendly]

3.1.17 AICRP-17: Enhancement of fodder availability and quality to reduce unsustainable grazing in the forest

Duration of project: Five years

Total budget outlay: Rs. **635.00** lakh

Justification for the Project:
There exists a huge shortage of fodder for domestic animals in the country. As a result fodder-seeking animals graze and browse in the forest while their owner's cut grass and lop old as well as young trees. This badly impairs forest regeneration, productivity and biodiversity particularly in areas near human habitation. To overcome the scarcity of fodder in the country the then Planning Commission has assigned the responsibility of increasing fodder availability in forest

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lands and community lands to the department of forests while the agriculture department is responsible for promoting fodder cultivation in agricultural lands (Planning Commission, 2011). Thus there need to coordinate and steer various research, educational and extension programmes for increasing fodder availability in degraded forest lands on a high priority. This project aims to develop and disseminate protocols for sustainable production of tree fodder of high nutritive value in degraded forests in forest fringe areas with a view to developing models for overcoming the problem of unsustainable grazing in forest.

It is envisaged to establish research-cum-demonstration plantations of the most promising fodder tree species (capitalizing on results of previous researches) in forest fringe areas in different ecological zones that would give early and high yields of fodder. This requires selection of most promising tree species, development of cultivation, management and fodder sharing protocols and capacity building of rural communities. Successful models may then be replicated on a larger scale by the SFDs.

Objectives:

1. Standardizing mass-multiplication, plantation management, protection and fodder sharing procedures for enhancing tree fodder availability in fodder scarcity regions of India
2. Improving nutritive value and fodder availability during lean period
3. Capacity building of local stakeholders in raising high-yielding fodder plantation

Major deliverables of the project:

1. Baseline data on fodder usage in villages in fodder-scarcity areas of India
2. List of promising fodder trees for villages
3. Field trials cum demonstration plantations on planting, protection and management of fodder trees
4. Protocols for mass-multiplication and planting of fodder trees
5. Protocols for protection of the selected fodder species
6. Protocols for plantation management for enhancing fodder yield
7. Nutritive value of germplasm of diverse sources
8. Practices for improving storage life of fodder
9. A cadre of people capable of establishing fodder plantations and storing fodder through lean period
10. Procedure for sharing of fodder among stakeholders

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	28.92	28.92	32.40	30.24	30.24	**150.72**
Consumable	9.70	9.70	5.20	2.40	2.40	**28.30**
Travel	16.30	12.20	12.20	9.75	10.35	**56.20**
Contingencies	84.00	65.50	57.00	30.30	23.40	**260.20**
Non-recurring						
Equipment and accessories	4.95	0.00	0.00	0.00	0.00	**4.95**
Fence	28.80	0.00	0.00	0.00	0.00	**28.80**
Total	**170.57**	**114.62**	**105.80**	**72.29**	**65.89**	**529.17**
Management cost @20%	**34.11**	**22.92**	**21.16**	**14.46**	**13.18**	**105.83**
Grand Total	**204.68**	**137.54**	**126.96**	**86.75**	**79.07**	**635.00**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Selection of sites	9.00	0.00	0.00	0.00	0.00	9.00
2: Selection of promising species	9.00	0.00	0.00	0.00	0.00	9.00
3: Protocols for mass-multiplication, plantation management, protection and fodder sharing	140.57	108.62	80.90	63.20	65.89	459.18
4: Enhancement of nutritive value of fodder	12.00	6.00	6.00	0.00	0.00	24.00
5: Capacity building of local stakeholders	0.00	0.00	18.90	9.09	0.00	27.99
Total	**170.57**	**114.62**	**105.80**	**72.29**	**65.89**	**529.17**
Management cost @20%	**34.11**	**22.92**	**21.16**	**14.46**	**13.18**	**105.83**
Grand Total	**204.68**	**137.54**	**126.96**	**86.75**	**79.07**	**635.00**

Augmentation of ecosystem services:
Fodder is an important service that the forest provides. This project will develop tree fodder for local people and reduce the grazing pressure on forests.

[Key words: fodder availability, quality, grazing, tree fodder, demonstration plantations, nutritive value, storage life, capacity building, fodder, sharing protocols]

3.1.18 AICRP-18: Silvicultural interventions for productivity enhancement and carbon sequestration in plantations of important tree species

Duration of the project: 5 years

Total Budget outlay: Rs. 206.81 lakhs

Justification for the Project:
Tree improvement programmes and silvicultural interventions have great potential to enhance the productivity, the qualitative improvement as well as the carbon sequestration potential of the plantations. There exists dearth of information on the optimum water requirement or in other words the Water Productivity (output of crop per unit of water consumed) as well as on optimum tree spacing to be adopted for higher productivity and carbon sequestration of important tree species. Silviculture intervention proposed in this project is mixing of N-fixing trees with Non-N fixing tree species to harness the benefits of association, which is well studied in other countries with reference to mixing of Acacias with Eucalyptus, Sandal with Dalbergias and documented that there is increase in productivity and qualitative improvement in mixed plantations when compared to pure plantations of the respective species. By considering the gap in the researches on silvicultural interventions in plantations of important tree species both under irrigated and rainfed conditions, the present project is proposed. Site-specific silvicultural prescriptions for important tree species both under irrigated and rainfed conditions will be developed aiming at greater yield from trees with optimum tree density and optimum water use. The carbon capturing potential of plantations of important tree species will also be assessed and financial analysis of varying silvicultural interventions will also be done to know the economic feasibility of the intensive silvicultural interventions.

Objectives of the project:

The broad objectives of this research proposal are as follows.

1. To study the effect of various micro-irrigation regimes in block and boundary plantations of Teak, *Gmelina, Adina*, and *Cadamba.*
2. To investigate effect of various tree density on qualitative and quantitative improvement in rainfed plantations of *Ailanthus*, Neem and Pungam in block and in boundary planting.
3. To investigate effect of various tree density on qualitative and quantitative improvement in Adina plantations.
4. To investigate effect of mixed planting of *Casuarina* and *Acacia auriculiformis* with Teak on qualitative and quantitative improvement in plantations in block and in boundary planting.
5. To investigate the influences of silvicultural interventions on wood quality.
6. To assess carbon sequestration potential and financial analysis of plantation of important tree species under varied silvicultural interventions.

Deliverables from the project:

1. Recommendation on optimum irrigation regimes for Teak, *Gmelina, Adina*, and *Cadamba* both under block and boundary planting.
2. Recommendation on optimum tree density for Ailanthus, Neem and Pongam under rainfed conditions both under block and boundary planting.
3. Information on influence of silviculture interventions on wood traits.
4. Knowledge on compatibility of trees under mixed planting systems both under block and boundary planting (both in rainfed and irrigated conditions).
5. Feasibility on minimizing planting stock requirement for teak plantation through mixed planting with Nitrogen fixing trees with cost cutting in planting stock to the tune of 75%.
6. Information on carbon sequestration potential under varied silvicultural interventions.
7. Financial analysis of varied silvicutural interventions to assess on economic feasibility of the silvicultural interventions to be recommended.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	**1st Yr**	**2nd Yr**	**3rd Yr**	**4th Yr**	**5th Yr**	**Total**
Recurring						
Salary – Field Assistant - 8	8.64	8.64	8.64	8.64	17.28	51.84
Consumables	4	4	4	4	8	24
Travel	4	8	8	4	8	32
Contingencies	4	4	4	4	8	24
Planting stock production	4.5	3	0	0	0	7.5
Establishment & maintenance of field trials – 43 ha	0	10.5	9	4.5	9	33
Non-recurring						
Equipment & Accessories – Drip irrigation systems for 16 ha plots	0	0	0	0	0	0
Total	**25.14**	**38.14**	**33.64**	**25.14**	**50.28**	**172.34**
Management cost @20%	5.03	7.63	6.73	5.03	10.06	34.47
Grand Total	**30.17**	**45.77**	**40.37**	**30.17**	**60.34**	**206.81**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1) Studies on the effect of various micro-irrigation regimes	8.28	7.05	0	0	0	15.33
2) Investigation on effect of various tree density rainfed plantations	0	5.58	6.54	0	0	12.12
3) Investigation on effect of various tree density in Adina plantations	4.21	5.86	4.07	4.40	9.02	27.56
4) Investigation on effect of mixed planting of *Casuarina* and *Acacia auriculiformis* with Teak	12.65	19.65	23.03	13.54	27.06	95.93
5) Investigation on influences of silvicultural interventions on wood quality	0	0	0	3.6	7.1	10.7
6) Assessment on carbon sequestration potential and financial analysis of plantation under varied silvicultural interventions	0	0	0	3.6	7.1	10.7
Total	**25.14**	**38.14**	**33.64**	**25.14**	**50.28**	**172.34**
Management cost @20%	5.03	7.63	6.73	5.03	10.06	34.47
Grand Total	**30.17**	**45.77**	**40.37**	**30.17**	**60.34**	**206.81**

Augmentation of ecosystem services:
The project will optimize the water regime of important plantation species, tree density and silvicultural practices to enhance productivity and carbon sequestration.

[Key words: Silvicultural interventions, productivity enhancement, carbon sequestration, optimum tree density]

4.1.19 AICRP-19: Assessment of water requirement of different forest tree species and its impact on subsoil moisture

Project Duration: Four Years

Project outlay: Rs. 309.98 lakhs

Justification for the Project:
With the growing population and overall development of the country, there is exponential increase in demand of water. Various parts of the country are already facing shortage of water availability. Temporal and spatial distribution of rainfall in the Indian subcontinent is highly uneven. Monsoon accounts for 75-80% of the annual rainfall in the country. Most part of the year is dry and most of the stream discharge during this period is supplemented by ground water. Most of rivers originate from forests and are mainly supported by ground water during the lean season. The ground water is basically the subsurface flow and the base flow components that infiltrate in to subsoil after precipitation. The parameters like soil, geology, slope basin shapes which affect the discharge are invariable. Parameters like forest type, species, canopy density etc which affect the stream discharge although having smaller role still becomes more important for managing and manipulating the stream discharge. Keeping in view the increasing water shortage

felt in various parts of the country during non-monsoon period, manipulation of stream discharge by manipulating the vegetative parameters has now become more significant. It is therefore important to undertake a long term study to test various important forestry species normally used by the forest departments for the plantation in various states under different climatic conditions for their water demand, so that a protocol may be developed for the suitability of various forestry species under different climatic conditions, with an objective to maximize the water yield.

Under the proposed study the transpiration requirement of selected forest species shall be quantified. The cumulative effect of the evapo-transpiration and infiltration on the soil moisture conditions in the root zone shall also be monitored. It will help decision/policy makers in taking decision to select the suitable species under different climatic conditions, so as to ensure higher infiltration and minimize the transpiration losses to maximize the lean seasonal flow.

Objectives of the project:

Long Term objective

To recommend suitable forest tree species for plantation under different climatic conditions to maximise water yield from a watershed.

Short Term objectives

1. To quantify water requirement for transpiration of selected forest tree species commonly used for plantation by various State Forest Departments.
2. To quantify the cumulative effect of evapotranspiration and infiltration on subsoil moisture.
3. To develop correlation between transpiration rate and subsoil moisture status for species under study

Deliverables from the project:

1. Identifying the suitable forest species (from the tested species) for plantation under different rainfall conditions in the country with an objective to maximize water yield from a catchment.
2. Information on total water requirement for transpiration of a tree species under investigation
3. Correlation between status of subsoil moisture and water requirement for transpiration of species.
4. The quantification of transpiration losses and subsoil moisture status of a forested watershed.
5. Information on soil moisture dynamics in effective root zone.
6. Transpiration dynamics of different forest tree species
7. Relation between soil properties and infiltration rate

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**Total**
1. Recurring					
Salary (JRF-1 @ Rs. 16000/-)	3.84	7.68	8.16	8.64	28.32
FRE (including soil testing and fencing)	13.00	13.50	5.00	4.00	35.50
Consumables	0.70	1.00	1.00	1.00	3.70
Travel	4.30	6.00	4.50	3.80	18.60
Contingency	1.80	2.80	1.80	1.80	8.20
2. Non-Recurring (Equipment & Accessory)	164.00	-	-	-	164.00
Total	**187.64**	**30.98**	**20.46**	**19.24**	**258.32**
Management cost @20%	**37.53**	**6.20**	**4.09**	**3.85**	**51.66**
Grand Total	**225.17**	**37.18**	**24.55**	**23.09**	**309.98**

Component wise budget summary (Rs. in lakhs):

Components	1 Year	2 Year	3 Year	4 Year	Total
1: Establishment of experimental set up for assessment of transpiration of different forest tree species, periodical data retrieval for analysis and compilation of transpiration and rainfall	62.23	9.69	6.14	5.69	83.75
2: Soil profiling and identification of root zone of the species, installation of soil moisture sensors at selected sites to establish the field trial for the study of soil moisture dynamics in effective root zone and periodical retrieval of the component	62.23	9.69	6.14	5.69	83.75
3: Measurement of soil properties such as texture, bulk density, porosity, hydraulic conductivity, organic carbon, content, infiltration rate etc for developing soil moisture characteristic curve for different sites	62.23	9.69	6.14	5.69	83.75
4: Compilation of data and analysis on annual basis for all institutes for all three outputs. Developing correlation between output 1 and output 2 with output 3 as a variable for preparation of midterm, draft and final report	0.96	1.92	2.04	2.16	7.08
Total	**187.64**	**30.98**	**20.46**	**19.24**	**258.32**
Management cost @20%	**37.53**	**6.20**	**4.09**	**3.85**	**51.66**
Grand Total	**225.17**	**37.18**	**24.55**	**23.09**	**309.98**

Augmentation of ecosystem services:
Water budgeting is important considering future availability. This project will help in deciding the type of species that are required to be planted.

[Key words: water requirement of forest tree species, impact on subsoil moisture, forest hydrology]

3.1.20 AICRP-20: Development of bio-pesticide products/formulations from extracts of tree borne oil seeds and tissues of wild plants for management of insect pests

Duration of the Projects: 5 Years

Total Budget Outlay: Rs. 270.24 lakhs

Justification for the Project:
In 1990s renewed interest stemmed for the use of botanical pesticides on realizing the impact on health and environment that the synthetic insecticides cause, and their presence in food.

In the past few decades, the interest in use of plant products of natural origin with low toxicity has increased. Higher plants contain a wide spectrum of secondary metabolites such as phenols, flavonoids, quinones, tannins, essential oils, alkaloids, saponins and sterols. Such plant-derived chemicals may be exploited for their different biological properties.

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Forest is a treasure house of diverse flora and fauna. Opportunities for bio-prospecting of forest resources are enormous. Development of bio-pesticides, including plant derivatives and natural enemies of insect pests available in forests ecosystems, is one of the potential areas which need to be explored. Institute like IFGTB has already developed bio-pesticides based on plant extracts and non edible tree borne seed oil with significant bioefficacy. The biopesticide named ***Hy-Act*** using seed oil of *Hydnocarpus pentandra* was pre-formulated against teak defoliator *Hyblea purea*, and ailanthus defoliator *Eligma narcissus*, and **Tree PAL^{H}** a new bio-pesticide formulation was made from essential oil of *Lantana camara*, seed oil of *Pongamia pinnata*. Further **Crawl clean** – Botanicals based Bio-pesticide (powder formulation) has also been developed for the management of sap suckers in particular Papaya mealybug, *Paracoccus marginatus* which is also an important pest of many tree species. Of the above bio-pesticidal formulations products such as **Tree PAL^{H}** (non edible seed oil based) and **Crawl clean** (plant tissue based) may be considered for multi locational and multi tree crops pests evaluation across the country to make them into market available bio-pesticides and to use them in forestry.

Further, continued efforts have been made by ICFRE Institutes to explore more active principles from various unexplored forest resources including tree borne oil seeds known to have bio-pesticide properties. Oils extracted from some of the tree borne oilseeds (tree- oilseeds for short, also known as non-edible or minor oilseeds) viz, *Calophyl luminophyllum* (Surpan/Punnai), *Hydnocarpus pentandra* (Garudphal/ Maravattai) and *Quassia indica* (Nibam), *Moringa oleifera* (murungai), *Pongamia pinnata* (pongam) and *Sapindus emarginatus* (soap nut tree) are reported as potent sources of natural pesticides.

Globally bio-pesticides including microbials and plant based products are engaged in commercial agriculture and horticulture in a significant level due to interest in organic production, food safety and environmental concerns. Any efforts to identify promising forestry based products will be highly appreciated full in national and global markets. Thus the present project is proposed with following objectives.

Objectives of the Project:

Long term: To develop potential biopesticide formulations for use in forestry and possibly extend to National and Intemational Agriculture and Horticulture Markets.

Short term:

- To tests the efficacy of the biopesticidal formulations of **TreePAL^{H}**and **Crawl clean** at multi locations across the country against targeted forest pests.
- Bioassay directed characterization of active principles or compounds from selected tree borne oil seeds and plant tissues.
- To develop effective biopesticidal formulations using most effective bioactive principles and appropriate formulation features for the management of insect pests of forestry crops.

Deliverables from the Project:

1. An extensive efficacy and safety database will be completed and documented on Biopesticides products developed by ICFRE for inhouse and commercialization efforts.
2. A product dossier will be created on key plant oils and it's bioactive markers of the products for pest control and for it's commercial prospects.
3. Innovative formulations with suitable formulation inerts will be developed and tested for it values.
4. Key product registration data will be completed for commercialization in India

5. Based on product innovations, multiple commercial collaboration will be made in India and possibly explored in International markets as well.
6. Commercialize products in India and further explore International sales.
7. Achieve multiple Licensing of suitable technologies to commercial entities in India and possibly in International segments.
8. Dissemination of techniques, technologies and products to stake holders through training programmes
9. Take leadership in developing biopesticides specific for forest pests
10. The technology/techniques developed in developing biopesticide formulations (using locally available resources and can easily be learnt and adopted) will be disseminated to the local people including the tribal community which would help in creation of job opportunities and poverty alleviation.

Summary of Budget estimate (Rs. in lakhs)

Heads	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Fellowship/scholarship	9.60	9.60	10.80	10.80	10.80	**51.60**
M & S (Consumables)	5.50	6.00	5.50	6.00	5.00	**28.00**
Field Research Expenses	13.50	15.75	15.75	15.75	12.75	**73.50**
Travelling Expenses	4.75	6.25	6.25	6.00	4.75	**28.00**
Instruments (Capital)	44.10	-	-	-	-	**44.10**
Total	**77.45**	**37.60**	**38.30**	**38.55**	**33.30**	**225.20**
Management cost @20%	**15.49**	**7.52**	**7.66**	**7.71**	**6.66**	**45.04**
Grand Total	**92.94**	**45.12**	**45.96**	**46.26**	**39.96**	**270.24**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development and Evaluation of Biopesticides	**77.45**	**37.60**	**38.30**	**38.55**	**33.30**	**225.20**
Management cost @ 20%	**15.49**	**7.52**	**7.66**	**7.71**	**6.66**	**45.04**
Grand Total	**92.94**	**45.12**	**45.96**	**46.26**	**39.96**	**270.24**

Augmentation of ecosystem services:
Bio-pesticide will provide eco-friendly alternative for managing inspect pest of forest species.

[Key words: bio-pesticide, tree borne oilseeds]

3.1.21 AICRP-21: Development of superior bio-fertilizers for enhanced plant productivity

Duration of the project: Five years

Total budget outlay: Rs. 192.50 Lakhs

Justification for the Project:
Bio-fertilizers play a very significant role in improving soil fertility by fixing atmospheric nitrogen; solublise insoluble soil nutrients and produces plant growth promoting substances. A lot of commercial bio-fertilizer products are being made available for various agriculture crops. However, the same for forestry crops are very meager. ICFRE developed a range of bio-fertilizer

products such as VAM fungal bio-fertilizer (*IFGTB Tree Growth Booster*), *Frankia– (Nitrogen fixer),* Potash mobilizer and *Trichoderma viride* (Tricho-K), which are being used by farmers and tree growers of southern India and found more effective on growth enhancement of different tree crops in tree seedlings in nursery. However, their better performance in different field conditions has to be studied further so as to identify better efficient bio-fertilizers and their synergistic effect both on soil ecosystem and tree crops for enhancing the greenery *vis-a-vis* forest productivity especially in degraded areas.

Despite huge gap in demand and supply, bio-fertilizer production in India faces major problems with regard to statutory regulations for production and certification. All of these points to the fact that the bio-fertilizer production is significantly low and there is lack of specific information with regard to use of beneficial microbes as bio-fertilizers in forestry tree species. In this context, the proposed project is proposed.

ICFRE has taken up Forest Genetic Resources Management (FGRM) and Tree Improvement programme for the economically important tree species, which are affected by insect pests and diseases leading to heavy mortality. Bio-fertilizers and bio-control agents would yield much promising results in high quality healthy seedling production vis-à-vis growth improvement of these targeted tree species.

Research has been under taken at ICFRE on the status of different beneficial microorganisms in association with many tree species in varied ecosystems. These beneficial microorganisms have been tested in nurseries for quality seedling production and developed efficient bio-fertilizers. But, these bio-fertilizers are not tested in field conditions. Although many bio-fertilizers are developed and marketed, their efficacy on growth improvement of many tree species are not evaluated so far. Moreover, utilization of bio-fertilizers for better forest productivity by the farming communities is very meager and the project envisages creating awareness among various stake holders about the holistic benefits of bio-fertilizers both in terms of crop yield and improvement of soil health.

Objectives of the project

1. To evaluate the efficacy of different bio-fertilizers (both commercial and IFGTB developed) on quality seedling production in nursery for developing potential bio-fertilizer consortia.
2. To determine the bio-control efficacy of bio-fertilizers against soil/root borne pathogens of seedlings in nursery.
3. To assess out-planting performance of bio-fertilizers inoculated plants in different field conditions.
4. To conduct training-cum demonstration about the bio-fertilizer production technology to various stakeholders to improve their livelihood.

Deliverable from the project

1. Identification of potential bio-fertilizer consortia (N-fixer, P-solubilizer, P-mobilizer and K-mobilizer) for application to different forestry crops in tree nurseries for healthy and quality planting stock production.
2. Efficient microbial bio-control agents for important soil and root borne pathogens in tree nurseries.
3. Out planting performance of the bio-fertilizer inoculated plants for selection and recommendation of effective bio-fertilizer/consortia.

4. Establishment of "VAM Bio-fertilizer Production Unit" facility net-working Institutes of ICFRE.
5. Establishment of germplasm bank of efficient bio-fertilizers at ICFRE as a reference collection.
6. Dissemination of cost-effective VAM bio-fertilizer production technology to women self-help groups, farmers, industries and other stakeholders for sustainable production and livelihood augmentation of the rural communities.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	1 Year	2 Year	3 Year	4 Year	5 Year	Total
Recurring						
Salary (JRF)	11.64	11.64	14.88	14.88	14.88	**67.92**
Consumables	2.25	4.25	3.25	3.00	2.25	**15.00**
Travel	1.50	3.75	4.50	3.75	3.00	**16.50**
Contingencies	7.50	18.00	5.25	4.50	3.75	**39.00**
Non recurring						
Equipment & accessories (Establishment bio-fertilizer production unit)	10.00	0.00	12.00	0.00	0.00	**22.00**
Total	**32.89**	**37.64**	**39.88**	**26.13**	**23.88**	**160.42**
Management cost @20%	**6.58**	**7.53**	**7.98**	**5.23**	**4.78**	**32.08**
Grand Total	**39.47**	**45.17**	**47.86**	**31.36**	**28.66**	**192.50**
Names of equipment	1. Culture shaker; 2. BOD incubator					
	3. Hot air oven; 4. Autoclave					

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development of Superior Bio-fertilizer Products for Enhanced Plant Productivity	**32.89**	**37.64**	**39.88**	**26.13**	**23.88**	**160.42**
Management cost @ 20%	**6.58**	**7.53**	**7.98**	**5.23**	**4.78**	**32.08**
Grand Total	**39.47**	**45.17**	**47.86**	**31.36**	**28.66**	**192.50**

Augmentation of ecosystem services:
Biofertiliser will help in producing healthy plants in forest nurseries and for application on forest species, thus supporting productivity.

[Key words: bio-fertilizers, development, bio-control efficacy, dissemination, productivity, testing]

3.1.22 AICRP-22: Preparation of Forest Soil Health Cards under different Forest Vegetations in all the Forest Divisions of India

Duration of the Project: 3 years

Total Budget Outlay: Rs. 2075.71 Lakhs

Justification for the Project:

Soil Health Card Scheme for agriculture soils sponsored by Government of India was launched by the Hon'ble Prime Minister on 19 February 2015. This scheme has been approved for implementation during the XII Five Year Plan with an outlay of Rs. 568.54 crore. It aims at issuing SHCs to each one of the 140 million farmers of the country once in a cycle of 3 years on a continuous basis. This will facilitate building up of the soil database of the country and monitor the changes occurring in the soil health status periodically especially in agricultural sector. However, forest area of the India has not been covered in the present scheme and therefore, the project is proposed to undertake a task to prepare Forest Soil Health Card in the country. The proposed study will provide information about the relationship between vegetation and soil quality parameters which may be useful for State Forest Departments (SFD's) for sustainable management of the forests, plantation growers to identify the suitable place for tree growing in relation to soil quality, improve the forest soil health and in turn the forest health and productivity and ultimately the benefits will reach to the rural masses. Soil heath card will be very much useful for identifying the soil related constraints of the areas.

Objectives of the project:

1. To prepare forest soil health cards under different vegetations and adjoining degraded land in all the Forest Divisions to enhance deficient nutrients through sustainable management practices and making plantations more successful
2. To diagnose forest soil fertility related constraints with the help of standard procedures, uniform sampling, data compilation and analysis thereof and to suggest divisional level management practices
3. To promote soil test-based nutrient management practices in different forest vegetations in the forest divisions for enhancing nutrient use efficiency
4. To build capacities of officials / field level staff of SFD's for promoting nutrient management practices for effective plantations
5. To strengthen the Forest Soil Testing Laboratories and develop a network with state owned soil testing laboratories.
6. To launch a forest soil health card portal on website for easy access to the various stakeholders.

Major Deliverables from the project:

- Identification of soil related constraints
- Soil fertility status of different vegetation
- Management strategies for sustainable productivity of forests
- Building of forest soil database.
- Forest Soil Health Cards will be generated at the level of State Forest Divisions.
- Single point information dissemination for end users through web portal.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Total (Rs.)
Recurring				
Salary	113.41	113.41	120.93	347.76
Consumables	72.00	144.00	72.00	288.00
Travel	96.00	96.00	96.00	**288.00**
Field Research	110.00	120.00	48.00	278

Contingencies	10.00	10.00	10.00	30.00
Non-Recurring				
Equipment	454	4.00		**458**
Total	**855.41**	**487.41**	**346.93**	**1689.76**
Management cost @20%	**171.08**	**97.48**	**69.39**	**337.95**
Grand Total	**1026.49**	**584.89**	**416.32**	**2027.71**

Component wise budget summary (Rs. in lakhs):

Components	**Year 1**	**Year 2**	**Year 3**	**Total**
Capacity Building	67	52		119
Strengthening of Soil Testing Laboratories	472	22	18	512
Site Selection and Soil Sample Collection	111	126	111	348
Soil Sample Analysis	185.41	257.41	192.94	635.76
Development of Forest Soil Health Card Portal, Technical Manual, Printing / Publication/ Soil Health cards and Report writing etc	20	30	25	75
Total	855.41	487.41	346.94	1689.76
Management Cost @ 20%	171.08	97.48	69.39	337.95
Grand Total	1026.49	584.89	416.33	2027.71

Augmentation of ecosystem services:
Information on soil health is important to decide on the nature of plantation to be carried out on the forest land and the treatment that is required for better productivity.

[**Key words:** Forest soil health, Soil fertility, nutrient management practices, forest productivity]

3.1.23 AICRP 23: Genetic improvement and value addition of *Madhuca longifolia*

Duration of the project: 5 years

Total Budget Outlay: Rs. 284.64 Lakhs

Justification of the project:
This project aims at selecting phenotypically superior trees of *Madhuca longifolia* and production of improved planting material from them. It also aims at assessing the status of its natural regeneration and carbon sequestration potential. Value added products will be prepared and their shelf life and nutraceutical values will be determined. Various ITKs related to post harvest practices will also be documented. The project will be implemented by four ICFRE Institutes and one centre and coordinated by TFRI as the lead institute.

Wide genetic variability is expected to be found in mahua populations with respect to amount of sugar in flowers and oil and saponins content in seeds. This variability provides scope for selection of high yielding populations and genetic improvement in future. The gestation period of the mahua trees would be reduced by planting grafted plants. The high yielding trees in the populations should be conserved and multiplied. More and more mahua trees should be planted in plantations and in the fields of farmers under agroforestry systems to increase availability of

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flowers, fruits and seeds. This will help to meet the growing demand of sugar from mahua flowers and mahua butter from seeds. Mahua flowers have multidimensional industrial applicability especially as a natural, renewable, organic source of raw material for liquid sweetener with antioxidant property. Flowers can be utilized for a number of uses in food industry and pharmaceutical industry. Similarly, seed oil can be used for production of mahua butter which is used in soap industry and also as edible oil.

Objectives of the project

1. To select and characterize germplasm using morphological and physico-chemical markers.
2. To study the status of natural regeneration in areas of its distribution.
3. To assess carbon stock and annual sequestration in mahua trees.
4. To develop value added products and assess their shelf life and nutraceutical value.
5. To estimate genetic diversity parameters at molecular level.
6. To produce quality planting material from selected phenotypically superior trees.
7. To establish vegetative multiplication gardens/clonal seed orchards at different locations.
8. To document ITKs for post harvest techniques of mahua

Deliverables from the project:

1. Selection of CPTs.
2. Status of natural regeneration and carbon sequestration will be quantified; Genetic diversity analysis will be accomplished.
3. Production of quality planting material. QPM will be assembled at various locations in VMGs for future genetic improvement.
4. Value added products from flowers, seeds and other plant parts will be developed. Improvement in post harvesting techniques. Documentation of ITKs. Income generation of stakeholders through improved post harvesting techniques.
5. Evaluation of shelf life and nutraceutical values of value added products will be determined. Findings will be disseminated through trainings, videos films and printed material.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	15	15	16.2	16.2	16.2	78.6
M&S (Consumable)	5	7	7	7	7	33
Travel	5.2	5.3	5.3	5.3	5.2	26.3
Field Research Expenses (FRE)	5	7	11	11	14	48
Contingencies	2.5	3.5	3.5	3.5	4.5	17.5
Non-recurring						
Equipment and accessories	33.8					33.8
Total	**66.5**	**37.8**	**43**	**43**	**46.9**	**237.2**
Management cost @20%	**13.3**	**7.56**	**8.6**	**8.6**	**9.38**	**47.44**
Grand Total	**79.8**	**45.36**	**51.6**	**51.6**	**56.28**	**284.64**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Genetic improvement, genetic diversity analysis, phytochemical evaluation and development of quality planting material of mahua	49.10	20.08	25.07	23.56	28.30	46.9
2: Natural regeneration status of mahua and assessment of carbon sequestration	7.89	7.00	4.00	8.00	6.00	18.6
3: Development of value added products and evaluation of the developed products	6.60	7.50	8.43	6.96	7.86	12.6
4: ITKs documentation and Extension activities for livelihood support	2.91	3.22	5.50	4.48	4.74	4.74
Total	**66.5**	**37.8**	**43**	**43**	**46.9**	**237.2**
Management cost @20%	**13.3**	**7.56**	**8.6**	**8.6**	**9.38**	**47.44**
Grand Total	**79.8**	**45.36**	**51.6**	**51.6**	**56.28**	**284.64**

Augmentation of ecosystem services:
Madhuca longifolia is a species which provides security to the forest dependent communities. Improving planting material and value addition will help local communities.

[**Key words:** *Madhuca longifolia*, improved planting material, Value added products, natural regeneration, vegetative multiplication gardens, clonal seed orchards]

3.1.24 AICRP 24: Combating desertification by enhancing vegetation cover and people livelihoods in degraded drylands and deserts of India

Duration of project: 5 Years

Project of the project outlay: 888.6 Lakhs

Justification of the project:
Despite severities of climatic and edaphic conditions in dry areas of India, there is still enough opportunity to restore and enhance diversity and productivity of these lands for environmental amelioration, reduced degradation and enhanced people livelihood. This coordinated research and extension project involves survey assessment of different species for listing best fitting species/ variety or strains of trees, shrubs and grasses for their uses in restoration of different types of degraded sites, people mobilization by developing region specific live fencing techniques on farmers lands for improved protection from stray domestic/wild animals, and field oriented restorations of degraded hills, reactivated sand dunes, ravine areas and saline lands. This also includes assessment of different restoration works on recovery of indigenous flora and their diversity, soil water and soil organic carbon and nutrient status and more importantly selecting best models/technologies with high diversity and productivity and high rate of carbon sequestration and carbon storage in both different plant habits and soils. These restoration works will be carried out in different landscape of hot arid region of north-western India, cold arid region of western Himalayas and Chambal river basin areas as demonstration models.

Knowledge extension to the people will be through, people interaction, exposure visits and workshop. The plantations and models developed as a whole helps increase green cover, biodiversity and productivity, enhance people livelihood and combat desertification with co-benfits of carbon sequestration and climate change adaptation and mitigation. This will add to help people better adapt and mitigate the effects of climate change.

Objectives of the project:

Broad objectives of this research proposal are as follows:

1. Survey and selection of indigenous herbs/grass, shrubs, and trees species and their combinations for effective use in various restoration programmes
2. People mobilization and development of live fencing around a cluster of farmer's field for soil and water conservation to enhance farm production and people livelihoods.
3. Restoration of degraded hills, hillslopes, sand dunes, ravines and saline areas through introduction of new genotypes/ varieties/ species and natural resource conservation in different landscape.
4. Assessment of the impact of different species under afforestation/reforestation on vegetation recovery, soil health improvement and carbon storage.
5. Popularization of ecological, environmental and economic benefits of improved practices of mitigation of the effect of land degradation and desertification among the local people

Major Deliverables of the project:

1. Development of water harvesting structure in sites for restoration of various types of degraded lands like degraded hills, dunes, ravine and saline lands.
2. A model of people participation through farm protection and livelihood improvements.
3. Various demonstrations sites under restorations works
4. Data on plantation survival and growth.
5. Data on farm protection and crop yield and changes in livelihoods.
6. A detailed knowledge on the ecological and environmental benefits of combating desertification.
7. Best combination of trees, shrubs and grass or their combinations for their use in restoration programmes on reducing wind and water erosion, stabilizing sand dunes and hillslopes and rehabilitation of degraded hills, ravine and saline lands.
8. Best species for afforestation/reforestation for enhanced survival, improved soil health, rate of carbon sequestration and carbon storage along with people livelihood support.
9. Demonstration models on restoration of degraded hills, ravine and saline lands and effective control measures of sand drift.
10. Improved practices and their effective adoption in mitigating the effect of land degradation and desertification involving the local people.
11. Published leaflets, pamphlets and other extension materials for distribution among the stakeholders.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year-wise fund Requirement					
	1 Yr	2 Yr	3 Yr	4 Yr	5 Yr	Total
Recurring						
Salaries						
Scientific/Technical Manpower. JRFs/ SRF (from third year onwards) - (08 Nos)	24.30	32.40	36.29	36.29	72.58	201.85

Project Assistants (08 Nos.)	7.776	10.37	10.37	10.37	20.72	59.62
Sub-total	**32.08**	**42.77**	**46.66**	**46.66**	**87.29**	**261.47**
Consumables						
FRE/Wages	88.00	49.00	47.20	45.70	90.70	320.60
Stationery / OE	1.00	1.75	1.50	2.00	22.75	11.00
Materials & Supply	13.5	12.00	10.50	10.00	17.00	63.00
People mobilization and extension activities			1.00	2.50	15.00	18.50
Workshop					20	20.00
Subtotal	**102.50**	**62.75**	**60.20**	**60.20**	**147.45**	**433.10**
Travel						
POL/Hiring of vehicle	7.10	8.60	9.10	7.80	16.60	49.20
T.E	7.00	9.30	8.75	9.00	16.00	50.05
Subtotal	**14.10**	**17.90**	**17.85**	**16.80**	**32.60**	**99.25**
Contingency	13.25	9.50	8.00	10.00	18.00	58.75
Non-recurring						
Equipment and accessories	24.50	8.00	2.00	-	-	34.50
Sub total	**24.50**	**8.00**	**2.00**	-	-	**34.50**
Total	**168.3**	**121.2**	**112.3**	**108.3**	**230.6**	**740.5**
Management cost @20%	**33.65**	**24.23**	**22.45**	**21.65**	**46.10**	**148.10**
Grand Total	**201.9**	**145.4**	**134.7**	**129.9**	**276.7**	**888.6**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1) Survey and selection of indigenous herbs/grass, shrubs, and trees species and their combinations for their effective use in various restoration programmes.	34.00	22.95	20.80	20.22	41.99	236.5
2) Development of live fencing around a cluster of farmer's field for soil and water conservation and enhance farm production and people livelihoods.	29.24	24.15	22.85	22.02	46.83	194.51
3) Restoration of degraded hills, hill slopes, sand dunes, ravines and saline areas through introduction of new strains/ varieties/ species and natural resource conservation in different landscape	80.29	53.65	49.25	42.17	67.09	147.68
4) Assessment of the impact of different species under afforestation/reforestation on vegetation recovery, soil health improvement and carbon storage.	24.77	20.45	18.40	19.37	39.59	74.59
5) Popularization of ecological, environmental and economic benefits of improved practices of mitigation of the effect of land degradation and			1.00	4.50	35.00	35.00

desertification among the local people						
Total	168.36	121.20	112.28	108.29	230.56	7400.
Management cost @20%	**33.65**	**24.23**	**22.45**	**21.65**	**46.1**	**148.10**
Grand Total	**201.9**	**145.4**	**134.7**	**129.9**	**276.6**	**888.6**

Augmentation of ecosystem services:
Species / structures suitable for restoration work, water conservation, vegetation recovery, soil health improvement, demonstration models, livelihood enhancement will improve the ecosystem goods and services.

[**Key words:** combating desertification, enhancing vegetation cover]

3.1.25 AICRP 25: Domestication, genetic characterization, improvement and diversified utilization of poplars

Duration of the project: 5 years

Budget of the project: Rs. 288.60 Lakhs

Justification of the project:
The project has been designed to overcome technical problems that hinder cultivation and utilization of poplars in India. Under the project, *Populus ciliata*, *P. alba* and *P. gamblei* are proposed to be taken up for development of propagation and plantation techniques. Native populations of the three species will be characterized through DNA markers. Superior germplasm of these species will be collected and tested in field trials. Wood anatomy and physical and mechanical properties are proposed to be tested for the native poplar species. Problems of pests and diseases are scheduled to be studied and managed for these species as well as for *P. deltoides,* a popular exotic agroforestry species. *P. deltoides* will also be taken up for development of new value-added wood products and testing of promising clones in multilocation trials.

- *Populus alba* occurs in small pockets around streams, depressions or irrigated fields. Its natural resources are overexploited and are inadequate to meet the needs of local communities. Appropriate low-cost soil moisture conservation measures might allow planting *Populus alba* in larger area.
- *P. alba* tolerates extremely low temperatures in cold desert region of Himachal Pradesh and Jammu and Kashmir. It might be possible to plant it in similar site conditions in Uttarakhand and Arunachal Pradesh where very few woody species are available. Similarly, the fast-growing native poplar *P. gamblei* merits testing for planting outside natural distribution range.
- Propagation and cultivation protocols are not available for native poplar species. Such protocols are crucial to promoting their planting in forest and outside forest.
- Germplasm of native poplars and *P. deltoides clones* have not been characterized. Protocol is not available to identify them on the basis of DNA.
- Quality planting material is not available for native poplars due to inadequate research on improvement of these species. Several clones of *Populus deltoides* are available with various agencies in India; best clones need to be identified for planting on different site conditions based on field trials.

- Native and exotic poplars are facing high incidence of insect-pest and diseases. Protection measures are required to be developed against such biotic factors.
- Wood properties on native poplars have not been adequately studied to allow their effective utilization. The range of wood products of *P. deltoides* is very narrow due to which its market is limited, the demand and prices fluctuate widely and growers in large area find it difficult to sell poplar wood in local market.

Objectives of the projects:

1. Standardization of propagation techniques and cultural practices for native poplars
2. Introduction trials of *Populus alba* in high altitude areas of Uttarakhand and Arunachal Pradesh and *P. gamblei* in Gangetic plains
3. Genetic improvement of native and exotic poplar through classical tree improvement and molecular approaches and their DNA characterization
4. Management of major insect pests and diseases of native and exotic poplars
5. Assessment of wood quality and studies on diversification of usage/products from poplars

Major Deliverables of the projects:

1. Assemblage of germplasm of poplars from forests and other agencies
2. Establishment of field trial on low-cost soil moisture conservation measures for *P. alba*
3. Establishment of introduction trials of *P. alba* and *P. gamblei* outside natural distribution range
4. Nursery techniques of indigenous poplars
5. Anatomical characteristics and physical and mechanical properties of *P. gamblei* and *P. ciliata* wood
6. *P. deltoides* wood products viz. oriented strand board, glue-lam, etc.
7. Recombinant DNA technology protocols
8. DNA characteristics of native poplars and clones of *P. deltoides*
9. Package for managing insect pests and diseases
10. Plantation technique of indigenous poplars
11. Growth rate of *P. alba* and *P. gamblei* outside natural distribution range
12. Data on performance of different clones

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	15.84	16.92	18.46	12.96	4.32	68.50
Consumable	18.00	18.50	18.00	6.30	3.30	64.10
Travel	8.00	10.50	8.30	6.80	3.80	37.40
Contingencies	13.00	22.50	15.00	9.00	5.00	64.50
Non-recurring						
Equipment and accessories	6.00	0.00	0.00	0.00	0.00	6.00
Total	**60.84**	**68.42**	**59.76**	**35.06**	**16.42**	**240.50**
Management cost @20%	**12.17**	**13.68**	**11.95**	**7.01**	**3.28**	**48.10**
Grand Total	**73.01**	**82.10**	**71.71**	**42.07**	**19.70**	**288.60**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1: Standardization of silvicultural practices for native poplars	5.00	10.00	8.00	8.00	8.00	39.00
2: Introduction trials of *Populus alba* and *P. gamblei*	0.00	10.00	6.00	6.00	5.00	27.00
3: Genetic improvement	18.00	20.00	20.00	14.00	3.42	75.42
4: Plant protection measures	17.84	10.00	10.00	7.06	0.00	34.90
5: Wood quality and utilisation	20.00	18.42	15.76	0.00	0.00	54.18
Total	**60.84**	**68.42**	**59.76**	**35.06**	**16.42**	**240.50**
Management cost @20%	**12.17**	**13.68**	**11.95**	**7.01**	**3.28**	**48.10**
Grand Total	**73.01**	**82.10**	**71.71**	**42.07**	**19.70**	**288.60**

Augmentation of ecosystem services:
Poplars are the important species for plantation in northern India. It has been extended to Bihar as well. A major source of farmers income is generating considerable amount of livelihood. Continuous improvement in the genetic base, introduction trials in newer areas, improvement in nursery techniques and management of pest and diseases will help further in meeting the demand and store additional carbon.

[**Key words:** *Poplar, P. deltoids, P. gamblei, P. alba, P. ciliata*, Domestication, improvement, Genetic improvement, DNA characterization, Introduction trials, Nursery Techniques, Anatomical characteristics, physical and mechanical properties, managing insect pests and diseases]

3.1.26 AICRP 26: Genetic Improvement of *Azadirachta india* A. Juss. (Neem)

Duration of the project: 5 years (First Phase)

Budget of the project: Rs. 295.46 lakhs

Justification of the project:

Looking into the potential of Neem Coated Urea and its acceptance by the farmers, Ministry of Agriculture in July 2004, included the Neem Coated Urea in FCO. The use of Neem Coated Urea has been found to improve the uptake of N, P and K significantly. Since 2008 the, Ministry of Chemicals and Fertilizers allowed Neem Coated Urea manufacturer to sell NCU at 5% above the MRP, to recover the cost of coating, however cost of Neem kernel Oil and production as such of Neem Coated Urea has increased significantly. As per recent notification dated 25.05.2015 all the urea producers in country shall now be producing 100% urea as NCC in order to improve crop productivity and reduce the subsidy. Balanced use Nitrogen, Phosphorous, Potassium along with the requirements of secondary and micronutrient increase the yield at economic level.

The main thrust of present concept note is to identify seed sources for high aza and oil yielding as well superior genotypes in first five years. In the second Phase of programme quality seed orchards will be developed at suitable locations and superior germplasm will be multiplied through seeds and vegetative means for large scale plantations to meet national demand of Neem oil with high Aza contents.

Some basic studies on reproductive biology (including role of insects in pollination, fruit yield per tree), DNA markers, polyploids and genetic transformation will be part of this programmes for future genetic improvement and management of these plantations. These studies will play significant role in management of these future quality plantations and improvement of overall seed, oil and azadiractin yields.

Objectives of the project:

1. Development of quality Seed Sources or Seed Production Areas, Identification of Superior genotypes across the country for high Aza and oil and Genetic Characterization of high aza and oil yielders
2. To develop genetic transformation methods for frost/cold tolerance
3. Development of Polyploids for high Aza and oil content
4. Generation of haploid population of *Azadirachta indica* through anther-culture for better production of azadirachtin
5. Extraction of Azadirachtin through cell suspension culture
6. Phenology and Reproductive biology studies
7. Genetic Improvement of Neem for high Aza and oil contents

Major Deliverables of the project:

1. Seed sources/ seed production areas to partially fulfill the demand of fertilizer companies and other users for oil and aza.
2. Supply of quality seeds from identified sources for commercial plantations.
3. Establishment of valuable germplasm at different locations for further improvement by selection and developing breeding populations.
4. The data generated in the project on oil and azadirachtin along with climatic data in four years can be used by a team of expert (Statisticians, Plant Physiologist, Geneticists and Programmer) to develop a model for prediction of oil and aza yield of plantations if desired parameters are known.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Salary (PF 14)	28.80	28.80	35.28	35.28	35.28	163.44
Consumables	12.50	13.10	25.26	25.99	21.78	98.63
Travel	10.50	10.65	12.32	12.50	12.70	58.67
Field Research	14.00	14.50	18.05	22.66	21.32	90.53
Contingencies	11.00	11.50	15.05	15.66	16.32	69.53
Total	**76.8**	**78.55**	**105.96**	**112.09**	**107.4**	**480.8**
Management cost @20%	**15.36**	**15.71**	**21.192**	**22.418**	**21.48**	**96.16**
Grand Total	**92.16**	**94.26**	**127.15**	**134.50**	**128.88**	**576.96**

Augmentation of ecosystem services:

Genetic improvement in agroforestry species will enhance farmers income and provide necessary raw material for urea coating, and help improve the soil quality.

[**Key words:** *Azadirachta india,* Neem coated urea, genetic improvement, neem DNA markers]

3.1.27 AICRP 27: Conservation and sustainable management of wild edible fruit species

Duration of the project: 5 years

Budget of the project: 406.37 lakhs

Justification of the project:

The trees in natural habitats are being lost, mainly to widespread deforestation resulting from population growth, the cutting of trees for firewood or charcoal, and in some cases industrial agriculture or other business interests. What's unique about fruit trees is their ability to provide vital nutrients that may otherwise be scarce. Indigenous fruit trees, in particular, have still another added benefit: Naturally adapted to local soils and climates, wild trees often survive environmental stresses better than introduced species. A growing number of researchers, conservationists, and plant domesticators are fighting to reverse the population declines these native fruit trees are experiencing. Scientists are studying their nutritional and ecological benefits and how those properties could be enhanced if the wild trees are domesticated. They're also characterizing the genetic diversity of the trees and working with growers to ensure their successful cultivation, often as new crops, with the potential to transform local agriculture. Farmers are considered a crucial part of preserving the future for indigenous fruit trees, which, in turn, are viewed as a means for improving the livelihoods of poor smallholder farmers in particular. With this present scenario a project is being proposed for surveying the status of some selected wild fruiting species. The ultimate aim is improvement of planting stock, mass production in ex-situ condition, protect natural regeneration, production of value-added products for conservation of natural resources and economic development of rural community.

Objectives of the project:

1. To study the distribution pattern, natural regeneration and ethno-botanical uses of selected wild edible fruit species
2. To identify superior plants of selected wild edible fruit species based on their performance and physical parameters of plant
3. To standardize the techniques of propagation through seeds and vegetative parts for mass multiplication
4. To standardize potting media, irrigation schedule, shade and fertilizer requirements for production of Quality Planting Stock of selected wild edible fruit species
5. To conserve the selected germplasm as seeds and clone.
6. To study the factors affecting sustenance of the species in natural habitat.
7. To produce value added products from wild fruits
8. Extension of the technology for livelihood support

Major Deliverables of the project:

1. Population study will help to select the species preferred by the people for livelihood and food security as well as climatic and edaphic factors affecting it.
2. Conservation of quality germplasm of underutilized edible wild fruit species as seed or clone.
3. Development of propagation techniques of target species through seed or by vegetative means
4. Development of nursery techniques for better growth of seedlings of target species in nursery.

5. The project will be the base for breeding and variety development program for the target species.
6. Conservation of germplasm save the species from being endangered, provide planting material during poor seed year.
7. Maximum harvest quantity to sustain regeneration.
8. Steps to be taken for better regeneration in its natural habitat.

Summary of Budget estimate (Rs. in lakhs)

Budget Head	I year	II Year	III Year	IV Year	V Year	Total
Fellowships	18.06	18.06	18.06	15.9	15.9	85.98
FRE	8.4	18.9	20	22.5	22.5	92.3
Sub Total						
Material & Supply	3.5	3.2	3.16	5	5	19.86
Travel	18.75	18.55	20.5	20	20	97.8
Equipments	25.2	0	0	0	0	25.2
Extension (including trainings etc.)			5	5	7.5	17.5
Total	73.91	58.71	66.72	68.4	70.9	338.64
Management cost @ 20%	14.78	11.74	13.34	13.68	14.18	67.73
Grand Total	88.69	70.45	80.06	82.08	85.08	406.37

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	
1 : To study the distribution pattern, natural regeneration and ethno-botanical uses of selected wild edible fruiting species	30	6.2	7.7	8.55	9.6	62.05
2: To identify superior plants of selected wild edible fruiting species based on their performance and physical parameters of plant	5	6.2	7.6	8.55	8.5	35.85
3: To standardize the techniques of propagation through seeds and vegetative parts for mass multiplication	9.54	10.74	7.6	8.55	8.8	45.23
4: To standardize potting media, irrigation schedule, shade and fertilizer requirements for production of Quality Planting Stock of selected wild edible fruiting species	5	6.2	7.6	8.55	8.8	36.15
5: To conserve the selected germplasm as seeds and clone.	5	6.2	7.6	8.55	8.8	36.15
6: To study the factors affecting sustenance of the species in natural habitat.	5	6.2	7.6	8.55	8.8	36.15

7: To Study the performance of the germplasm in different location	4.37	4.57	5.82	-	-	14.76
8: To produce value added products from wild fruits	5	6.2	7.6	8.55	8.8	36.15
9: Extension of the technology for livelihood support	5	6.2	7.6	8.55	8.8	36.15
Total	73.91	58.71	66.72	68.4	70.9	338.64
Management cost @20%	14.78	11.74	13.34	13.68	14.18	67.73
Grand Total	88.69	70.45	80.06	82.08	85.08	406.37

Augmentation of ecosystem services:
Conservation, domestication, regeneration intervention, nursery techniques, variety development, value addition of selected edible wild fruit will secure the livelihood of forest dependent communities.

[Key words: wild fruit species, value addition, livelihoods, quality planting material]

3.1.28 AICRP 28: Population status, collection, conservation, characterization, and evaluation of genetic resources of Indian Rosewood, *Dalbergia latifolia*

Duration of the project: 5 years

Budget of the project: 504.92 lakhs

Justification of the project:

The Indian Rosewood, *Dalbergia latifolia* is a "Vulnerable" and most precious timber species of India. The species is slow-growing and is threatened by over-exploitation for its timber. Studies carried out in IFGTB, Coimbatore has shown that the population of this species is drastically dwindling in different forest areas of Tamil Nadu and Kerala. In most of the locations, the population is represented by old trees and occurrence of younger trees is much less. Natural regeneration is also very poor. Invasion by exotic weeds like *Lantana camara, Chromolaena odorata, Mikania micrantha* and *Cassia spectabilis* and occurrence of forest fire have been detrimental to the establishment of seedlings and saplings in the forest areas. Concerted efforts are required to conserve the genetic resources, restock the depleting natural population, manage the weed and forest fire and encourage cultivation of the species outside forest areas by developing suitable varieties through systematic tree improvement programmes.

The genetic resources of *D. latifolia* have been over-exploited and large numbers of superior trees are lost forever. Suitable populations are to be identified and conserved as Preservation Plots for long term *in-situ* conservation. The seeds from different populations/ superior trees are to be collected, progenies raised and tested at multi-locations to match genotypes suitable for different ecological situations. The clones/ families assembled are to be characterized and evaluated for ascertaining their genetic superiority. Genetic variations existing in different populations are to be quantified, so as to create baseline data on diversity within and between them. Biotechnological tools such as molecular markers are to be used for understanding mating/ breeding systems in different populations. More data to be generated on seed technology, silvicultural practices, nursery and plantation techniques and root inhabiting micro-symbionts. Agro-forestry models are to be developed to popularize among farmers. Insect

pest and disease problems need utmost attention, so as to develop eco-friendly management practices.

Large scale plantation of Rosewood on commercial scale is yet to take off in India, in spite of its high timber price. Availability of suitable planting materials for commercial cultivation could be one of the major constraints. The tree growers have apprehension to grow the species due to its long rotation period. Developing comparatively fast growing, high quality planting materials suitable for cultivation in different eco-climatic zones along with prescriptions for precision silvicultural practices will help in popularizing Rosewood among the tree growers. Research activities are to be intensified to conserve the species both *in-situ* and *ex-situ* as well as to utilize the full potential of the genetic resources available, so as to meet various requirements.

Objectives of the project:

The broad objectives of this research proposal are:

i) Undertake studies on population structure and natural regeneration in different forest areas.
ii) Selection of superior trees from identified populations.
iii) Clonal propagation of identified superior trees and establishing of Field Gene Bank (FGB).
iv) Characterization and evaluation of the clones.
v) Undertake studies on reproductive biology.
vi) Seed collection, establishment of germplasm banks and progeny trials.
vii) Quantify genetic variation in different populations and creating baseline data on diversity.
viii) Understanding mating/breeding systems in different populations using molecular markers.
ix) Undertake research on seed technology, Silvicultural practices, nursery and plantation techniques, root inhabiting microsymbionts as well as harvesting and selling of timber.
x) Develop agro-forestry models with *D. latifolia* as tree component.
xi) Monitor insect pests and diseases of nurseries and plantations and develop suitable management practices.
xii) Identification of bioactive principles from *D. latifolia*

Major Deliverables of the project:

- Preliminary status of populations and natural regeneration in forest areas
- Information on quantity of the resource available, management practices followed, harvesting, selling etc
- Information on phenology, seed production and dispersal and factors contributing towards successful seedling establishment
- Germplasm assemblage as clones and seeds from different forest areas
- Results of biochemical and molecular characterization
- Information on major pests and diseases and biocontrol agents
- Results of molecular characterization of pathogens
- Eco-friendly management practices for pests and diseases
- Selection of drought and salt tolerant planting stock
- Selection of superior germplasms and site specific clones for raising plantations and agroforestry models

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary JRF (Net) @ Rs.25000/- (4 Nos) &JPF (Non NET) @Rs. 16,000/- (4Nos) plus HRA (10% -30%)	24.00	24.00	26.93	26.93	26.93	128.79
Field Assistant – 4 Nos	19.20	19.20	20.93	20.93	20.93	101.19
Consumables	10.00	10.00	10.00	10.00	10.00	50.00
Travel	9.50	11.50	11.50	9.50	8.50	50.50
Field Research	7.50	11.50	11.50	19.50	14.50	64.50
Contingencies	4.10	4.18	4.18	4.18	4.15	20.79
Non-Recurring						
Work Station	5.00	-	-	-	-	5.00
Total	**79.30**	**80.38**	**85.04**	**91.04**	**85.01**	**420.77**
Management cost @ 20%	**15.86**	**16.08**	**17.01**	**18.21**	**17.00**	**84.15**
Grand Total	**95.16**	**96.46**	**102.05**	**109.25**	**102.01**	**504.92**

Component wise budget summary (Rs. in lakhs):

Component	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Population status, collection, conservation, characterization and evaluation of genetic resources of Indian Rosewood, *Dalbergia latifolia.*	**79.30**	**80.38**	**85.04**	**91.04**	**85.01**	**420.77**
Management cost @20%	**15.86**	**16.08**	**17.01**	**18.21**	**17.00**	**84.15**
Grand Total	**95.16**	**96.46**	**102.05**	**109.25**	**102.01**	**504.92**

Augmentation of ecosystem services:
Conservation, domestication, regeneration intervention, variety development, value addition.

[Key words: Rosewood, *Dalbergia latifolia*, population status, collection, seed, regeneration, conservation, characterization, and evaluation of genetic resources**]**

3.1.29 AICRP 29: Sustainable management of NTFP's through conservation and value addition

Duration of the project: 5 years

Budget of the project: Rs. 677.30 lakhs

Justification of the project:
The natural availability of NTFP's producing trees is depleting in number, and their regeneration in many forest areas has goes down. Till date, the germplasm of only few medicinal plants and other forest species are collected and screened for selection of best population for conservation purposes.

Some species are good source of variety of NTFPs but still underutilized due to the lack of knowledge of processing and value addition.

The incidence of harvest and post-harvest losses remains high at all stages from harvesting to value addition. No well established / weak market linkages between local collectors and users and lack of inadequate capacity and knowledge in NTFP management, the full production potential of NWFP's has not been realized.

Therefore, the study envisaged in the proposed project is to find out conservation strategies of NTFP's yielding species through selection of quality material, multiplication, sustainable collection and their value addition for livelihood support in a synergistic manner. The outcome of the project will help in sustainable management of NTFP's yielding species. Concerted efforts made through the programme would not only helpful in the conservation of species but also benefit its stakeholders through generation of employment across the country.

The conservation of species can best be assured through a process of gradual domestication of NTFP's through higher yields, improved and more consistent quality and control over the time and quantity of harvests reduce pressure on wild resources which results in sustainable utilization. Quality and hygiene are major determinants of price and acceptability.

It is estimated that NTFP's are capable of generating of employment annually, if their potential will fully exploited. The government is committed to increasing employment opportunities, so NTFP's may be one of the first items to be considered. Project will be helpful to launch national drive to intensify propagation, sustainable collection, processing and value addition of NTFPs. Most NTFP's currently provide employment during only part of the year because processing of NTFP's is still poorly developed or some are underexploited. It would increase the employment opportunities for longer period of the year and ensure higher prices for the produce. Further, development of forest based small scale industries for onsite processing and utilization of regional/local NTFP's through participating institutes situated in different climatic conditions, a national drive may be launched. The species selected for study are important in different regions of India because of their commercial value and there is a vast untapped opportunity to bring more NTFP's onto national as well as international markets. Documentation of traditional knowledge of methods of preparations of medicinal formulation of different medicinal plants and their chemical composition will be helpful in the development of lead molecules for drugs.

Tentative list of potential NTFP's yielding species for conservation and value addition, useful parts and proposed studies for participating institute.

Plant species	**Useful part**
TFRI, Jabalpur	
Sapindus mukrossi/ laurifolius	Fruits
Oroxylum indicum	Roots
Acacia conciana	Fruits
Desmodium gangeticum	root
Sterculai urens	gum
Boswellia serrata	gum
Picrorhiza kurroa	roots
Curcuma angustifolia	Tubers

Butea monosperma	*Flowers*
Cassia tora	*Seeds*
CFRHRD Chhindwara	
Picrorhiza kurroa	roots
Desmodium gangeticum	root
Withania somnifera	roots
Gymnema sylvestre	leaves
Tinospora cordifolia	Stem/leaves
Moringa olifera	Leaves, fruits, medicinal value
FRI, Dehradun	
Diploknema butyracea	seeds
Premna latifolia/ mollissima	root
Desmodium gangeticum	root
Uraria picta	root
IFB, Hyderabad	
Gloriosa superba	Roots
Costus speciosus	*Tubers*
Shorea tumbuggaia	Oleoresin
Terminalia pallida	fruits
IFP, Ranchi	
Sapindus mukrossi/ laurifolius	Fruits,
Desmodium gangeticum	Roots
Mesua ferrea	Seed oil and other parts
Embelia ribes	Fruits
HFRI,Shimla	
Podophyllum hexandram	rhizomes
Picrorhiza kurroa	rhizomes
Aconitum hetrophyllum	root
Taxus wallichiana	bark and leaves
RFRI, Jorhat	
Clinogyne dichotoma(Roxb.) Salisb	Stem
Tacca bibracteata Drenth	Tuber, starch yielding
Mangifer asylvatica Roxb.	Fruits
Aoprosa octendra (Buch-Hum) ex D.Don	Bark, leaves, Dye yielding
Hydocarpus kurzii (King) Warb.	Fruit
Phoebe cooperiana	Fruits
Dillenia indica L.	Fruits
Garcinia pedunculataRoxb.	Fruits
Costus speciosus	*Tubers* ,medicinal
AFRI, Jodhpur	
Moringa concanensis	Gum

Balanites aegyptiaca	Fruit
Eclipta alba	Fruits
Acacia concianna	Fruits
Oroxylum indicum	root
Butea monosparma	*Flowers*

Objectives of the project:

In view to focus attention on sustainable management of NTFP's following objectives have been identified:

- To identify best quality germplasm of NTFP's yielding species
- To standardize, domestication and package of practices of propagation/cultivation
- To standardize sustainable harvesting techniques of NTFP's
- To document Indigenous Traditional Knowledge(ITKs) on medicinal formulations used for treatment of different chronic diseases in different regions
- To standardize post harvesting processes and value addition techniques of NTFP's for providing sustainable livelihood
- To develop value chain
- Capacity building of different stakeholders

Major Deliverables of the project:

- Identification of chemically superior germplasm of NTFP's yielding species.
- Protocols for cultivation of NTFP's yielding species.
- Protocols for sustainable harvesting of NTFP's.
- Protocols for post-harvest managements of NTFP's.
- Value added products.
- Knowledge of methods of preparation of ethno-medicinal formulations.
- The findings will be helpful in promotion of onsite processing, value addition and increasing empowerment through small to medium enterprises at local level which would help in creation of job opportunities and poverty elevation.
- Systematic collection, value addition and marketing can help in international trade.
- Research papers, brochures/bulletins etc.

Summary of Budget estimate (Rs. in lakhs):

Head of expenditure	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Recurring:						
Salary (JPF (25) @ Rs. 16,000/- pm and Rs. 18,000/- pm for 3-5 year; Project Assistant (04))	42.24 17.28	42.24 17.28	49.68 17.28	49.68 17.28	49.68 17.28	233.52 86.40
M&S (Consumables)	13.0	13.0	13.0	10.0	4.0	53.00
Travel	15.0	15.0	15.0	12.00	9.0	66.00
FRE	8.0	20.0	20.0	20.0	20.0	88.00
Contingencies	3.5	3.5	3.5	5.5	5.5	21.50
Non-recurring						
Total	**115.02**	**111.02**	**118.46**	**114.46**	**105.46**	**564.42**
Management @ 20%	**23.00**	**22.20**	**23.69**	**22.89**	**31.89**	**112.88**
Grand Total	**138.02**	**133.22**	**142.15**	**137.35**	**191.35**	**677.30**

Component wise budget summary (Rs. in lakhs):

Components	1 Year	2 Year	3 Year	4 Year	5 Year	Total
1: Selection of superior germplasm of NTFP's yielding species	60.50	48.00	40.50	42.46	40.00	231.46
2: Standardization and domestication of propagation methods/ nursery techniques/ cultivation protocols of NTFPs (medicinal and other NTFP's) yielding species	10.00	10.00	10.00	8.00	7.00	45.00
3: Standardization of sustainable harvesting techniques of NTFP's	12.00	12.00	13.46	14.00	8.00	59.46
4: Documentation of traditional knowledge/ information on medicinal formulations used for treatment of chronic diseases in different regions	16.50	16.50	25.00	20.00	15.00	93.00
5: Standardization of post harvesting process and value addition technique of NTFP's for providing sustainable livelihood	16.02	16.02	25.00	25.00	15.46	97.50
6: Developing value chain	-	8.50	4.50	5.00	5.00	23.00
7: Capacity building of different SHGs /SFDs/ people in forest fringes or other stakeholders	-	-	-	-	15.00	15.00
Total	**115.02**	**111.02**	**118.46**	**114.46**	**105.46**	**564.42**
Management cost @20%	**23.00**	**22.20**	**23.69**	**22.89**	**21.09**	**112.88**
Grand Total	**138.02**	**133.22**	**142.15**	**137.35**	**126.55**	**677.30**

Augmentation of ecosystem services:
The project will identify new potential species; develop protocols for value addition and domestification. The project will address the issue of livelihood generation.

[**Key words:** NTFP yielding species for conservation medicinal plants, superior germplasm, propopagation methods, nursery techniques, harvesting techniques, post harvesting processes, value addition, value chain, capacity building, ethno-medicinal formulations, job opportunities and poverty elevation, domestication, package of practices of propagation/ cultivation, documentation of traditional knowledge]

3.1.30 AICRP 30: Development of package of practices on *Gmelina arborea* Roxb. (Khamer or Gamhar) in selected regions of India

Duration of the project: 5 years

Budget of the project: Rs. 441.41 lakhs

Justification of the project:
G. arborea Roxb. is a fast growing, short rotation timber yielding tree species, easy to cultivate, widely grown as plantations from south to south east countries including India. It is preferred due

to its easy establishment either from seeds, cuttings, grows fast, has quality wood characteristics and offers growers rapid returns within 11th year. To adequately promote *Gmelina* in the local and international markets, comprehensive research is to be carried out.

Systematic data on genetic base of *G.arborea* is available for Indian region is not available. There is insufficient quantity of quality planting material (QPM) for large scale plantation. No work has been carried out on quality of *G. arborea* as affected under agroforestry as well as in monoculture. The proposed study will be helpful in selection and assemblage of superior germplasm of *G. arborea* which will ultimately help to increase the productivity of this important timber species. The study also aims to establish clonal trials of *G. arborea* for selection of superior clones in terms of fast growth and disease and insect resistance. The study will also lead to the establishment and standardization of suitable agroforestry systems as per the site specific to increase the uniform wood productivity simultaneously enhance the green cover to mitigate the climate change. This will serve as source of income generation for the farmers and generate avenues in tree farming with assured market price. The study will also help in gathering valuable information on genetic diversity and to establish timber market of *Gmelina and its products*. The proposed project aims to study the variation in the diverse population *Gmelina* in Tamil Nadu and Kerala, Estimation of vegetative and reproductive variations helps for developing conservation strategies. Establishing broad base grafted orchards of *Gmelina* will supply good quality seeds and also helpful for future breeding program. Only few *Gmelina* based agroforestry models were developed restricted to specific site conditions of India. Studies on tree-crop compatibility will suggest the best tree-crop combination to increase multiple crop productivity successfully. Wood properties of *G. arborea* were studied only in neighboring countries outside India due to lack of wood based industry and its finished products is not yet started. Determination of wood quality at different age, effects and standardize for harvesting period of trees in monoculture as well as in agroforestry system. Studies on selection of plus tree, based on wood quality trait to obtain better gain in commercial plantations. Predict the suitability of the species for various end applications based on mechanical properties. Demonstration of prototype products for popularizing the species. There is no standard practice of value chain in marketing of end products. The study would suggest the effective value chain for popularizing the cultivation of this species. *Gmelina* trees are susceptible to the major insect pest at different age of plantation. Hence studies will recommend plant protection measures against these major insect pests. Studies will also quantify the carbon sequestration potential of species in sole plantation as well in major agroforestry models.

Objectives of the project:

- To select and assemble germplasm of *Gmelina arborea from* selected agro-climatic regions of India.
- To establish and evaluate clonal trials of *G. arborea* and estimate genetic diversity using morphological and molecular markers.
- To study floral phenology, pollination ecology and pollen pistil interaction to determine the breeding system of *G. arborea.*
- To establish *G. arborea* based agroforestry systems in the selected regions of India.
- To evaluate tree-crop compatibility (effect on growth and quality of produces) in different agroforestry system.
- To standardize water use efficient model for *Gmelina* plantation by using drip irrigation system.

- To study insect – pest management of *G. arborea* in monoculture as well as in agroforestry system.
- To study effect of biofertilizer / vermi compost / azolla on tree-crop productivity.
- To assess carbon sequestration and reclamation of land under *G.arborea* plantation as well as in agroforestry system.
- In-situ evaluation of wood (density, stiffness, mechanical and physical properties) in standing trees using non-destructive/ less invasive tools to assess variability in the population and selection of mother plants.
- To fabricate prototype products for demonstration.
- To study harvesting practice and suggest appropriate time of harvesting of *Gmelina* wood.
- To study value chain in marketing of *Gmelina* wood products.
- To disseminate package of practices through extension activities and develop farmer's friendly 'mobile app'.

Major Deliverables of the project:

- Establishment of G. *arborea* germplasm banks at all the study sites to supply quality seeds which will be helpful for future breeding programme.
- Establishment of *G. arborea* based agroforestry trials as Multi-locational trials.
- Determination of wood quality traits to obtain better grain in commercial plantations.
- Development and demonstration of package of practices of *G.arborea* for different site conditions of India.
- Determination of quality of *G. arborea* studied using GC - MS.
- Development and demonstration of prototype wood products of *G. arborea.*
- Standardization of harvesting cycle for Gmelina wood .
- Development of model for quantifying carbon sequestration potential of *G.arborea* in monoculture as well as in agroforestry system.
- Development of value chain in marketing of *Gmelina* wood products.
- Development of farmer's friendly 'mobile app' on *G. arborea.*

Summary of Budget estimate (Rs. in lakhs):

Budget Heads	**1 Year**	**2 Year**	**3 Year**	**4 Year**	**5 Year**	**Total**
Fellowship Junior Research Fellow* - (8) (Rs.25,000 per month) and SRF (Rs. 28,000 (3rd yr onwards)	24.00	24.00	26.88	26.88	26.88	128.64
Project assistant – 8	8.64	8.64	8.64	8.64	8.64	43.20
M & S (Consumables)	2.60	1.70	1.45	1.55	1.95	9.25
Field research expenses	15.00	15.00	15.00	1500	15.00	75.00
Travel expenses (TE)	13.25	12.25	11.75	10.25	10.25	57.75
Capital assets	20.00	5.00	5.00	5.00	5.00	40.00
Extension, seminar and printing	1.20	1.50	2.70	2.45	6.15	14.00
Total	**84.69**	**68.09**	**71.42**	**69.77**	**73.87**	**367.84**
Management cost @20%	**16.94**	**13.62**	**14.28**	**13.95**	**14.77**	**73.57**
Grand Total	**101.63**	**81.71**	**85.70**	**83.72**	**88.64**	**441.41**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year3	Year 4	Year 5	Total
1: Selection of phenotypically superior trees from selected agro-climatic regions	15.10	7.00	5.00	5.00	5.00	37.1
2: Production and management of *G.arborea Plants*	10.10	9.00	8.00	8.00	9.00	44.1
3: Establishment and assessment of broad base grafted orchard for breeding and seed production of *Gmelina arborea*	10.10	7.00	9.00	8.07	9.00	43.17
4: Establishment and assessment of *G.arborea* based agroforestry practices	15.30	10.09	10.00	10.70	10.07	56.16
5: Evaluation of wood quality (wood density, wood stiffness, termite resistance, pulping and seasoning time) of different age of *G.arborea* using non-destructive methods	5.00	3.00	5.00	5.00	5.00	23
6: Fabrication of prototype products for demonstration	5.00	3.00	4.00	5.00	5.00	22
7: Integrated Insect – pest management of plantations of *G. arborea* in the study sites.	7.00	7.00	5.02	5.00	5.00	29.02
8: Integrated Organic farming (application of biofertilizer/ vermi compost/ Azolla/FYM) of plantations of *G. arborea* in the study sites.	7.00	7.00	5.10	5.00	3.00	27.1
9: Assessment of water-use efficient model in traditional vs high tech irrigation technique.	10.09	8.00	5.10	5.00	3.00	31.19
10: Assessment of carbon sequestration and reclamation of soil by *G.arborea* in monoculture and intercropping	0. 00	2.00	5.10	3.00	4.00	14.1
11: To study its value chain in marketing of *Gmelina* wood products	0.00	5.00	5.10	5.00	5.40	20.5
12: Capacity building of women, rural youth for skill development. Report writing and submission of PCR	-	-	5.00	5.00	10.40	20.4
Total	**84.69**	**68.09**	**71.42**	**69.77**	**73.87**	367.84
Management cost @20%	**16.94**	**13.62**	**14.28**	**13.95**	**14.77**	**73.57**
Grand Total	**101.63**	**81.71**	**85.70**	**83.72**	**88.64**	**441.41**

Augmentation of ecosystem services:
Gmelina arborea is an important light weight good quality fast grown timber species having all commercial value. The work on this species will add a new species for plantation in agroforestry and will help in carbon sequestration and livelihood generation.

[**Key words:** *Gmelina arborea,* Khamer, Gamhar, germplasm assemblage, wood quality traits, clonal trials, genetic diversity, floral phenology, pollination ecology, agroforestry, tree-crop compatibility, insect – pest management, effect of biofertilizer, vermi compost, azolla, tree-crop productivity, carbon sequestration, reclamation of land, prototype products, package of practices, extension activities, farmer friendly mobile app]

3.1.31 AICRP 31: Study of climate driven effects on Indian forests through long term monitoring

Duration of the project: Phase 1 - 5 years (Total project 10 years)

Budget of the project: 2728.27 lakhs

Justification of the project:

Understanding how climate change will affect future forests is a complex task. Although studies have shown that forests have adapted to temperature increases of 2-3°C in the past, these changes occurred over thousands of years. Current climate predictions suggest that average global mean temperatures could rise by 1.5-5.8°C over this century alone. Such rapid changes in a relatively short period of time could affect forests significantly. Thus, in order to make prediction of potential climate change impacts on forests more reliable we need to monitor and generate basic information on structure and function of different forest types in a time series for long period.

Most information on changes in tropical forest structure, dynamics, productivity and function has come from the long-term monitoring of tropical tree populations, within permanent sample plots. Long-term monitoring allows recording and analyzing changes in forest stand growth, recruitment and mortality rates and other environmental regulatory services. Furthermore, by using allometric equations tree diameter measurements can be converted to biomass, and carbon content, to ascertain if forests are currently a carbon sink, source, or are neutral, and hence how they modulate the rate and magnitude of climate change.

In India Long term forest research sites were established in various names including *Linear Tree Increment Plots*, *Linear Increment Plots*, *Linear Sample Plots* and *Permanent Preservation Plots* covering diverse plant communities and environmental conditions. Presently, some of these long-term observational studies are functional, some are disturbed and others have almost been lost. Preservation plots had an extra reason for existence in the form of "ecological reference centers" where natural ecological processes could be studied in isolation from human interference and pressures.

With this background it is proposed to study climate driven effects on Indian forests through long term research plots in all the major forest types and grasslands of India. The project will encompass studies on various issues involving different aspects of forestry research (Interdisciplinary). Scientists from various disciplines may get involved to conduct research in their respective fields in the permanent research plots of different forest types.

Objectives of the project:

- To observe and record detailed temporal and spatial changes in structure and function of selected forest types and grasslands of India.
- Monitoring climate change driven effects on carbon regulating services and nutrient dynamics of Indian forests.
- To study impact of Climate Change on distribution of major Forest Types of India.
- Monitoring biodiversity in selected forest types with special emphasis on invasive species.
- To study and monitor health of forest soils.
- To study micro-meteorological effects of forests in India.

Major Deliverables of the project:

It is a comprehensive project to understand forests of India and the climate driven effects on the dynamics, diversity, structure and function and other carbon regulating services across different forest types. Basic deliverables are listed below:

- Patterns of mortality, recruitment and growth observed in different species.
- Estimation of above and below ground biomass of individuals, species and forests; carbon stock, sequestration potential and productivity of different species over broad environmental gradients of Indian forests.
- Field inventory data of those newly proposed large-scale plots will provide community level compositional data at plot level for various forests of India, including diversity, population of species - dominance and rare, and as a bench mark for the long-term monitoring of forest dynamics.
- Validation of several results based on remote sensing and GIS techniques.
- Data to evaluate and validate the plot/stand level forest biomass characteristics using remote sensing.
- Short and long term climate impacts on forest communities and we can obtain a sensitivity measure for each species.
- Classification of species into adaptable and vulnerable categories to proposed/observed climate change.
- Climatic data (rainfall/temperature and humidity) at the plot level to understand the influence of forests on microclimate and study the climate driven effects on forests.

Summary of Budget estimate (Rs. in lakhs)

Head of expenditure	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Recurring						
Salary	40.80	111.72	113.16	119.68	125.20	**510.56**
Consumables	18.00	27.00	27.00	27.00	27.00	**126.00**
Travel	24.00	66.00	51.00	51.00	51.00	**243.00**
Field Research	48.00	99.00	27.00	27.00	27.00	**228.00**
Contingencies	9.00	18.00	18.00	18.00	18.00	**81.00**
Non-Recurring						
Equipment	85.00	1000.00				**1085.00**
Total	**224.80**	**1321.72**	**236.16**	**242.68**	**248.20**	**2273.56**
Management Cost @ 20%	44.96	264.34	47.23	48.54	49.64	454.71
Grand Total	**269.76**	**1586.06**	**283.39**	**291.22**	**297.84**	**2728.27**

Component wise budget summary (Rs. in lakhs):

Components	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Ecology and Carbon stock	28.00	395.00	32.50	32.50	32.50	**520.50**
Phenology	38.00	275.00	32.50	32.50	32.50	**410.50**
Biodiversity and invasive species and regeneration	38.00	77.50	25.00	35.50	35.50	**211.50**
Forest Soils	28.00	235.00	25.00	30.00		**318.00**
Dendrochronology	28.00	65.00	36.50	35.00	45.00	**209.50**
Mycology	20.00	37.22	32.50	26.58	46.00	**162.30**
Disease &pest incidence and Pollinators	20.00	37.00	36.00	35.00	41.00	**169.00**
Microclimate study	24.80	200.00	16.16	15.60	15.70	**272.26**
Total	**224.8**	**1321.72**	**236.16**	**242.68**	**248.2**	**2273.56**

Augmentation of ecosystem services:
The long term study of forest will provide data on climate change effects and change in the diversity of forests

[**Key words:** Temperature, Short and long term climate change impacts, climate driven effects, temporal and spatial changes, structure and function, major forest types and grasslands, time series for long period, productivity and function, environmental regulatory services, long-term monitoring, carbon sink, carbon regulating services, nutrient dynamics, biodiversity, Linear Tree Increment Plots, Linear Increment Plots, Linear Sample Plots and Permanent Preservation Plots, invasive species, health of forest soils, micro-meteorological effects, above and below ground biomass, remote sensing, GIS techniques, allometric equations]

CHAPTER 4

National Program for Conservation and Development of FGR

National Program for Conservation and Development of Forest Genetic Resources (FGR)

Duration: 5 years (Phase I)

Total Budget Outlay: Rs. 5198.95 lakhs

Justification for FGR:

Forest Genetic Resources (FGRs) constitute a very important sub-set of biodiversity. FGRs are very essential for the adaptation and the evolutionary processes of forests and trees as well for improving their resilience and productivity. In addition, the FGRs at the levels of species, populations, and individuals form a very vital and irreplaceable resource for the benefit of mankind. In India alone, more than 340 million people are estimated to be dependent upon the FGRs for their livelihoods.

The important role of FGRs in carbon sequestration, mitigating impacts of climate change, soil and moisture conservation, and in maintaining almost all other life forms in forest ecosystems is also being increasingly appreciated. Evolved over millennia in their natural habitats, the forest genetic resources are the source material for the development of the improved varieties/ clones/ hybrids and their conservation is of critical importance for sustaining the tree improvement programme. It is imperative that this very important sub-set of the biodiversity is brought to focus, properly documented, and sustainably managed for its intrinsic value and for the benefit of the mankind.

India's forests are a very rich repository of FGRs, which are unique in that (a) these represents a very large subset of the documented higher plant diversity with most of these species being wild, and managed (a) in natural habitats; (b) these are typically long lived, highly heterozygous group with high levels of intra-specific variations; (c) each of these species performs multiple functions in the form of products and services, making selection of management options rather complex; (d) unlike agricultural and horticultural species, conservation and management of these species is impacted by and is dependent upon a diversity of externalities, mainly environmental and biotic; and (e) the germplasm of FGR is either distributed in the form of scattered populations across various bio-geographic regions in the country or is restricted to very narrow localities making working on these a challenge.

Our knowledge of FGRs is, however, grossly inadequate for a well planned policy and management interventions. No comprehensive biodiversity inventory of forest habitats and quantitative information on its threat status is available. Whatever FGR measurements are available have been made in an ad hoc manner in studies disjointed in time and space. There is very limited data on production and consumption of FGR based produce seriously affecting the planning for NWFP and wood based industry. Further, 'there is no mechanism in the country to know the status of biodiversity of a given region at a given point of time to assess the change and take appropriate action accordingly'.

With country's forest area spread over more than 21% of its landmass, it would take time to explore, document and assess conservation status of the multitude of FGRs. It is proposed to undertake this very important and critical task under a **10-year program (2018-2028)** in phases of years each (Phase I -2018-2023; Phase II -2023-2028). This proposal is for the Phase I (2018-2023). All the institutes of ICFRE will be involved in the proposed work. For smooth execution

of the work two lead institutes i.e., Forest Research Institute (FRI), Dehradun and IFGTB Coimbatore are proposed. Accordingly two centres for coordination as detailed below are proposed to be established. At present there is no custodian of FGR in the country like ICAR.

1. **FGR Coordination by Forest Research Institute (CE-FRI), Dehradun:**

The CE-FRI will coordinate the activities with five ICFRE institutes (FRI, AFRI, RFRI, HFRI and IFP) in their jurisdiction states.

Coordinator: FRI Dehradun

2. **FGR Coordination by Forest Institutes of Forest Genetics and Tree Breeding (CE-IFGTB), Coimbatore:**

The CE-IFGTB will coordinate the activities with remaining four ICFRE institutes (IFGTB, IWST, IFB and TFRI) in their jurisdiction states.

Coordinator: Head FGRM Division, IFGTB

Objectives:
To generate understanding and knowledge on Forest Genetic Resources of the country through exploration, documentation, characterization, and to develop and strengthen in situ and ex situ FGR conservation programmes for their long term safeguard for the benefit of humanity.

The major focus of Phase-I would be to document and bring out status of the FGRs in the country, put in place systems for networking and inter-institutional collaborative working, prioritizing FGRs for action on the basis of their conservation status and commercial value, and kick start research and conservation action on the prioritized FGRs.

Major Deliverables:

1. Preparation of comprehensive inventory of the FGRs of the country with distribution maps.
2. Preparation of priority list of FGRs with road map for their conservation and development.
3. Collection and depositing of seed of important FGR species in Seed Banks towards medium and long-term conservation.
4. Evaluation and molecular characterization of important FGRs of commercial importance
5. Studying of genetic diversity and population structure of important FGRs and initiation of their *in situ* conservation measures
6. Establishment of Field Gene Banks of FGR species of high conservation & commercial importance
7. Developing well studied, systematic and sustainable protocols for utilization of forest genetic resources for supporting livelihoods
8. Building a National FGR Information and Research Network of organisations engaged in research on FGR for collaborative working
9. Developing a national level seed storage, research and referral centre for seeds of forestry species
10. Development of comprehensive computerized database on FGR of India

A. Budget for FRI and its coordinating Institutes (Rs in lakhs)

Project Components/ Working Groups	Estimated Budget Requirement (Rs. in lakh)					
	Year-1	Year-2	Year-3	Year-4	Year-5	Total
A. Documentation of FGR	111.20	111.30	114.80	107.30	107.30	551.80
B. FGR Seed and Germplasm storage	86.9	86.9	90.26	90.26	90.26	444.58
C. FGR Characterization	97.92	97.92	100.32	100.32	100.32	496.80
D. FGR Conservation	101.7	101.7	125.3	105.3	105.3	539.3
E. Establishment of Centre of Excellence on FGR and creation of FGR database	29.48	29.48	29.96	29.96	29.96	148.84
F. Creation of National Forestry Seed Research and Referral Centre	17.74	17.74	18.22	18.22	18.22	90.14
Total Recurring Expenses	**444.94**	**445.04**	**478.86**	**451.36**	**451.36**	**2271.46**
Non recurring expenses	**596.50**	**62.50**	**0.00**	**0.00**	**0.00**	**659.00**
Total	**1041.44**	**507.54**	**478.86**	**451.36**	**451.36**	**2930.46**
Management Cost @ 20%	**208.29**	**101.51**	**95.77**	**90.27**	**90.27**	**586.09**
Grand Total	**1249.73**	**609.05**	**574.63**	**541.63**	**541.63**	**3516.55**

B. Budget for IFGTB and its coordinating Institutes:

Project Components/ Working Groups	Estimated Budget Requirement (Rs. in lakh)					
	Year-1	Year-2	Year-3	Year-4	Year-5	Total
A. Documentation of FGR	13.00	9.00	7.00	5.00	3.00	37.00
B. FGR Collection	115.00	107.00	50.00	35.00	20.00	327.00
C. FGR Seed and Germplasm storage	10.00	10.00	7.00	7.00	6.00	40.00
D. FGR Characterization	20.00	20.00	20.00	10.00	10.00	80.00
E. FGR Conservation	27.00	27.00	16.00	13.00	8.00	91.00
F. Establishment of Centre of Excellence (COE-FGR)	20.00	12.00	6.00	6.00	5.00	49.00
G. Creation of National Forestry Seed Centre	10.00	4.00	3.00	1.00	1.00	19.00
Total Recurring Expenses	**215.00**	**189.00**	**109.00**	**77.00**	**53.00**	**643.00**
Non recurring expenses	**749.00**	**5.00**	**5.00**	**0.00**	**0.00**	**759.00**
Total	**964**	**194.00**	**114.00**	**77.00**	**53.00**	**1402.00**
Management Cost @ 20%	**192.80**	**38.80**	**22.80**	**15.40**	**10.60**	**280.40**
Grand Total	**1156.80**	**232.80**	**136.80**	**92.40**	**63.60**	**1682.40**

CHAPTER 5

Policy Research Studies by Center for Forest Policy Research of ICFRE

5

Policy Research Studies by Center for Forest Policy Research of ICFRE

Introduction:

The Centre for Forest Policy Research (CFPR) has been established at ICFRE (HQ.) to take up policy research studies exclusively focused on forest and environment sector. The CFPR would act as "Policy Think Tank" and undertake research on contemporary policy issued for providing inputs to Government of India for policy decisions and appropriate interventions for the better governance of forest and environment in India.

The establishment of the Centre for forest Policy Research (CFPR) was approved by the Board of Governors (BOG) in its meeting held on 9th January 2018 and was notified vide ICFRE Notification dated 06th February 2018. CFPR is created in the Directorate of Education at ICFRE (H.Q) with Deputy Director General (Education) as Chairperson of the CFPR.

The CFPR shall have an Advisory Committee headed by the Director General, ICFRE. This advisory committee will meet at least twice a year to advise and review the policy research work of CFPR in the Council.

The CFPR would act as "Policy Think Tank" and undertake research on contemporary policy issues for providing inputs to Government of India on policy decisions and appropriate interventions for the better governance of forest and environment in India.

Objectives:

The main objectives of CFPR are:

1. To identify the thrust areas where there is a need for policy interventions for better governance of forest, wildlife and other natural resources in the country and also conduct research on the same through collaborative research projects.
2. To undertake the policy analysis of governance of natural resources and also look into the relevant legislations in a changing socio-economic scenario.
3. To provide inputs to the Government on issues related to policy formulation & strategies for implementation.
4. To carryout evaluation of various Government programmes/projects/policies with respect to identification of gaps in policy perspective.
5. To provide policy advisory services to Government of India and State Government Organizations, on the matter related to sustainable management and Governance of natural resources.
6. To conduct capacity building programmes for the stakeholders involved in the management and governance of natural resources.
7. To organize seminars/workshops/conferences on public policy related to governance of natural resources.
8. To create a knowledge base on public policy issues related to the governance of natural resources.
9. To develop CFRP as 'State of the Art' resource center having repository of information on governance of natural resources and best practices adopted across the globe for the sustainable management of natural resources.

The First meeting of the Advisory Committee of CFPR was held on 23.04.2018 at ICFRE (HQ), Dehra Dun under the Chairmanship of DG, ICFRE.

Topics shortlisted for Policy Research Studies:
After detailed deliberations in the meeting of Advisory Committee, the following Topic of Research (TOR) have been prioritized for taking up the policy research studies. Initially some of the studies will be taken up and subsequently the studies for policy research will be taken up as per the recommendation of Advisory committee of CFPR.

1. **Policy issues in agro forestry including market mechanisms, forward and backward linkages, regional availability, Transit of forest produce, linkages with NDC targets, choice of species and utilization aspects**
   The draft national policy prescribes doubling of the tree cover outside forests by the end of the next decade by incentivizing agro-forestry and farm forestry. The policy document also prescribes enabling provisions like assured returns, enabling regulations and by promoting the use of wood products. Committees have been earlier constituted to examine these issues and some of the recommendations include, coordination mechanism between agriculture and forest departments, availability of land for agroforestry, assured purchase, minimum support price, flexibility in schemes for planting trees, etc. Detailed studies emanating from these recommendations needs detailed study for policy formulation.

2. **Institutions of community participation including Joint Forest Management committees (JFMCS), linkages with Panchayati Raj Institutions, review of its working in various regions of the country and identification of successful models**
   The institutions like the Joint Forest Management Committees (JFMCs) and the Eco-development Committees (EDCs) have been the important institutional arrangements for community participation in the conservation of Forests. The implementation of the various schemes of the Government of India and State Government are being carried out through these institutions. However there are issues pertaining to the effectiveness of these institutions, like legal backing of these JFMCs, integration of these institutions with the Gram Sabha, sustainability, etc., which need to be studied.

3. **Functioning of Forest Development Corporations and its role in the present scenario.**
   The Forest Development Corporations were established in many of the states and has been registered under the companies Act. Their major role was harvesting of timber and other forest produces, marketing, etc., However due to the changes in the forestry sector like ban of green felling, working in only already worked areas, etc., the role of these corporations have been restricted and they are now diversifying into other activities like ecotourism, wood based industries, etc. The profitability of these Forest Development Corporations has also been greatly reduced. In this scenario it is proposed that the role of the corporations in the present scenario needs to be studied.

4. **Augmenting resources including innovative means of fund raising for achieving the targets enshrined in various policy documents. Review of the existing schemes and formulation of new ones with self financing capability**
   The Government of India in its NDC communicated to the UNFCC committed to create an additional carbon sink of 2.5 to 3 billion tones of equivalent through additional forest and tree cover by 2010. Analyzing the present schemes polices and funding, gaps if any for achieving these targets and the recommendations could be proposed by a study. The existing schemes presently implemented by the Government of India are also required to be reviewed

to suggest additional schemes or merging of schemes. The formulation of schemes with self financing capability also needs to be explored.

5. **Formulation of guidelines under the Forest (Conservation) Act 1980 for diversion of privately owned forests**
   Forests (deemed) are owned privately by many individuals which vary in extent from few hectares to large tracts. Even small patches of land because of being continuous with other lands qualify the criteria of deemed forests prescribed by Government of India. There is no policy for the bonafide usage/ diversion of these lands and are governed by the FCA guidelines applicable to other cases. People allege that they are being punished preserving these forests as even a small portion of diversion of their own lands require compensatory afforestation on alternate revenue lands and payment of NPV.

6. **Study of grazing policy in different parts of the country and formulation of grazing guidelines**
   Animal husbandry is an important profession of the rural community only next to agriculture. There has been traditional grazing lands/rangelands for the community from ancient times in the country for the purpose. In recent times, there is an enormous pressure on the forests due to increasing domestic animal population and the problem in more severe in the arid and semi arid areas of the country. It is estimated that about 50 percent of them depend on forests, community lands and other lands for grazing. In this paper the aspects related to livestock grazing in light of policy considerations is reviewed. Few major areas where more thrust is required are also highlighted. Therefore it is important to review the existing provisions of grazing in different parts of the country and to prescribe a grazing policy.

7. **Public Private Partnership in a broad perspective in forestry involving various sections of the society**
   Public private partnership has been successful in many areas like infrastructure and the same is being advocated in some of the areas of the management of forest. There have also been critics on the ecological and social risks of PPP in case of forest management. The dimensions of PPP is therefore required to be studied in a holistic manner regarding the areas of partnership, terms and conditions of the contract , advantages and risks etc.,

8. **Analysis of policy perspectives for intersectoral synergy in achieving goals of National Forest Policy and other policies and implementation of National Action Plan for Climate Change (Green India Mission)**
   The National Forest Policy and other policies relating to the conservation of forests and wildlife prescribe for targets which could only be achieved through intersectoral synergy of various ministries/departments. An example is that of the increase of forest cover in the non forest lands. Similarly, synergy with various ministries is also required in the implementation of the National Action plan for climate change including Green India Mission, where convergence of schemes and planning on a landscape based approach has been prescribed.

9. **Popularization the use of wood and wood substitutes as per the National Forest Policy and modalities for encouraging industries for its optimum utilization**
   Wood as a renewable resource is an environmentally friendly raw material having zero carbon footprints. As per the SWOT (+LCA) analysis, industries based on wood have an advantage over other industries. This concerns particularly, renewable and extensive raw

material base, energy consumption in the course of manufacturing process, application range, ease of recycling and health.

Wood substitutes are building products that are not graded as lumber. Composite substitutes contain wood fibers and a mixture of plastic or cement, glue and assorted other materials. Structural substitutes, also known as engineered wood, consist of thin, overlapping strips of lumber laminated together under hydraulic pressure. Although the majority of wood substitutes contain wood byproducts, other substitutes contain no wood whatsoever. Substitution becomes a universal and inevitable phenomenon as a result of technological advancement and ever growing societal needs. It is remarkable that at the same time substitution is a positive process allowing saving valuable natural raw materials, including wood which needs to be popularized.

10. **Devising methodologies for periodical valuation and payment of ecosystem services**
The concept of ecosystem services is important for understanding human-environment relationships and designing environmental policy interventions. Recently, 'payment for ecosystem services' (PES) has emerged as a policy solution for balancing the goods and services, derived by society, from natural ecosystems. To implement a successful PES strategy, the social, economic, and environmental contexts need to be considered in order to determine the policy outcomes. The ecosystems are influenced by various inter-sectoral policies, such as forests, agriculture, animal husbandry, rural development and land use. These policies, sometimes contradictory or overlapping, may lead to conflicts, faulty land use practices and resultant degradation. With the growing awareness of the crucial ecosystem services and their potential role in mitigating climate change-related impacts, future sectoral policies need to converge and focus on maintaining the integrity of these ecosystems so as to ensure the flow of goods and services.

Economic valuation of ecosystem services and Payments for Ecosystem Services (PES) are increasingly considered as suitable economic instruments to maintain ecosystem functions and services by rewarding benefits through payments and markets. Various studies such as 'The Economics of Ecosystems and Biodiversity' (TEEB), underline the need for detailed policy perspectives on the subject. Although, some economic instruments exist in India, there are apprehensions for Payment for Ecosystem Services (PES) among various stakeholders. Given the rapidly changing social and economic scenario in India, studies on these aspects would help to develop policy on the matter.

11. **Issues in Forest Certification and certifying agencies.**
The international recognition of problems in the forest management and conservation led to a search for policy instruments across the world to promote sustainable forest management. Forest certification was promoted from 1990 onwards as such a policy instrument to address these issues. It is often described as a market based non-regulatory conservation tool to recognize and promote responsible forest management. Certification is generally taken as an indirect economic incentive with two major objectives, viz., improved forest management and provision of better market access for certified products.

However, certification has also become one of the most controversial topics in national and international forest policy discussions, partly because it is often seen as a threat to forest departments or the forest based industry. Policy research is, therefore, needed on the subject in the Indian context with the broad objectives to analyze the policy process which can help

the Govt to take informed decisions on the development of forest certification programmes in the country and to contribute to a better understanding of the potential strengths and weaknesses of forest certification as an incentive for sustainable forest management.

Duration: 5 years

Funds Required: Rs. in lakhs

Budget	1 year	2 year	3 year	4 year	5 year	Total
Policy Research Studies @Rs 10 lakhs per study	110.00	50.00	50.00	50.00	50.00	310.00
Workshop / Conferences	2.00	2.00	2.00	2.00	2.00	10.00
Publications	2.00	1.00	1.00	1.00	1.00	6.00
Total	**114**	**53**	**53**	**53**	**53**	**326**

CHAPTER 6

Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy

Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy

Duration of the Project: 2 years

Total Budget Outlay: Rs 120.06 Lakhs

Justification for the Project:

Reducing emissions from deforestation, forest degradation, role of conservation, sustainable management of forests and enhancement forest carbon stocks collectively known as REDD+. REDD+ is primarily a forestry based climate change mitigation option. Deforestation and forest degradation leads the loss of ecosystem goods and services provided by forests. Continuous supply of ecosystem goods and services from forest ecosystem are becoming increasingly important in the context of changing climate. REDD+ programme and actions if implemented properly, has a potential to contribute towards climate change mitigation and adaptation and at the same time providing financial incentives to the participating local communities. REDD+ mechanism has the potential which can address the issues of climate change, biodiversity conservation and land degradation. It will be the only mechanism which can build synergies among three Rio Conventions (UNFCCC, CBD and UNCCD). Article 5 of Paris Agreement encourages all Parties (developed and developing countries) to take action to conserve and enhance emissions sinks and reservoirs, including forests. It also encourages countries to "take action to implement and support, including through results-based payments" REDD+ activities. Presently, REDD+ is widely recognized as financial incentive to the participating communities for their contribution in reducing greenhouse gas (GHG) emissions from forests through reduction in deforestation, forest degradation and enhancement of forest carbon stocks through forest conservation and sustainable management of forests.

Cancun (COP 16) was a major milestone in REDD+ negotiations where REDD+ activities were finalized. The COP 16 decision (1/CP.16) outlines a phased approach for strengthening efforts by developing countries to implement REDD+ activities. REDD+ activities are to be implemented in three phases. In first phase, the focus should be on development of national strategies and action plans, policies and measures, and capacity-building. In second phase, the Implementation of national strategies and action plans could be carried out through results-based demonstration activities or the pilot projects. In third phase, there could be an evolution of results-based actions that should be fully measured, reported and verified (MRVable) alongwith safeguards.

On behalf of Ministry of Environment, Forest and Climate Change, ICFRE has developed National REDD+ Strategy through wide stakeholder consultation processes and same has been approved by the Ministry. National REDD+ Strategy will address to reduce GHG emissions by lowering the rate of deforestation and forest degradation and/or increasing GHG removals from the atmosphere through forest carbon enhancement activities viz. establishing plantations, forest landscape restoration, and improved forest management.

As per UNFCCC decisions, REDD+ can be implemented at sub-national level as an interim measure. The National REDD+ Strategy of India stated the development of REDD+ Action Plan in physiographic zone wise. India has been divided in to 14 physiographic zones on the basis of varying topography, latitude, altitude and climate. Keeping this in view, it will be better either to develop sub-national REDD+ Action Plans at physiographic zone wise or to develop sub-

national REDD+ Action Plan at state level which is known as State REDD+ Action Plan (SRAP). SRAP can be developed through multi stakeholder consultation for effective implementation of National REDD+ Strategy which provides state specific strategies/ interventions packages with detailed activities along with budget requirement for addressing the drivers of deforestation and forest degradation.

The proposed capacity building programmes will provide an opportunity to the State Forest Departments, other line departments, local communities and other institutions for building their capacity about REDD+ mechanism and details of stages involved in preparation of State REDD+ Action Plans.

Capacity building programme directly or indirectly will lead to the enhancement of forest carbon stocks and other ecosystem services, improving the forest health, biodiversity conservation and enhancement in the livelihoods of the local communities. It will also be helpful in achieving the NDC target

Objectives:
The main objective of the programme is to build the capacity of the State Forest Departments for preparation of the State REDD+ Action Plans. The capacity building programme also develop awareness on REDD+ related issues, key concepts, analysis of COP decisions on REDD+ and their relevance to India.

Deliverables from the Project:
1. Personnel will be identified from the State Forest Departments which will be act as facilitators for preparation of State REDD+ Action Plans.
2. A manual for facilitators on Developing State REDD+ Action Plans will be developed as a reference / guiding document.
2. Capacity building of the identified personnel of State Forest Departments will be developed for preparation of of State REDD+ Action Plans.
3. State REDD+ Action Plans will be developed for implementation of National REDD+ Strategy.

Summary of Budget Estimate (Rs. in lakhs)

Head of expenditure	1 Year	2 Year	Total
Recurring			
Salary (engagement of 1 Consultant @ Rs. 40,000/- per month)	2.40	2.40	4.80
Organisation of capacity building workshops in the states	27.00	33.75	60.75
Travel Expenses of the resource persons	10.00	15.00	25.00
Consumables and stationery items	1.50	2.00	3.50
Non-recurring			
Contingencies (printing of training manuals)	6.00	-	6.00
Total	**46.90**	**53.15**	**100.05**
Management Cost 20% of the total budget	9.38	10.63	**20.01**
Grand Total	**56.28**	**63.78**	**120.06**

[Key Words: REDD+, SRAP, Capacity Building, State Forest Departments, REDD+ Action Plan]

CHAPTER 7

Operationalization of Human Resource Development Plan of ICFRE

7

Operationalization of Human Resource Development Plan of ICFRE

Under the ICFRE umbrella, there are currently nine institutes and five research centres in different bio-geographical regions with the specific objectives of addressing research, education and extension issues of their respective mandated areas. Being the apex national body in this field, the ICFRE caters to forestry research needs by identifying scientific problems and issues faced by the stakeholders and carries out research planning, execution, promotion, coordination and extension related to different aspects of forestry.

A team of highly motivated and self-driven professionals and support staff is essential to ensure the quality performance and delivery of a research organization. In order to keep the human resource well informed, ahead of their times and at high competence level, a well-conceived and meticulously planned organizational HRD programme is needed. In recent times, a decline in manpower has necessitated that the existing manpower be entrusted with greater responsibilities and diversified roles in the current organizational set-up. Human Resource Development Plan is a blueprint designed to help employees achieve their best potential by enhancing their knowledge base and skills, and thus their abilities in their respective fields of expertise. Organisational development and mandate accomplishment can be achieved through targeted trainings, a conducive work environment, increased opportunities for career growth, succession planning, recognizing the performance and identification & mentoring of high performers for specific jobs.

In order to keep pace with international developments and challenges within the country and to utilize recent scientific advancements HRD plan of ICFRE for the 5 year period from 2018-2023 has been prepared. In view of the training needs for different categories of ICFRE personnel, the requirements were compiled from different ICFRE institutes and after discussion with the subject matter specialists the various capacity building programmes were finalized.

Salient Features of the HRD Plan:

(1) Capacity building through induction & subsequent skill upgradation training for all categories of ICFRE Personnel i.e., scientific, technical, administrative and executive.
(2) Seminars/workshops & conference both national and international for scientists and senior technical officers.
(3) Exposure visits to senior managers.
(4) Other HRD Initiatives like awards, online system of appraisal, increase in remuneration of support staff and periodical seminars/conference.

The following capacity building programs are proposed for different categories of ICFRE Personnel:-

1 **Scientists**: The induction training shall be organized when a reasonable number of newly recruited scientists are available. However as the newly recruited scientists need to be exposed to the essential elements of the institutes, research programmes and administration more productively even before the induction training, a two week orientation training is proposed for the newly recruited scientists in the institutes of their posting immediately after their joining. Following this an induction training of 12 weeks will be organized in FRI Deemed University within the residency period of Scientist B. The professional skill upgradation programmes are planned latter in the career for scientist levels C to G. At least one training for each of the scientists is proposed during this HRD plan period and a total of 49 national and 33

international trainings have been recommended in this category.

2 Technical Personnel: Induction training for one or two weeks for various grades of the technical staff after recruitment as well as subsequent professional skill upgradation trainings are proposed in this HRD plan. A total of 43 training courses have been identified for the Technical staff in ICFRE for skill upgradation and knowledge acquisition in the latest technologies in the scientific research, scientific equipments and laboratories, collection of data etc.

3 Administrative Staff: Two week induction training after recruitment as well as subsequent professional skill upgradation trainings is proposed in this HRD plan. A total of 9 trainings have been recommended for skill upgradation trainings.

4 Executive Staff: Executive staffs like Forest Guards and Foresters are recruited by the ICFRE Institutes. The induction trainings will be organized by the institutes in State Forest Academies and at least the institutes will also organize at least one professional skill upgradation training of one week duration during this HRD plan period for all the executive staff either in their institutes or in the State Forest academies/other organizations.

Other Initiatives of ICFRE towards HRD

1 ICFRE Awards: The council has instituted awards for excellence for Scientists as well other personnel to motivate and to recognize their contribution in forestry research and administration. The following two categories of awards have been instituted to be given every year.

a) ICFRE Awards of Excellence in Forestry for Scientists and other Stakeholders
b) ICFRE Outstanding Employee Awards to the ministerial, administrative and technical staff of ICFRE

2 Online appraisals: The Annual Performance Appraisal Reports form the basis of evaluation of the working of the Scientists as well as other personnel working in ICFRE. The online recording of APARs for Group 'A' scientists/ officials of the Ministry will be adopted during this HRD plan period.

3 Higher Remuneration for JRF/SRF: In order to attract qualified and talented personnel at JRF, SRF, RA, FA, PA, etc., their emoluments have been/will be revised substantially at par with the Ministry and other organizations.

4 Periodical seminars and conferences: Four broad categories of such seminars/conferences have been identified as given below

a) Institute level research seminars of half/one day duration to discuss current research and future strategies.
b) Regional research conference of one/two days duration once in a year in each of the five regions.
c) National Forestry Research Conference to be organized for one/two days on any issue of contemporary/national significance once a year.
d) In addition, the Silviculture Conference will be held once in every four years.

Summary of Budget Estimate (Rs. in lakhs)

HRD Subject Area	1 Year	2 Year	3 Year	4 Year	5 Year	Total
Induction trainings	04	75	53.75	15	15	**162.75**
Professional Skill upgradation trainings	25	150.71	150.71	150.71	150.72	**627.85**
Awards	10	10	10	10	10	**50.00**
National seminars/workshops	2.0	7.0	7.0	7.0	7.0	**30.00**
International training/seminars /explore visits	-	6576	65.76	65.79	65.76	**263.07**
Sub Total	**41.00**	**308.47**	**286.97**	**248.5**	**248.48**	**1133.67**

The proposed activities of training/ capacity building and giving away the awards shall be coordinated by Directorate of Education at ICFRE HQ.

Duration: 5 years (60 months)

Linkage between Ecosystem Services and Human Resource Development: The flow of ecosystem services can be sustained by managing the ecosystem which can provide immediate economic benefits, and strengthen the resilience of those systems, especially in the face of climate change. The adequately trained human resource can help to optimize the use of ecosystems services and biodiversity values by the society to address local as well as global challenges such as environmental protection, forest livelihoods, expand market mechanism, climate change etc. This will also help to ensure the incorporation of ecosystem services in the development planning in all the sectors.

CHAPTER 8

Operationalisation of Forestry Extension Strategy of ICFRE

8

Operationalisation of Forestry Extension Strategy of ICFRE

One of the most important mandate of ICFRE is extension of research findings from lab to land so that the benefit of research efforts and can be translated into gain to society in real time. This can only happen if proper strategies are in place along with matching grants.

As a result of years of research work, the Council has a rich tally of innovative technologies/processes to its credit. Some of these technologies are being transferred to the stakeholders through various mechanisms.

The Council endeavors to transfer and disseminate their technologies through its **Directorate of Extension** at Dehradun. This directorate has developed a variety of extension programmes to disseminate the outcomes of research to various stakeholders/ end-users with active participation of State Forest Departments and other institutions like Self Help Groups (SHGs), Joint Forest management Committees (JFMCs), Village Panchayats including farmers, women, industries, rural poor and unemployed youth. ICFRE through its institutes and centres is actively engaged in conducting the activities like Publication of targeted literature, Organizing workshops, interactive meetings, symposia seminars, trainings, awareness programmes, Creating awareness through radio and television talks, Running extension programmes through Van Vigyan Kendras, Demo Villages Networking of Van Vigyan Kendras (VVKs) with Krishi Vigyan Kendras (KVKs) of Indian Council of Agricultural Research (ICAR) and Tree Growers Mela for extension:

Proposal

For strengthening the Extension Component of ICFRE the following two activities are proposed:

1. **Strengthening the existing extension activities:** Under this sub-project, there are three components which are already being implemented and need strengthening to get desirable results.
   a) Van Vigyan Kendras (VVKs)
   b) Demo Villages
   c) Farmers' Mela
2. **New Extension initiatives:** Under this sub-project, three new components have been devised to provide outreach to ICFRE technologies to the target groups.
   a) Development/establishment of Technology Demonstration Centres (TDC)
   b) Modified Direct to Consumer Schemes

3.1 Strengthening the Existing Extension Activities

3.1.1 Van Vigyan Kendras (VVKs)

The Council had initiated this extension scheme during 2007-08 with active collaboration of State Forest Departments (SFDs) with the objective of dissemination of various technologies developed by the Council and its institutes and State Forest Departments (SFDs) to the user groups including farmers, women and forest based industries. The norms for demo villages followed by ICFRE are 19 Lakhs for the first year and 10 lakhs per year for subsequent years. This include providing literature for VVK, printing of brochures, newsletter etc., Training/Capacity

building, Model Nurseries, Maintenance of nursery, Other Extension Activities, Equipments for Extension etc and Contingencies/overheads.

Till March 2016 ICFRE institutes have taken leading role in establishment of **29 Van Vigyan Kendras (VVKs)** in different states of the country with the active participation of concerned State Forest Departments. The role and responsibilities of ICFRE and SFDs are as follows:

Sl. No.	ICFRE	State Forest Departments
1	Literature in the form of brochures, pamphlets, newsletters etc.	Appointment of Nodal Officers and close coordination with concerned ICFRE institute
2	Training/Capacity Building	Providing and sharing of relevant literature
3	Establishment of Model Nursery	Infrastructure including building and fixtures
4	Maintenance of Nursery	Land for model nursery and trials
5	Other extension activities including equipments, demonstration (engaging personnel for VVK related tasks, other overhead expenses etc	Electricity and water supply

There are 660 Krishi Vigyan Kendras (KVKs) of ICAR in the country whereas the VVKs which were envisaged on the lines of KVKs has reached to 29 only.

AS we have been mandated to increase forest cover, address carbon sequestration and environment amelioration and also address livelihood options of rural poor, farmers, women etc. for which we have developed number of technologies, products, plant varieties etc. thus there is need to extend our achievements to the targeted groups for achieving the above goals. Therefore, strengthening of the existing VVKs is the need of the hour on the one hand and establishment of more VVKs for better coverage of population and dissemination of technologies on the other hand.

It is proposed to maintain existing 29 VVKs, establish 24 new VVKs/year from 2nd year upto the 5th year. The 1st year of the project period is for preparations i.e. correspondence with SFDs, selection of sites etc. 2nd year to 5th year, 24 new VVKs @ 6 VVK/year will be established. From 6th year onward, backlog, if any, will be addressed to in addition to the full-fledged activities of the new VVKs in collaboration with the State Forest Departments, NGOs, Master trainers/artisans and co-operatives.

Deliverables:

1. There will be 24 new VVKs which will make a tally of 53 VVKs (24 +29). Thereby covering all 29 States and 53 districts out of 707 districts of the country.
2. Training will be imparted to over 50,000 persons including farmers, artisans, tribals and women.
3. 50,000 seedlings per VVK per year will be distributed amongst farmers and other end-users. Thereby increasing the green cover, sequestering more carbon and mitigating global warming.
4. 72,800 copies of different publications containing useful information will be distributed to generate awareness and expertise.

3.1.2 Demo Villages (DVs)

ICFRE has initiated establishment of **Demo Villages** with the objective of "dissemination of various technologies developed by the Council and its institutes to the user groups including

farmers". The activities and technologies shown are mainly, high tech-nurseries. Technologies demonstrated are vermin-composting, bio-fertilizer, agroforestry models, mushroom cultivation etc. Demonstration & Extension of technologies e.g Agroforestry Models Establishment of Model/ Hi-tech Nursery, Demonstration/ Training in Technologies, Transfer of Simple Technologies developed etc. at an average cost of Rs. 10 lacs per year per Demo village.

So far ICFRE institutes have established 09 Demo Villages (DVs). Under this scheme, the Council trained 2232 persons through 73 trainings between 2007-08 to 2015-16.

As the scheme has been launched to provide ICFRE know-how at the door step of villagers, it is to be strengthened to extend its benefits to the farmers and other villagers. Therefore, it is proposed to provide sufficient funding i.e. Rs. 10.00 lakh per DV to the existing DVs and also adopt other villages every third year to maximize the outreach.

For this, an MoU will be signed with collaborating partners e.g. NGO, Gram Panchayat, SHGs for execution/maintenance of the DV for a period of 8 years wherein ICFRE will invest for initial 2 years and continue monitoring thereafter. The collaborating partner will be responsible for continuing activities for remaining 6 years. It is proposed to establish 9 new DVs at a cost of Rs. 10 lacs each, in the second year in collaboration with Gram panchayats, NGOs, JFMCs etc. An additional amount is also required for maintenance of newly established DVs from second year onwards @ Rs. 10.00 lakh per DV per year.

Deliverables:

Strengthening outreach to 72 locations as 72 districts in 29 states shall be covered.

1. 50,000 people shall be Sensitized. Create awareness towards environment friendly activities in and around Demo Village which will help enhancing livelihood opportunities and environment friendly practices.
2. 15,000 people shall be trained.
3. 67.5 lakh seedlings shall be distributed.
4. As a result of shifting of the DVs every third year, there will be 72 locations developed by ICFRE.
5. Population of 72 lesser developed/tribal districts of 29 States will be addressed.

3.1.3 Farmers' Mela

To disseminate ICFRE technologies, especially the high yielding clones of various forestry species and the products developed and to attract and sensitise a large number of people to our activities and achievements at one go, ICFRE has taken an initiative by organizing Tree Growers Melas. These Melas have attracted a large number of stakeholders, farmers, industries and experts. Keeping in mind the success of Tree Growers Melas at IFGTB, Coimbatore, FRI, Dehradun, RFRI Jorhat, and IWST, Bengaluru, ICFRE has decided to replicate this event at all of our institutes.

It is proposed to organize two farmers melas by each ICFRE institute in collaboration with NGOs, SHGs, forest based industries etc every year. These melas are proposed to be conducted in the lean season i.e. extreme summer and extreme winters because at this time the agrarian population is free of their field work.

Deliverables:

The large number of end-users including farmers, artisans, women, rural poor, small entrepreneurs will be sensitized with the following:

1/0

1. New high yielding/pest resistant plant varieties
2. Bio-fertilizers and bio-pesticides
3. New agro-forestry models
4. Value addition techniques for a variety of products
5. Fodder enhancement and grass land development etc.
6. Larger coverage of the forest areas under tree cover
7. Increase in carbon sequestration
8. Increase in the income of farmers

It is expected to sensitize 2000 farmers, 10 NGOs, 5 Research organizations, 10 entrepreneurs and 5 Industries in each Farmers mela.

3.2 New Extension Initiatives

3.2.1 Establishment Of Technology Demonstration Centres (TDCs)

To disseminate ICFRE technologies and research achievements of ICFRE, it needs to be demonstrated effectively for the benefit of stakeholders including the researchers, students, farmers, administrators and planners in a short period of time exhibiting the developed technologies at one place. For this purpose, it is proposed to establish Technology Demonstration Centres (TDC) at each institute which shall be equipped with Prototype of major demonstrable technologies, Display boards, Museum exhibits, Digital display boards, Models, Audio- visual facilities. Apart from the above, under TDC, documentaries on various technologies and other material will be prepared for screening in TDC and at other fora.

Deliverables:

TDC will showcase the achievements, products and technologies of ICFRE institutes. This will help create awareness about the green technologies and sensitize people towards the environmental issues and provide alternatives of livelihood augmenting their income.

3.2.2 Modified Direct To Consumer (MDTC) Scheme

Direct to Consumer scheme was initiated to bring the technological advancements made through research breakthroughs in ICFRE at the doorstep of end-user without loss of time. This scheme is introduced to increase the outreach of research findings and linking the livelihood of people with forestry. Besides State Forest Departments; farmers, women, industries and rural communities are expected to benefit from the Scheme.

Status of earlier projects

No. of projects	Duration	Budget (Rs. in lakh)
4	1 year	1.12
8	2 years	24.12
1	3 years	2.70
13		**27.94**

Shortcomings:

1. Only 13 projects could have been undertaken while another 13 projects could not be undertaken due to paucity of funds.
2. No provision for developing prototypes, products etc. Developed technologies were confined to research papers, demo plots, samples etc. The finished product or prototype was not ready for adoption by industries/other stakeholders.

3.2.2 Proposal: It is proposed to develop prototypes/protocols/pilot product from identified technologies for demonstrations for mass propagation/commercialization of technologies. The products/prototypes will be produced in large amount and distributed to the end-users for large scale impact, therefore, sufficient budget is required for the same.

Objectives: To disseminate ICFRE technologies identified for the target groups.

Target areas: As per jurisdiction of the individual institute.

3.2.2.1 Activity: The MDTC will be technology specific, some of the examples are as follows:

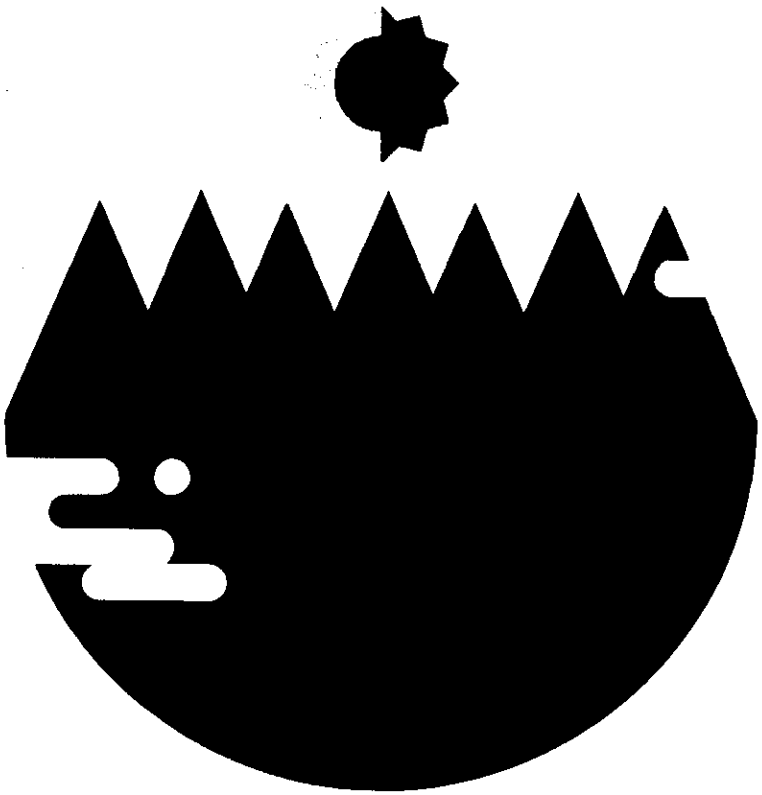
- Raise 5 to 10 lakh seedlings of new varieties per year for distribution directly to farmers to have visible impact on the green cover
- Prototype for wood polymer composites will be shown to forest based industries
- Samples of bio-fertilizer products in large number for distribution among farmers for application in the fields
- Samples of bio-pesticide products in large number for distribution among farmers ready to be used and applied

The examples/activities/outcomes shown above are not exhaustive and new products/protocols/prototypes may be added.

3.2.2.2 Expected outcome: The farmers/industries will be able to use and reap benefit of the green products. This will enhance productivity. New high yielding varieties will also enhance their income, wood substitutes and wood composites will save carbon ultimately affecting the climate change and sustainable growth.

Year wise summary of budget outlay for the Project

Schemes	Budget (in Rs. lakhs)					
	1st yr	2nd yr	3rd yr	4th yr	5th yr	Total
1. **Strengthening the existing extension activities**						
1.1 VVKs	290	404	464	524	584	**2266**
1.2 DVs	90	90	90	90	90	**450**
1.3 Farmers' Mela	135	135	135	135	135	**675**
1.4 Extn. normal	45	45	45	45	45	**225**
Sub total	**560**	**674**	**734**	**794**	**854**	**3616**
2. **New Extension Initiative**						
2.1 TDC	270	18	18	18	18	**342**
2.1.2.2 Preparation of documentaries	10	10	10	10	10	**50**
2.2 MDTC	216	116	216	116	116	**780**
Sub total	**496**	**144**	**244**	**144**	**144**	**1172**
Grand Total	**1056**	**818**	**978**	**938**	**998**	**4788**



Annexures
I, II and III

Annexure - I

Budget details of the proposal

	Tile of the program	Duration (years)	Yearwise Budget required (in Lacs)					
	Title of project, name of NPC, lead Institute		1 year	2 year	3 year	4 year	5 year	Total
A.	**All India Coordinated Research Projects (AICRPs)**							
AICRP 1	Testing and deployment of clones and seed sources of Casuarina for different planting environments and end-use applications. Dr A Nicodemus/ IFGTB Coimbatore	5	89.30	73.04	67.87	62.47	63.37	356.06
AICRP 2	All India coordinated research project on bamboo. Dr HS Ginwal / FRI Dehradun (Phase 1)	5	857.58	504.80	510.56	472.38	455.88	2801.21
AICRP 3	Conservation, improvement, management and promotion of sandalwood (*Santalum album*) cultivation in India. / IWST Bangalore	5	188.16	181.52	149.32	133.47	126.13	778.60
AICRP 4	*Eucalyptus* improvement. Dr V Shiv Kumar/ IFGTB	5	130.18	112.46	89.10	54.50	69.87	456.11
AICRP 5	Development of dielectric heating based processing technologies for solid-wood, bamboo and their composites. Dr SS Chauhan / IWST Bangalore	4	96.48	111.72	39.56	22.88	-	270.65
AICRP 6	Value addition of wood and wood based composites using nanomaterials. Dr KK Pandey/ IWST Bangalore	4	94.08	46.68	43.92	38.52	-	223.20
AICRP 7	Assessment and monitoring of Invasive Alien Plant species in India and formulation of strategies for management of key Invasive Alien Plant Species in different regions of the country. Dr A Rajasekaran / IFGTB Coimbatore	5	118.48	87.28	87.83	84.35	78.05	455.98
AICRP 8	Conservation and productivity improvement of Red sanders (*Pterocarpus santalinus*). Dr S Pattanaik/ IFB Hyderabad	5	106.35	77.79	80.76	87.94	81.94	434.79
AICRP 9	Quality teak production: Capitalizing on cloning. Dr Yashodha / IFGTB Coimbatore	5	84.9	76.74	65.04	66.72	66.72	360.12

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AICRP 10	Developing seed testing and seed storage protocols of selected forestry species from diverse forest types. Dr Manisha Thapliyal / FRI Dehradun	**5**	**166.74**	**80.58**	**85.90**	**87.04**	**87.82**	**508.07**
AICRP 11	All India coordinated research project on *Dalbergia sissoo*. Dr Amit Pandey / FRI Dehradun	**5**	**257.74**	**106.12**	**101.50**	**97.30**	**92.20**	**654.80**
AICRP 12	Assessment of demand and supply of timber, fuel-wood and fodder in India. Sh Raman Nautiyal/ ICFRE	**3**	**45.30**	**53.10**	**45.30**	**-**	**-**	**143.70**
AICRP 13	Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services. Sh Raman Nautiyal / ICFRE Dehradun	**4**	**86.70**	**80.40**	**75.60**	**72.90**	**-**	**315.60**
AICRP 14	Forest fire research and knowledge management. Dr Ombir Singh / FRI Dehradun	**5**	**151.80**	**154.20**	**140.52**	**114.72**	**97.92**	**659.16**
AICRP 15	Tamarind (*Tamarindus indica*): Domestication, conservation and deployment of genetic resources for sustenance and livelihood amelioration. Dr B Nagarajan / IFGTB Coimbatore	**5**	**36.73**	**46.00**	**48.85**	**34.40**	**33.38**	**199.61**
AICRP 16	Bio-prospecting for industrial utilization of lesser known forest plants. Dr VK Varshney / FRI Dehradun	**5**	**295.18**	**102.88**	**98.57**	**102.77**	**96.17**	**695.56**
AICRP 17	Enhancement of fodder availability and quality to reduce unsustainable grazing in the forests. Dr Dinesh Kumar / FRI Dehradun	**5**	**204.68**	**137.54**	**126.96**	**86.75**	**79.07**	**635.00**
AICRP 18	Silvicultural interventions for productivity enhancement and carbon sequestration in plantations of important tree species. Dr C Buvneswaran / IFGTB Coimbatore	**5**	**30.17**	**45.77**	**40.37**	**30.17**	**60.34**	**206.81**
AICRP 19	Assessment of water requirement of different forest tree species and its impact on sub soil moisture. Dr Rajeev Tiwari / ICFRE Dehradun	**4**	**225.17**	**37.18**	**24.55**	**23.09**	**-**	**309.98**
AICRP 20	Development of bio-pesticide products/ formulations from extracts of tree borne oil seeds and different tissues of wild plants for management of insect	**5**	**92.94**	**45.12**	**45.96**	**46.26**	**39.96**	**270.24**

	pests. Dr A Balu/ IFGTB Coimbatore							
AICRP 21	Development of superior bio-fertilizer products for enhanced plant productivity. Dr V Mohan/ IFGTB	**5**	**39.47**	**45.17**	**47.86**	**31.36**	**28.66**	**192.50**
AICRP 22	Preparation of forest soil health cards under different forest vegetations in all the forest divisions of India, Dr Savita, Director FRI/ Dr V Panwar/ FRI Dehradun	**3**	**1026.49**	**584.82**	**416.32**	**-**	**-**	**2027.63**
AICRP 23	Genetic improvement and value addition of *Madhuca longifolia*. Dr Fatima Shirin/ TFRI, Jabalpur	**5**	**79.8**	**45.36**	**51.6**	**51.6**	**56.28**	**284.64**
AICRP 24	Combating desertification by enhancing vegetation cover and people livelihoods in degraded drylands and deserts of India. Dr G. Singh/ AFRI Jodhpur	**5**	**201.9**	**145.4**	**134.7**	**129.9**	**276.60**	**888.60**
AICRP 25	Domestication, genetic characterization, improvement and diversified utilization of poplars. Dr Dinesh Kumar/ FRI Dehradun	**5**	**73.01**	**82.10**	**71.71**	**42.07**	**19.70**	**288.60**
AICRP 26	Genetic Improvement of *Azadirachta india* A. Juss. (Neem). Dr UK Tomar/ AFRI Jodhpur	**5**	**92.16**	**94.26**	**127.15**	**134.51**	**128.88**	**576.96**
AICRP 27	Conservation and sustainable management of wild edible fruit species. Dr Maitryee Kundu/ TFRI Jabalpur	**5**	**88.69**	**70.45**	**80.06**	**82.08**	**85.08**	**406.37**
AICRP 28	Population status, collection, conservation, characterization, and evaluation of genetic resources of Indian Rosewood, *Dalbergia latifolia*. Dr KR Sasidharan/ IFGTB Coimbatore	**5**	**95.16**	**96.46**	**102.05**	**109.25**	**102.01**	**504.92**
AICRP 29	Sustainable management of NTFP's through conservation and value addition. Mrs Neelu Singh/ TFRI Jabalpur	**5**	**138.02**	**133.22**	**142.15**	**137.35**	**126.55**	**677.30**
AICRP 30	Development of package of practices on *Gmelina arborea* Roxb. (Khamer or Gamhar) in selected regions of India. Dr Nanita Berry/ TFRI Jabalpur	**5**	**101.63**	**81.71**	**85.70**	**83.72**	**88.64**	**441.41**
AICRP 31	Study of climate driven effects on Indian forests through long term monitoring. Dr N Bala	**5**	**269.76**	**1586.06**	**283.39**	**291.22**	**297.84**	**2728.27**

	Sub Total A		**5564.75**	**5125.93**	**3510.73**	**2811.69**	**2739.26**	**19800.53**
B	National Programme for Conservation and Development of Forest Genetics Resource (FGR)							
	Coordination Centre of FGR at FRI Dehradun	**5**	**1249.73**	**609.05**	**574.63**	**541.63**	**541.63**	**3516.55**
	Coordination Centre of at IFGTB Coimbatore	**5**	**1156.80**	**232.80**	**136.80**	**92.40**	**63.60**	**1682.40**
	Sub Total B		**2406.53**	**841.85**	**711.43**	**634.03**	**605.23**	**5198.95**
C	Studies by Center for Forest Policy Research (CFPR) of ICFRE	**5**	**114.00**	**53.00**	**53.00**	**53.00**	**53.00**	**326**
D	Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy	**2**	**56.28**	**63.78**	**-**	**-**	**-**	**120.06**
E	**Operationalisation of Human Resource Development (HRD) Plan of ICFRE (5 years)**							
	Inducting trainings		**04.00**	**75.00**	**53.75**	**15.00**	**15.00**	**162.75**
	Professional Skill upgradation trainings		**25.00**	**150.71**	**150.71**	**150.71**	**150.72**	**627.85**
	Awards		**10.00**	**10.00**	**10.00**	**10.00**	**10.00**	**50.00**
	National seminars/workshops		**2.00**	**7.00**	**7.00**	**7.00**	**7.00**	**30.00**
	International training/seminars /explore visits		**-**	**65.76**	**65.76**	**65.79**	**65.76**	**263.07**
	Sub Total D		**41.00**	**308.47**	**286.97**	**248.5**	**248.48**	**1133.67**
F	**Operationalisation of Forestry Extension Strategy of ICFRE (5 Years)**							
(i)	**Strengthening the existing extension activities**							
	Van Vigyan Kendras (VVKs)		290	404	464	524	584	2266
	Demo Villages (DVs)		90	90	90	90	90	450
	Farmers' Mela		135	135	135	135	135	675
	Extn. normal		45	45	45	45	45	225
	Sub sub total (i)		**560**	**674**	**734**	**794**	**854**	**3616**
(ii)	**New Extension Initiative**							
	TDC		270	18	18	18	18	**342**
	Preparation of documentaries		10	10	10	10	10	50
	MDTC		216	116	216	116	116	780
	Sub sub total (ii)		**496**	**144**	**244**	**144**	**144**	**1172**
	Sub Total E (i) + E(ii)		**1056**	**818**	**978**	**938**	**998**	**4788**
	Grand Total (A+B+C+D+E+F)		**9238.56**	**7211.03**	**5540.13**	**4685.22**	**4643.97**	**31367.21**

Annexure - II

Budget required for balance months of 2018-19 (Rs. in lakhs)

	Tile of the program Title of project, name of NPC, lead Institute	Duration (years)	Budget 1st year (12 months)	Budget required for balance months of 2018-19 (in Lahs)			
				Recurring	Non recurring	Management cost @20%	Total
A.	**All India Coordinated Research Projects (AICRPs)**						
AICRP 1	Testing and deployment of clones and seed sources of Casuarina for different planting environments and end-use applications. Dr A Nicodemus/ IFGTB Coimbatore	5	89.30	17.80	0.00	3.56	21.36
AICRP 2	All India coordinated research project on bamboo. Dr HS Ginwal / FRI Dehradun (Phase 1)	5	857.58	104.00	30.00	26.80	160.80
AICRP 3	Conservation, improvement, management and promotion of sandalwood (*Santalum album*) cultivation in India. Dr S Vishwanath / IWST Bangalore	5	188.16	90.00	0.00	18.00	108.00
AICRP 4	*Eucalyptus* improvement. Dr V Shiv Kumar/ IFGTB	5	130.18	26.40	8.00	6.88	41.28
AICRP 5	Development of dielectric heating based processing technologies for solid-wood, bamboo and their composites. Dr SS Chauhan / IWST Bangalore	4	96.48	6.50	0.00	1.30	7.80
AICRP 6	Value addition of wood and wood based composites using nanomaterials. Dr KK Pandey/ IWST Bangalore	4	94.08	6.60	0.00	1.32	7.92
AICRP 7	Assessment and monitoring of Invasive Alien Plant species in India and formulation of strategies for management of key Invasive Alien Plant Species in different regions of the country. Dr A Rajasekaran / IFGTB Coimbatore	5	118.48	30.71	9.45	8.03	48.19
AICRP 8	Conservation and productivity improvement of Red sanders (*Pterocarpus santalinus*). Dr S Pattanaik/ IFB	5	106.35	40.16	30.00	14.03	84.19
AICRP 9	Quality teak production: Capitalizing on cloning. Dr Yashodha / IFGTB Coimbatore	5	84.9	22.19	0.00	4.44	26.63

AICRP 10	Developing seed testing and seed storage protocols of selected forestry species from diverse forest types. Dr Manisha Thapliyal / FRI Dehradun	**5**	**166.74**	**32.00**	**26.00**	**11.60**	**69.60**
AICRP 11	All India coordinated research project on *Dalbergia sissoo*. Dr Amit Pandey / FRI Dehradun	**5**	**257.74**	**34.52**	**60.00**	**18.90**	**113.42**
AICRP 12	Assessment of demand and supply of timber, fuel-wood and fodder in India. Sh Raman Nautiyal / ICFRE	**3**	**45.3**	**20.00**	**0.00**	**4.00**	**24.00**
AICRP 13	Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services. Sh Raman Nautiyal / ICFRE Dehradun	**4**	**86.7**	**40.00**	**0.00**	**8.00**	**48.00**
AICRP 14	Forest fire research and knowledge management. Dr Ombir Singh / FRI Dehradun	**5**	**151.80**	**70.00**	**0.00**	**14.00**	**84.00**
AICRP 15	Tamarind (*Tamarindus indica*): Domestication, conservation and deployment of genetic resources for sustenance and livelihood amelioration. Dr B Nagarajan / IFGTB Coimbatore	**5**	**36.73**	**18.76**	**8.00**	**5.35**	**32.11**
AICRP 16	Bio-prospecting for industrial utilization of lesser known forest plants. Dr VK Varshney / FRI Dehradun	**5**	**295.18**	**35.50**	**8.00**	**8.70**	**52.20**
AICRP 17	Enhancement of fodder availability and quality to reduce unsustainable grazing in the forests. Dr Dinesh Kumar / FRI Dehradun	**5**	**204.68**	**24.84**	**2.70**	**5.51**	**33.05**
AICRP 18	Silvicultural interventions for productivity enhancement and carbon sequestration in plantations of important tree species. Dr C Buvneswaran / IFGTB Coimbatore	**5**	**30.17**	**17.60**	**0.00**	**3.52**	**21.12**
AICRP 19	Assessment of water requirement of different forest tree species and its impact on sub soil moisture. Dr Rajeev Tiwari / ICFRE Dehradun	**4**	**225.17**	**10.00**	**0.00**	**2.00**	**12.00**
AICRP 20	Development of bio-pesticide products/ formulations from extracts of tree borne oil seeds and different tissues of wild plants for management of insect pests. Dr A Balu/ IFGTB Coimbatore	**5**	**92.94**	**15.00**	**0.00**	**3.00**	**18.00**
AICRP 21	Development of superior bio-fertilizer products for enhanced plant productivity. Dr V Mohan/ IFGTB	**5**	**39.47**	**12.57**	**0.00**	**2.51**	**15,08**

AICRP 22	Preparation of forest soil health cards under different forest vegetations in all the forest divisions of India, Dr Savita, Director FRI/ Dr V Panwar/ FRI Dehradun	**3**	**1026.49**	**118.00**	**250.00**	**73.60**	**441.6**
AICRP 23	Genetic improvement and value addition of *Madhuca longifolia*. Dr Fatima Shirin/ TFRI, Jabalpur	**5**	**79.80**	**32.70**	**33.80**	**13.30**	**79.80**
AICRP 24	Combating desertification by enhancing vegetation cover and people livelihoods in degraded drylands and deserts of India. Dr G. Singh/ AFRI Jodhpur	**5**	**201.90**	**40.90**	**18.00**	**11.78**	**70.68**
AICRP 25	Domestication, genetic characterization, improvement and diversified utilization of poplars. Dr Dinesh Kumar/ FRI Dehradun	**5**	**73.01**	**9.68**	**0.00**	**1.94**	**11.62**
AICRP 26	Genetic Improvement of *Azadirachta india* A. Juss. (Neem). Dr UK Tomar/ AFRI Jodhpur	**5**	**92.16**	**38.40**	**0.00**	**7.68**	**46.08**
AICRP 27	Conservation and sustainable management of wild edible fruit species. Dr. Maitryee Kundu/ TFRI Jabalpur	**5**	**88.69**	**30.00**	**15.2**	**6.00**	**36.00**
AICRP 28	Population status, collection, conservation, characterization, and evaluation of genetic resources of Indian Rosewood, *Dalbergia latifolia* Dr KR Sasidharan, IFGTB Coimbatore	**5**	**95.16**	**40.80**	**5.00**	**9.16**	**54.96**
AICRP 29	Sustainable management of NTFP's through conservation and value addition. Mrs. Neelu Singh/ TFRI Jabalpur	**5**	**138.02**	**64.50**	**2.00**	**13.30**	**79.80**
AICRP 30	Development of package of practices on *Gmelina arborea* Roxb. (Khamer or Gamhar) in selected regions of India. Dr. Nanita Berry/ TFRI Jabalpur	**5**	**101.63**	**28.90**	**10.00**	**7.78**	**46.68**
AICRP 31	Study of climate driven effects on Indian forests through long term monitoring. Dr N Bala	**5**	**269.76**	**139.80**	**85.00**	**44.96**	**269.76**
	Sub Total A		**5564.75**	**1210.46**	**601.15**	**362.4**	**2159.33**
B	National Programme for Conservation and Development of Forest Genetics Resource (FGR)						
	Coordination Centre of FGR at FRI Dehradun	**5**	**1249.73**	**111.24**	**50.00**	**32.25**	**193.48**
	Coordination Centre of at IFGTB Coimbatore	**5**	**1156.80**	**168.00**	**621.20**	**157.84**	**947.04**
	Sub Total B		**2406.53**	**279.24**	**671.2**	**190.09**	**1140.52**
C	**Studies by Center for Forest Policy Research**	**5**	**114**	**50.00**	**0.00**	**10.00**	**60.00**

	(CFPR) of ICFRE						
D	**Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy**	**1**	**56.28**	**38.00**	**0.00**	**7.60**	**45.60**
E	**Operationalisation of Human Resource Development (HRD) Plan of ICFRE (5 years)**						
	Inducting trainings		**04.00**	**04.00**	0.00		**04.00**
	Professional Skill upgradation trainings		**25.00**	**25.00**	0.00		**25.00**
	Awards		**10.00**	**10.00**	0.00		**10.00**
	National seminars/workshops		**2.00**	**2.00**	0.00		**2.00**
	International training/seminars /explore visits		**-**	-	0.00		**-**
	Sub Total D		**41.00**	**41.00**	**0.00**	-	**41.00**
F	**Operationalisation of Forestry Extension Strategy of ICFRE (5 Years)**						
(i)	**Strengthening the existing extension activities**						
	Van Vigyan Kendras (VVKs)		290	100	0.00	-	100
	Demo Villages (DVs)		90	40	0.00	-	40
	Farmers' Mela		135	50	0.00	-	50
	Extn. normal		45	20	0.00	-	20
	Sub sub total (i)		**560**	210	0.00	-	**210**
(ii)	**New Extension Initiative**						
	TDC		270	100	0.00	-	100
	Preparation of documentaries		10	10	0.00	-	10
	MDTC		216	100	0.00	-	100
	Sub sub total (ii)		**496**	**210**	**0.00**	-	**210**
	Sub Total E (i) + E(ii)		**1056**	**420**	**0.00**	-	**420**
	Grand Total (A+B+C+D+E+F)		**9238.56**	**2047.07**	**1272.35**	**568.64**	**3851.77**

Annexure - III

Budget (Rs. in lakhs) for 2019-2020

(Balance of first year carried forward to second year + requirement of second year)

	Tile of the program	Duration (years)	Balance of 1st year + Budget of 2nd year	Budget required for 2019-20 (in Lakhs)			
	Title of project, name of NPC, lead Institute			Recurring	Non recurring	Management cost @20%	Total
A.	**All India Coordinated Research Projects (AICRPs)**						
AICRP 1	Testing and deployment of clones and seed sources of Casuarina for different planting environments and end-use applications. Dr A Nicodemus/ IFGTB Coimbatore	**5**	**140.98**	**92.48**	**25**	**23.50**	**140.98**
AICRP 2	All India coordinated research project on bamboo. Dr HS Ginwal / FRI Dehradun (Phase 1)	**5**	**1201.58**	**740.82**	**260.5**	**200.26**	**1201.58**
AICRP 3	Conservation, improvement, management and promotion of sandalwood (*Santalum album*) cultivation in India. Dr S Vishwanath / IWST Bangalore	**5**	**261.68**	**207.67**	**10.4**	**43.61**	**261.68**
AICRP 4	*Eucalyptus* improvement. Dr V Shiv Kumar/ IFGTB	**5**	**201.36**	**143.50**	**24.3**	**33.56**	**201.36**
AICRP 5	Development of dielectric heating based processing technologies for solid-wood, bamboo and their composites. Dr SS Chauhan / IWST Bangalore	**4**	**200.4**	**42.00**	**125**	**33.40**	**200.4**
AICRP 6	Value addition of wood and wood based composites using nanomaterials. Dr KK Pandey/ IWST Bangalore	**4**	**132.84**	**69.70**	**41**	**22.14**	**132.84**
AICRP 7	Assessment and monitoring of Invasive Alien Plant species in India and formulation of strategies for management of key Invasive Alien Plant Species in different regions of the country. Dr A Rajasekaran / IFGTB Coimbatore	**5**	**157.57**	**106.46**	**24.85**	**26.26**	**157.57**
AICRP 8	Conservation and productivity improvement of Red sanders (*Pterocarpus santalinus*). Dr S Pattanaik/ IFB	**5**	**99.95**	**83.29**	**0**	**16.66**	**99.95**
AICRP 9	Quality teak production: Capitalizing on cloning. Dr	**5**	**135.01**	**95.01**	**17.5**	**22.50**	**135.01**

	Yashodha / IFGTB Coimbatore						
AICRP 10	Developing seed testing and seed storage protocols of selected forestry species from diverse forest types. Dr Manisha Thapliyal / FRI Dehradun	**5**	**177.72**	**95.70**	**52.4**	**29.62**	**177.72**
AICRP 11	All India coordinated research project on *Dalbergia sissoo*. Dr Amit Pandey / FRI Dehradun	**5**	**250.44**	**137.60**	**71.1**	**41.74**	**250.44**
AICRP 12	Assessment of demand and supply of timber, fuel-wood and fodder in India. Sh Raman Nautiyal / ICFRE	**3**	**74.4**	**62.00**	**0**	**12.40**	**74.4**
AICRP 13	Valuation of forests for GDP, Green GDP and Payment of eco-system goods and services. Sh Raman Nautiyal / ICFRE Dehradun	**4**	**119.1**	**99.25**	**0**	**19.85**	**119.1**
AICRP 14	Forest fire research and knowledge management. Dr Ombir Singh / FRI Dehradun	**5**	**222**	**185.00**	**0**	**37.00**	**222**
AICRP 15	Tamarind (*Tamarindus indica*): Domestication, conservation and deployment of genetic resources for sustenance and livelihood amelioration. Dr B Nagarajan / IFGTB Coimbatore	**5**	**50.62**	**34.18**	**8**	**8.44**	**50.62**
AICRP 16	Bio-prospecting for industrial utilization of lesser known forest plants. Dr VK Varshney / FRI Dehradun	**5**	**345.86**	**133.22**	**155**	**57.64**	**345.86**
AICRP 17	Enhancement of fodder availability and quality to reduce unsustainable grazing in the forests. Dr Dinesh Kumar / FRI Dehradun	**5**	**309.17**	**226.59**	**31.05**	**51.53**	**309.17**
AICRP 18	Silvicultural interventions for productivity enhancement and carbon sequestration in plantations of important tree species. Dr C Buvneswaran / IFGTB Coimbatore	**5**	**54.82**	**45.68**	**0**	**9.14**	**54.82**
AICRP 19	Assessment of water requirement of different forest tree species and its impact on sub soil moisture. Dr Rajeev Tiwari / ICFRE Dehradun	**4**	**250.35**	**44.63**	**164**	**41.73**	**250.35**
AICRP 20	Development of bio-pesticide products/ formulations from extracts of tree borne oil seeds and different tissues of wild plants for management of insect pests. Dr A Balu/ IFGTB Coimbatore	**5**	**120.06**	**55.95**	**44.1**	**20.01**	**120.06**
AICRP 21	Development of superior bio-fertilizer products for	**5**	**69.56**	**47.97**	**10**	**11.59**	**69.56**

	enhanced plant productivity. Dr V Mohan/ IFGTB						
AICRP 22	Preparation of forest soil health cards under different forest vegetations in all the forest divisions of India, Dr Savita, Director FRI/ Dr V Panwar/ FRI Dehradun	**3**	**1169.71**	**766.76**	**208**	**194.95**	**1169.71**
AICRP 23	Genetic improvement and value addition of *Madhuca longifolia*. Dr Fatima Shirin/ TFRI, Jabalpur	**5**	**45.36**	**37.80**	**0**	**7.56**	**45.36**
AICRP 24	Combating desertification by enhancing vegetation cover and people livelihoods in degraded drylands and deserts of India. Dr G. Singh/ AFRI Jodhpur	**5**	**276.62**	**216.02**	**14.5**	**46.10**	**276.62**
AICRP 25	Domestication, genetic characterization, improvement and diversified utilization of poplars. Dr Dinesh Kumar/ FRI Dehradun	**5**	**143.49**	**113.58**	**6**	**23.92**	**143.49**
AICRP 26	Genetic Improvement of *Azadirachta india* A. Juss. (Neem). Dr UK Tomar/ AFRI Jodhpur	**5**	**140.34**	**116.95**	**0**	**23.39**	**140.34**
AICRP 27	Conservation and sustainable management of wild edible fruit species. Dr. Maitryee Kundu/ TFRI Jabalpur	**5**	**123.14**	**92.62**	**10**	**20.52**	**123.14**
AICRP 28	Population status, collection, conservation, characterization, and evaluation of genetic resources of Indian Rosewood, *Dalbergia latifolia* Dr KR Sasidharan, IFGTB Coimbatore	**5**	**136.66**	**113.88**	**0**	**22.78**	**136.66**
AICRP 29	Sustainable management of NTFP's through conservation and value addition. Mrs. Neelu Singh/ TFRI Jabalpur	**5**	**191.44**	**159.53**	**0**	**31.91**	**191.44**
AICRP 30	Development of package of practices on *Gmelina arborea* Roxb. (Khamer or Gamhar) in selected regions of India. Dr. Nanita Berry/ TFRI Jabalpur	**5**	**136.66**	**98.88**	**15**	**22.78**	**136.66**
AICRP 31	Study of climate driven effects on Indian forests through long term monitoring. Dr N Bala	**5**	**1586.06**	**321.72**	**1000**	**264.34**	**1586.06**
	Sub Total A		**8524.95**	**4786.43**	**2317.70**	**1420.83**	**8524.95**
B	National Programme for Conservation and Development of Forest Genetics Resource (FGR)						
	Coordination Centre of FGR at FRI Dehradun	**5**	**1665.3**	**1270.38**	**117.37**	**277.55**	**1665.3**
	Coordination Centre of at IFGTB Coimbatore	**5**	**442.56**	**235.80**	**133**	**73.76**	**442.56**
	Sub Total B		**2107.86**	**1506.18**	**250.37**	**351.31**	**2107.86**

C	**Studies by Center for Forest Policy Research (CFPR) of ICFRE**	**5**	**107**	**89.17**	**0.00**	**17.83**	**107**
D	**Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy**	**1**	**74.47**	**62.05**	**0.00**	**12.41**	**74.46**
E	**Operationalisation of Human Resource Development (HRD) Plan of ICFRE (5 years)**						
	Inducting trainings		**75.00**	**75.00**	0.00	-	**75.00**
	Professional Skill upgradation trainings		**150.71**	**150.71**	0.00	-	**150.71**
	Awards		**10.00**	**10.00**	0.00	-	**10.00**
	National seminars/workshops		**7.00**	**7.00**	0.00	-	**7.00**
	International training/seminars /explore visits		**65.76**	**65.76**	0.00	-	**65.76**
	Sub Total D		**308.47**	**308.47**	**0.00**	-	**308.47**
F	**Operationalisation of Forestry Extension Strategy of ICFRE (5 Years)**						
(i)	**Strengthening the existing extension activities**						
	Van Vigyan Kendras (VVKs)		**594**	**594**	**0.00**	-	**594**
	Demo Villages (DVs)		**140**	**140**	**0.00**	-	**140**
	Farmers' Mela		**220**	**220**	**0.00**	-	**220**
	Extn. normal		**70**	**70**	**0.00**	-	**70**
	Sub sub total (i)		**1024**	**1024**	**0.00**	-	**1024**
(ii)	**New Extension Initiative**						
	TDC		**188**	**188**	**0.00**	-	**188**
	Preparation of documentaries		**10**	**10**	**0.00**	-	**10**
	MDTC		**232**	**232**	**0.00**	-	**232**
	Sub sub total (ii)		**430**	**430**	**0.00**	-	**430**
	Sub Total E (i) + E(ii)		**1454**	**1454**	**0.00**	-	**1454**
	Grand Total (A+B+C+D+E+F)		**12576.75**	**8206.3**	**2568.07**	**1802.38**	**12576.74**

India Council of Forestry Research and Education
New Forest, Dehradun - 248006
Uttrakhand, India

No.5-7/2019-ICFRE/Admin/Budget

Directorate of Administration
Indian Council of Forestry Research & Education
P.O. New forest, Dehradun-248006

Dated 11.02.2019

To,

Shri D. K. Sinha
Inspector General of Forests (CAMPA/SU)
Ministry of Environment, Forest & Climate Change
Indira Paryavaran Bhavan.
New Delhi-110003

Sub.: Request to release funds for implementation of ICFRE Scheme "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" reg.

Sir,

This is with reference to proposal No. 72(XVII) 2018/ICFRE (R)/RP/Project proposals/183 dated 24th September, 2018 from Director General, ICFRE (copy enclosed), submitting ICFRE scheme namely **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** for a period of 5 years from 2018-19 to 2024-25 for a total budget of Rs. 313.67 crores. The scheme was submitted to provide scientific intervention for restoring and improving the ecosystem services for the consideration of the competent authority. The scheme comprises of following six components:

I. All India Coordinated Research Projects (AICRPs)
II. National Programme for Conservation and Development of Forest Genetic Resources (FGR)
III. Policy studies under Centre for Forest Policy Research
IV. Capacity building of state Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy
V. Operationalization of Forestry Extension Strategy and Action Plan of ICFRE
VI. Operationalization of Human Resources Development Plan of ICFRE

The components are designed to address the issues of ecosystem improvement, improving productivity of important species including bamboo, seed technology, bio-prospecting, fuel wood, climate change mitigation, carbon sequestration, capacity building, forest resource conservation, extension and human resources development apart from development of forest genetic resources and undertaking forest policy research on selected contemporary topics.

The year wise breakup of the components is as under:

S. No.	Component	Project Year					Total* (in crores)
		1st	2nd	3rd	4th	5th	
1	All India Coordinated Research Projects (AICRPs)	5565	5126	3511	2812	2739	198.00
2	National Program for conservation and development of Forest Genetics Resource (FGR)	2406	842	711	634	605	51.99

DIG(FC) Dy. No. 19819 Date 21/2/2019

O/o IGF (DKS) Dy.No. 19818 22-2-2019

3	Center for Forest Policy Research (CFPR) of ICFRE	**114**	**53**	**53**	**53**	**53**	**3.26**
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy	**56**	**64**	-	-	-	**1.20**
5	Operationalization of Human Resource Development Plan of ICFRE	**41**	**308**	**287**	**249**	**248**	**11.34**
6	Operationalisation of Forestry Extension Strategy of ICFRE	**1056**	**818**	**978**	**938**	**998**	**47.88**
TOTAL		**9239**	**7211**	**5504**	**4685**	**4643**	**313.67**

It is understood that the scheme is under active consideration of the competent authority for approval. It is requested to release Rs. 50.00 crores as first instalment at the earliest towards implementation of the scheme immediately.

Yours faithfully,

12/7/19

(A.S.Rawat)
DDG (Admin.), ICFRE
Dehradun

Encl.: As above

डॉ. सुरेश गैरोला, भा.व.से.
Dr. Suresh Gairola, IFS

कुलाधिपति, व.अ.सं. विश्वविद्यालय
Chancellor, FRI University

महानिदेशक
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
डाकघर न्यू फॉरेस्ट, देहरादून-248006
(आई.एस.ओ 9001:2008 प्रमाणित संस्था)

Director General
Indian Council of Forestry Research and Education
P.O. New Forest, Dehra Dun - 248 006
(An ISO 9001:2008 Certified Organisation)

No. 72(XVIII)2018/ICFRE®/RP/Project Proposals /183 Dated the 24th September 2018

To

Shri D. K. Sinha
Inspector General of Forest (CAMPA/ SU)
Ministry of Environment, Forests and Climate Change, GOI,
Indra Paryavaran Bhawan, Jor Bagh, New Delhi

Subject: Comprehensive proposal of ICFRE for funding from NCAF for executing the proposed scheme **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** – reg

Sir,

Indian Council of Forestry Research and Education (ICFRE), Dehradun is a national level scientific organization involved in forestry research to meet the emerging challenges in the sector. The council has been undertaking holistic research to resolve forestry research issues and extending the research outputs to various stakeholders such as industry, state forest departments, farmers, etc. The council has necessary infrastructure and dedicated scientific human resource to provide scientific and technical support in recouping and improving the ecosystem services and developing good green cover.

Restoration of ecosystem services lost/ compromised is a challenging task and requires integrated scientific and technological inputs. Robust scientific technologies and interventions are required to be developed and used so that ecosystem services lost/ compromised are recovered and improved in shortest possible time. Accordingly, ICFRE has prepared a scheme entitled "**Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement**" to provide scientific interventions for restoring and improving the ecosystem services. The scheme is being submitted for funding under the National Compensatory Afforestoration Fund (NCAF) and comprises of the following six components:

i. All India Coordinated Research Projects (AICRPs)
ii. National Programme for Conservation and Development of Forest Genetic Resources (FGR)
iii. Policy studies under Centre for Forest Policy Research
iv. Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy
v. Operationalisation of Forestry Extension Strategy and Action Plan of ICFRE
vi. Operationalization of Human Resource Development Plan of ICFRE

दूरभाष / Phone : 135-2759382 (O)
EPABX : 0135-2224855, 2224333 (O)
ई–मेल / e-mail : dg@icfre.org
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The scheme will be implemented by ICFRE institutes and by networking with other domain expert institutes in the country. The scheme and its components are so designed to help in addressing the issues of ecosystem improvement, with focus on improving productivity of important species including bamboo, seed technology, bio-prospecting, fodder, fuel wood, invasive, soil health, forest fire, water and nutrient budgeting, climate change mitigation, carbon sequestration, capacity building, forest resource conservation, besides improving livelihoods.

The scheme is proposed for a total budget of Rs. 313.67 crores for a period of 5 years (60 months),i.e, from 2018-19 to 2024-25. A strong mechanism of monitoring and review will oversee the progress of these components. This scheme will provide adequate funds and financial security in the hands of ICFRE to address the research, policy and extension issues of national importance related to recouping the ecosystem services of diverted forest land by developing a synergy between diverse manpower available within and outside ICFRE to address the issues in the holistic manner by involving expertise from different fields.

It is, therefore, requested that the proposed scheme may kindly be considered for approval and funding from NCAF starting with financial year 2018-2019. Detailed proposal of the scheme and its components is attached.

Yours faithfully

(Dr S.C. Gairola)

Encl: As above (In triplicate)

Copy to Directors (All) for information

सत्यमेव जयते

डॉ. सुरेश गैरोला, भा.व.से.
Dr. Suresh Gairola, IFS

कुलाधिपति, व.अ.सं. विश्वविद्यालय
Chancellor, FRI University

महानिदेशक
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
डाकघर न्यू फॉरेस्ट, देहरादून - 248006
(आई एस ओ 9001:2008 प्रमाणित संस्था)

Director General
Indian Council of Forestry Research and Education
P.O. New Forest, Dehra Dun - 248 006
(An ISO 9001:2008 Certified Organisation)

No. 72(XVIII)2018/ICFRE®/RP/Project Proposals /183 Dated the 24th September 2018

To

Shri D. K. Sinha
Inspector General of Forest (CAMPA/ SU)
Ministry of Environment, Forests and Climate Change, GOI,
Indra Paryavaran Bhawan, Jor Bagh, New Delhi

DIG(FC) Dy. No. E176157 Date 26/9/2018

Subject: Comprehensive proposal of ICFRE for funding from NCAF for executing the proposed scheme **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** – reg

Sir,

Indian Council of Forestry Research and Education (ICFRE), Dehradun is a national level scientific organization involved in forestry research to meet the emerging challenges in the sector. The council has been undertaking holistic research to resolve forestry research issues and extending the research outputs to various stakeholders such as industry, state forest departments, farmers, etc. The council has necessary infrastructure and dedicated scientific human resource to provide scientific and technical support in recouping and improving the ecosystem services and developing good green cover.

Restoration of ecosystem services lost/ compromised is a challenging task and requires integrated scientific and technological inputs. Robust scientific technologies and interventions are required to be developed and used so that ecosystem services lost/ compromised are recovered and improved in shortest possible time. Accordingly, ICFRE has prepared a scheme entitled **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** to provide scientific interventions for restoring and improving the ecosystem services. The scheme is being submitted for funding under the National Compensatory Afforestoration Fund (NCAF) and comprises of the following six components:

i. All India Coordinated Research Projects (AICRPs)
ii. National Programme for Conservation and Development of Forest Genetic Resources (FGR)
iii. Policy studies under Centre for Forest Policy Research
iv. Capacity Building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy
v. Operationalisation of Forestry Extension Strategy and Action Plan of ICFRE
vi. Operationalization of Human Resource Development Plan of ICFRE

O/o IGF (DKS) Dy.No. E176157 Dat 25.9.2018

दूरभाष / Phone : 135-2759382 (O)
EPABX : 0135-2224855, 2224333 (O)
ई–मेल / e-mail : dg@icfre.org
फैक्स / Fax : 0091-135-2755353

(2) 130

The scheme will be implemented by ICFRE institutes and by networking with other domain expert institutes in the country. The scheme and its components are so designed to help in addressing the issues of ecosystem improvement, with focus on improving productivity of important species including bamboo, seed technology, bio-prospecting, fodder, fuel wood, invasive, soil health, forest fire, water and nutrient budgeting, climate change mitigation, carbon sequestration, capacity building, forest resource conservation, besides improving livelihoods.

The scheme is proposed for a total budget of Rs. 313.67 crores for a period of 5 years (60 months),i.e, from 2018-19 to 2024-25. A strong mechanism of monitoring and review will oversee the progress of these components. This scheme will provide adequate funds and financial security in the hands of ICFRE to address the research, policy and extension issues of national importance related to recouping the ecosystem services of diverted forest land by developing a synergy between diverse manpower available within and outside ICFRE to address the issues in the holistic manner by involving expertise from different fields.

It is, therefore, requested that the proposed scheme may kindly be considered for approval and funding from NCAF starting with financial year 2018-2019. Detailed proposal of the scheme and its components is attached.

Yours faithfully

(Dr S.C. Gairola)

Encl: As above (In triplicate)

Copy to Directors (All) for information

No. 5-7/2019-ICFRE/Admin/Budget (151)

Directorate of Administration
Indian Council of Forestry Research & Education
P.O. New forest, Dehradun-248006

Dated 11.02.2019

To,

Shri D. K. Sinha
Inspector General of Forests (CAMPA/SU)
Ministry of Environment, Forest & Climate Change
Indira Paryavaran Bhavan.
New Delhi-110003

Sub.: Request to release funds for implementation of ICFRE Scheme "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" reg.

Sir,

This is with reference to proposal No. 72(XVII) 2018/ICFRE (R)/RP/Project proposals/183 dated 24th September, 2018 from Director General, ICFRE (copy enclosed), submitting ICFRE scheme namely **"Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement"** for a period of 5 years from 2018-19 to 2024-25 for a total budget of Rs. 313.67 crores. The scheme was submitted to provide scientific intervention for restoring and improving the ecosystem services for the consideration of the competent authority. The scheme comprises of following six components:

I. All India Coordinated Research Projects (AICRPs)
II. National Programme for Conservation and Development of Forest Genetic Resources (FGR)
III. Policy studies under Centre for Forest Policy Research
IV. Capacity building of state Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy
V. Operationalization of Forestry Extension Strategy and Action Plan of ICFRE
VI. Operationalization of Human Resources Development Plan of ICFRE

The components are designed to address the issues of ecosystem improvement, improving productivity of important species including bamboo, seed technology, bio-prospecting, fuel wood, climate change mitigation, carbon sequestration, capacity building, forest resource conservation, extension and human resources development apart from development of forest genetic resources and undertaking forest policy research on selected contemporary topics.
The year wise breakup of the components is as under:

S. No.	Component	Project Year					Total* (in crores)
		1st	2nd	3rd	4th	5th	
1	All India Coordinated Research Projects (AICRPs)	5565	5126	3511	2812	2739	198.00
2	National Program for conservation and development of Forest Genetics Resource (FGR)	2406	842	711	634	605	51.99

3	Center for Forest Policy Research (CFPR) of ICFRE	114	53	53	53	53	3.26
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans" under National REDD+ strategy	56	64	-	-	-	1.20
5	Operationalization of Human Resource Development Plan of ICFRE	41	308	287	249	248	11.34
6	Operationalisation of Forestry Extension Strategy of ICFRE	1056	818	978	938	998	47.88
TOTAL		**9239**	**7211**	**5504**	**4685**	**4643**	**313.67**

It is understood that the scheme is under active consideration of the competent authority for approval. It is requested to release Rs. 50.00 crores as first instalment at the earliest towards implementation of the scheme immediately.

Yours faithfully,

12/7/19

(A.S.Rawat)
DDG (Admin.), ICFRE
Dehradun

Encl.: As above

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National Compensatory Afforestation Fund Management and Planning Athority
Indira Paryavaran Bhavan
Aliganj, Jor Bagh Road, New Delhi-110003
e-mail:igfdks.mef@gov.in (IGF(SU)
Ph:011-24695336 (IGF(SU)

F. No. 11-100/2015-FC Dated: 7th March, 2019.

Notice of Executive Committee Meeting of National Authority

In continuation of meeting notice dated 06.03.2019 for 1st meeting of Executive Committee of National Authority constituted under section 9 of the Compensatory Afforestation Fund Act, 2016 which is scheduled to be held at **12:00 noon on 8th March, 2019, at the Krishna Hall, 4th Floor, Jal Block, Indira Paryavaran Bhawan, Aliganj, Jor Bagh Road, New Delhi-110003.** The agenda note for the meeting is enclosed.

You are requested to make it convenient to attend the meeting.

Encl: As above.

(D.K. Sinha)
Inspector General of Forests (SU)-cum-
Jt. Chief Executive Officer, National Authority

Copy to:

1. Director General of Forests and Special Secretary, Ministry of Environment, Forest and Climate Change, Government of India – Chairperson.
2. Additional Director General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change, Government of India – Member.
3. Additional Director General of Forests (Wildlife), Ministry of Environment, Forest and Climate Change, Government of India – Member.
4. Mission Director, National Mission for a Green India, Ministry of Environment, Forest and Climate Change, Government of India – Member
5. Financial Adviser, Ministry of Environment, Forest and Climate Change, Government of India - Member
6. Head of all Regional Offices of the Ministry of Environment, Forest and Climate Change
7. Inspector General of Forests (Forest Conservation), Ministry of Environment, Forest and Comate Change, Government of India – Member.
8. Chief Executive Officer of the National Authority – Member Secretary.
9. Project Directors of all Schemes (as per the list attached in Annexure) who have submitted the schemes for consideration of National Authority for funding for making a presentation of their proposals in the meeting.

(134) 27 379

AGENDA

1st Meeting of Executive Committee of National Authority

12:00 noon: Friday 8th March, 2019

Venue: Krishna Conference Hall

4th Floor, Jal Wing,

Ministry of Environment, Forest & Climate Change,

Indira Paryavaran Bhavan, Aliganj, Jor Bagh,

New Delhi – 110 003.

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AGENDA NOTE

1st Meeting of Executive Committee of National Authority

12:00 noon Friday on 8th March, 2019

Sl. No.	Agenda items	Page No.
1	**Agenda Item No. 1: Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement - ICFRE**	
2.	**Agenda Item No.2: Monitoring Protocol for Plantations and Assets Created by State Forest Departments (SFDs) from the Compensatory Afforestation Funds by FSI, Dehradun**	
3.	**Agenda No. 3: Annual Plan of Operation for the year 2019-20 of Chandigarh.**	
4.	**Agenda No. 4: Annual Plan of Operation for the year 2019-20 of Haryana**	
5.	**Agenda No. 5: Annual Plan of Operation for the year 2019-20 of [illegible]**	
6.	**Agenda No. 6: Examination and approval of ongoing schemes funded by Adhoc CAMPA approved by National CAMPA Advisory Council (NCAC)**	
	A. National Program for Conservation and Development of Forest Genetic Resources	
	B. UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region	
	C. Endangered Species Recovery Programme	
	D. Centre of Excellence for Forest-Based Livelihoods in Uttarakhand, Uttarakhand State Council for Science & Technology, Dehradun (UCOST)	

Agenda No. 1: Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement - ICFRE

Indian Council of Forestry Research and Education (ICFRE) submitted comprehensive proposal for funding from National Compensatory Afforestation Fund for executing the scheme "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement". The objectives of the scheme are as under:-

a. To undertake research aimed at enhancing the health and productivity of natural forests and plantations for augmenting ecosystem goods and services.
b. To undertake research aimed at efficient and sustainable resource use through value addition and development of appropriate technologies.
c. To establish a comprehensive national programme for conservation and development of Forest Genetic Resources.
d. To undertake policy research in forestry sector to analyze the policy gaps and determine concordant policies.
e. To undertake capacity building programmes for stakeholders, including forestry personnel, communities, tree growers and forest based industries.
f. To undertake an exclusive outreach programme taking research and technology to users through a comprehensive extension strategy.

2. The scheme has the following six components:

(i) All India Coordinated Research Projects (AICRPs) ;
(ii) National Programme for Conservation and Development of Forest Genetic Resources (FGR) ;
(iii) Policy studies under Centre for Forest Policy Research ;
(iv) Capacity Building of State Forest Departments for developing "State REDD + Action Plans" under National REDD + Strategy;
(v) Operationalization of Forestry Extension Strategy and Action Plan of ICFRE ;
(vi) Operationalization of Human Resources Development Plan of ICFRE.

3. The scheme will be implemented by ICFRE Institutes and by networking with other domain expert institutes in the country. The scheme and its components are so designed to help in addressing the issues of ecosystem improvement with focus on improving productivity of important species including bamboo, seed technology, bio-prospecting, fodder, fuel wood, invasive, soil health, forest fire, water and nutrient budgeting, climate change mitigation, carbon sequestration, capacity building, forest resource conservation, besides improving livelihoods.

4. The scheme is proposed for a total budget of Rs.313.67 crores for a period of 5 years (60 months), i.e. from 2018-19 to 2014-25. The year wise projections of budget of the components is as under –

Sl. No.	Component	Project Year (5 years)					Total (in Lacs)
		1st year	2nd year	3rd year	4th year	5th year	
1.	All India Coordinated Research Projects (AICRPs)	5565	5126	3511	2812	2739	19800
2.	National Program for conservation and development of FGR	2406	842	711	634	605	5199
3.	Studies by Center for Forest Policy Research (CFPR) of ICFRE	114	53	53	53	53	326
4.	Capacity building of State Forest Departments for developing "State REDD+ Action Plans".	56	64	-	-	-	120
5.	Operationalization Human Resource Development Plan of ICFRE	41	308	287	249	248	1134
6.	Operationalisaton of Forestry Extension Strategy and Action Plan for ICFRE	1056	818	978	938	998	4788
	Total	9239	7211	5504	4685	4643	31367

5. In the proposed scheme each programme / sub-programme is output driven and is of 3-5 years duration regress monitoring of the programme will be done by the ICFRE by involving domain experts. There will also be a mid-term evaluation by MoEF&CC from external experts.

The above scheme is placed before the Executive Committee of National Authority for examination and consideration.

Agenda Item No.2: Monitoring Protocol for Plantations and Assets Created by State Forest Departments (SFDs) from the Compensatory Afforestation Fund by FSI, Dehradun.

Compensatory Afforestation Fund Act, 2016 and Compensatory Afforestation Fund Rules, 2018 envisage third party monitoring of plantations and activities implemented by the State Forest Departments (SFDs) utilizing the funds sanctioned from the Compensatory Afforestation Funds by MoEF&CC, Govt. of India as per the approved Annual Plan of Operations (APOs) of the SFDs. In the meeting held on 31st August, 2018 under the chairmanship of DGF&SS it was decided that Forest Survey of India will develop and implement a monitoring protocol to meet the above stated monitoring requirement, following a scientific approach.

1.1 Objectives of monitoring

i. to monitor plantations raised under the APOs from CAMPA funds approved by MoEF&CC.
ii. to monitor other assets and activities implemented under the APOs.
iii. assess relevant parameters such as survival percentage and growth of plantations.
iv. to create a transparent monitoring platform accessible to different stake holders.

1.2 Scope of monitoring of Plantations

i. location and extent of plantations (area)
ii. estimate of species wise planted saplings
iii. estimate of survival percentage
iv. assess social & ecological impacts of the raised plantations

1.3 Scope of Monitoring Assets / Other Activities

i. Physical status of the activities/assets.
ii. Dimension/Extent/Quantum describing implemented work
iii. General assessment about the quality of implementation and its effectiveness

2. Framework of monitoring process

The monitoring process will involve the following steps.

1. FSI will develop a Web-GIS based platform dedicated for the above monitoring purpose appropriate to meet the requirement and adequately scalable to meet future requirements. The Web-GIS platform will include application for automatic processing of data and statistical analysis.
2. Each (SFDs) will upload information about each activity implemented under the approved (APOs) as per the prescribed forms and schedule including photographs, latitude and longitude of the place of execution.
3. Each activity will be identifiable by an ID created by the system. Plantations and other activities will be assigned separate sets of IDs.

4. Using stratified random sampling design, the IDs of the plantations and other activities would be s elected by the software with a given sampling intensity for each State.
5. For plantations, strata would be in terms of geographical spread, age and size of plantations (area).
6. IDs of the selected samples for plantations of a State would then be assigned to the respective Regional Office of FSI for field data collection on the plantation sites selected in terms of IDs in the sample. The plantation sites would be reached using latitude-longitude with the help of GPS.
7. Field data would be collected on pre designed forms either in hard copies or on PDAs/ Mobiles in soft copy format using server based application.
8. An on-line Plantation Journal will be tagged with each Plantation Id on the Web GIS Platform. Uploading of required information and regular updation will be the responsibility of the SFDs.
9. An annual calendar would be drawn for the above steps. Sampling of the plantations will be done annually after the planting season.
10. Data entry (or automatic capture through PDAs/Mobile) and data processing on the Web-GIS platform will lead to State-wise report.
11. All the plantation locations, polygons, photographs uploaded by the SFDs along with data collected for monitoring will be available for viewing to the officials as per the authorisation schedule.
12. A mobile App to facilitate monitoring, access of information on raised plantations and crowd sourcing of ground truth will also be developed.

1.5 Web GIS Platform

A server based Web-GIS Platform dedicated for the above monitoring purpose will be developed by FSI. The platform will facilitate online data submission in real-time or near-real time from all the locations in the country. It will also have facility to do automatic data processing and generating reports. Server of the platform will be housed at the FSI Headquarters at Dehradun.

1.6 On-line Plantation Journal

1) A form of Plantation Journal would be automatically annexed with each plantation site uploaded on the system which will have to be filled up by the officials of SFDs.
2) The plantation journal will have all necessary details as outlined in the annexure V which will be updated from time to time.
3) There will be a system of on-line input of inspection note by senior of officials inspecting the plantations. The inspecting official will be able to upload the photograph of plantation taken at the time of inspection.
4) The On-line Journal will also have provision for automatic annexure of satellite image clip showing the synoptic view of plantations on high resolution satellite image for each year.
5) A template for the On-line Plantation Journal is given at Annexure III.

1.7 Overall Magnitude of Sampling

Monitoring of Plantations and assets under CAMPA will be based on a sample size of around 1500 polygons having average 3 plots in each polygon for the whole country every year, depending on the overall implementation intensity.

2 Sampling Design:

2.1 Plantations

(i) State as a whole (for smaller States) or Circle (or cluster of districts), for large States would be taken as a unit for monitoring i.e. samples would be generated for each unit separately. The reason for not taking district as a unit is that each district may not have many plantations; some District/Division may not have even a single plantation.

(ii) Plantations include all afforestation & reforestation works like assisted natural regeneration, planting in blank areas, enrichment planting etc.

(iii) A stratified sampling approach would be followed for drawing samples of plantations (in terms of Ids) for each sampling unit separately. Stratification of the plantations would be done on terms of size of plantations (area).

(iv) The selected samples will be distributed in different size classes following PPS approach (area proportion to size). Strata for different size classes would as follows:

I. 0 to 15 ha
II. 15 to 30 ha
III. 30 to 45 ha
IV. >45 ha

(v) Sample size for data collection on the selected plantations in different years of creation would be as follows:

i. 1st year – 10%
ii. 2nd year – 10%
iii. 3rd year – 8%
iv. 4th year – 5%

(vi) Samples would be generated following stratified random sampling approach with the help of software as per the above stratification scheme.

(vii) Field observations for monitoring will be preferably taken during Oct to December.

(viii) Data will be collected as per the forms annexure I using PDAs or in hard copy forms.

(ix) Layout of the sample plots will be as per the annexure IV.

3.2 Assets & Other Works

(i) A separate set of sample in terms of Ids of the activities uploaded by the SFDs on web GIS platform will be drawn for assets and other works implemented under the approved APOs from the CAMPA funds.

(ii) This category of works will include all works other than plantations including nurseries.

(iii) Stratified random sampling approach will be followed for this category of works as well.

(iv) Stratification for the sampling would be done in terms of expenditure outlay of the works. Sampling intensity will be approximately 5%.

(v) Collection of data for the monitoring of other activities on the identified sample IDs would be done using the form given at Annexure III.

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3. Budget Outlay

(a) Capital Expenditure on Infrastructure (one time)

Sl. No.	Item	Amount (in lakh Rs)	Remarks
1.	Construction of a small separate building of Center for Monitoring of Plantations at the FSI Hq	300.00	The space in the existing building has saturated. It is proposed to build an Annexure to house the proposed Center (approx 6000 sq ft floor area)
2.	Establishing a Dedicated Web GIS Platform	100.00	
3.	Furnishing, Computers and other equipments	100.00	Including PDAs
4.	Field vehicles in zonal offices of FSI	64.00	2 vehicles in each zone of FSI.
5.	Miscellaneous	50.0	
6	Total	614.00	

(b) Annual Expenditure

Sl. No.	Item	Amount (in lakh Rs.)	Remarks
1.	Data Collection on approximately 2500 sample points of monitoring @ Rs. 12000 per sample point	300.00	Amount includes wages of contractual employees, TA and DA of the dedicated crews for the purpose, to be created in each Zone. Includes Sample points to be covered by ICFRE.
2.	Very High Resolution Satellite Data	300.00	IRS Cartosat PAN and multispectral or Cartosat PAN sharpened LISS IV. Data will be procured from NRSC.
3.	Data Entry, Processing and Analysis	50.00	
4.	Report Preparation	30.00	
5.	Miscellaneous	20.00	
	Total	700.00	

The above scheme of Rs.1314.00 lakhs is placed before the Executive Committee of National Authority for examination and consideration.

Agenda No. 3: Annual Plan of Operation for the year 2019-20 of Chandigarh.

Vide letter dated 07.12.2018, Department of Forests and Wildlife, Chandigarh Administration has submitted Annual Plan of Operation of State CAMPA/State Authority for the year 2019-20, with an outlay of Rs.1.874 crores. The APO has been approved in the meeting of the State level Steering Committee held on 05.07.2018.

2. The APO for the year 2019-20 of Rs. 1.8749 crore is approved by Steering Committee of State CAMPA, Chandigarh under Compensatory Afforestation and Maintenance of plantation for Chandigarh Range and Nepli Range.

4. The APO of Rs.1.8749 crore for the year 2019-20 is placed for examination and consideration of Executive Committee of National Authority.

Agenda No. 4: Annual Plan of Operation for the year 2019-20 of Haryana

Vide letter dated 22.01.2019, Haryana CAMPA (State Authority), Panchkula has submitted Annual Plan of Operation of State CAMPA/State Authority for the year 2019-20. The APO of Rs.9684.94 lakhs has been approved in the meeting of the State level Steering Committee held on 08.02.2019. The approved component details are as under:

(i)	CA fund	:	Rs.4304.92 lakhs ;
(ii)	NPV money	:	Rs.4800.27 lakhs ;
(iii)	Interest money:	:	Rs. 579.75 lakhs.
	Total	:	**Rs.9684.94 lakhs**

2. **(i) Proposal under CA component:**

- Maintenance of CA plantation (a provision of Rs.2104.92 lakh for maintenance of plantation raised in previous years).

- New work of CA plantation will be covered under CA fund (Rs.2200.00 lakhs for new CA works).

(ii) **Proposal under NPV Component:**

- Maintenance of NPV plantation- Rs.2014.27 lakhs for maintenance of 6920.00 ha plantation raised from NPV funds for new NPV plantation.

- Plantation of tall plants in linear and block forest etc. (Rs.1000.00 lakh for plantation with provision of barbed wire fencing in linear and block forests).

- Plantation of Native Species for block forest area which was having salt affected soils and planted with Mesquite and Eucalyptus for soil reclamation and Rs. 336.00 lakhs for 100.00 ha plantation, installation of tube-wells and fencing.

- Modernization of 25 nurseries during 2019-20 for a cost of Rs.250 lakhs.

- For wildlife conservation and management works an amount of Rs.500.00 lakh for habitat improvement and infrastructure development works, development of Snake Park and Elephant Rescue Centre.

- For Research, Seed Collection, Publicity cum Awareness Generation, Training & Education a provision of Rs.200.00 lakh has been kept.
- For Soil & Moisture Conservation Activities a provision of Rs.500.00 lakh for upper reaches of Yamuna River Basin falling in Haryana.

(iii) **Proposal for expenditure from interest money:**

- An amount of Rs.125.00 lakh was approved to meet the expenditure in respect of pay and allowances of Officers/Officials of State Authority.

- An amount of Rs. 15.00 lakhs for hiring of vehicle/staff cars of the Officer for the State Authority.

- An amount of Rs.25.00 lakh was proposed for management of offices establishment/office expenditure of State Authority.

- An amount of Rs.10.00 lakh was proposed for hiring office space for State Authority.

- For 3rd Party monitoring and evaluation an amount of Rs.20.00 lakh was proposed.

- Provision to offset the incremental cost of CA at the increased wage rate an amount of Rs.384.75 lakhs (@ 5% escalation) was proposed (wages rates are generally revised by the State Labour Department twice in a year).

3. The APO 2019-20 of Rs. 9684.94 lakhs is placed before Executive Committee of National Authority for examination and consideration.

Agenda No. 5: Annual Plan of Operation for the year 2019-20 of Tripura.

Vide letter dated 07.02.2019, Department of Forests, Government of Tripura, Agartala has submitted Annual Plan of Operation of State CAMPA/State Authority for the year 2019-20. As per the minutes of the Steering Committee an amount of Rs.1674.08 Lakhs, has been approved the APO has been approved in the meeting of the State level Steering Committee held on 29.12.2018 for an amount of Rs. 1674.08 lakh as per the following break-up:

CA (Compensatory afforestation) related activities	: Rs. 661.99 lakhs
NPV (Net Present Value) related activities	: Rs. 928 lakhs
Other than CA & NPV related activities	: Rs. 084.09 lakhs

2. The APO has also mentioned Rs. 15.00 lakhs in Nagar Van Udhyan Yojna. This has come under ongoing scheme of National Authority, therefore, after deduction Rs. 15.00 lakhs the APO comes out to be Rs. 16.59 crores for year 2019-20.

4. The items which are to be taken under interest head, are kept in provision of NPV head, like- other support, Capacity building for monitoring with the District Forest Officer through video conferencing Rs. 13.50 lakhs, Office Support: Rs. 52.60 lakhs and Evaluation of works taken up under CAMPA during 2018-19: Rs. 4.00 lakhs.

5. The APO for year 2019-20 of Rs. 16.59 crore is placed before Executive Committee of National Authority for examination and consideration.

Agenda No. 6: Examination and approval of ongoing schemes funded by Adhoc CAMPA approved by National CAMPA Advisory Council (NCAC)

A. **National Program for Conservation and Development of Forest Genetic Resources**

Project proposal entitled "National Program for Conservation and Development of Forest Genetic Resources: Pilot Project Proposal is being implemented at FRI, Dehradun" from assistance out of the corpus available with the NCAC.

2. The objectives of the project are-

- Preparation of comprehensive inventory with population and threat status of 250 FGRs of Uttarakhand.
- Preparation of priority list of FGRs with road map for their conservation and development with eco-distribution maps of 50 priority FGRs.
- Collection and depositing of seed of 100 FGR species in Seed Banks towards medium and long-term conservation.
- Evaluation and molecular characterization of 5 important FGRs of commercial importance.
- Studying of genetic diversity and population structure of 5 important FGRs and initiation of their *in situ* conservation measures.
- Establishment of Field Gene Banks of 10 FGR species of high conservation & commercial importance.
- Protection of Indian FGR diversity through registration of specific landraces, varieties, clones, etc.
- Producing starting planting material of at least 10 important phenotypically superior tree species for providing to SFDs for further multiplication for plantation programs.
- Developing well studied, systematic and sustainable protocols for utilization of forest genetic resources for supporting livelihoods.
- Development of comprehensive computerized database on FGR of Uttarakhand.

The project is for a period of five years (2016-2020) with an outlay of Rs. 861.20 lakhs. The project was started in 2016. The progress report of the project upto quarter ending June, 2018 has been submitted by the FRI.

The budget released for the project from 2016 till date is as under:-

Year	Amount released (in Rs.)	Instalment
2016	1,46,25,000.00	1st
2017	1,46,25,000.00	2nd
2017	2,45,00,000.00	3rd
2018	1,27,05,000.00	4th

The matter is submitted before the Executive Committee of the National Authority for consideration of release of Rs. 109.45 lakhs for the year 2019-20.

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B. UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region

The project is for operationalization of UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region at Wildlife Institute of India, Dehradun for funding of Rs. 18.66 crore over the period of six years (2013-14 to 2018-19).

The Centre's mission is to strengthen implementation of world heritage convention in Asia and the Pacific Region by building the capacity of all those professionals and bodies involved with world natural heritage site inscription protection, conservation and management in Asia and the Pacific region, through training, research, dissemination of information and net work building. Te overall objective is to focus on natural heritage conservation issues with the aim to:

- Contribute to the strengthening of capacities in the management of Natural World Heritage in the region;
- Contribute to achieving a more balanced representation of properties from Asia and the Pacific on the World Heritage List;
- Raise awareness among the general public and the youth in particular of the importance of Natural World Heritage and the need to protect it; and
- Foster international cooperation on Natural World Heritage initiatives.

The detail of fund released to Wildlife Institute of India is as under:

Year	Amount released (in Rs.)	Instalment
2014	1,00,00,000.00	1st
2015	2,47,37,000.00	2nd
2017	2,25,00,000.00	3rd
2018	2,25,00,000.00	4th

The matter is submitted before the Executive Committee of the National Authority for consideration and approval of Rs. 349.93 lakh for the year 2019-20 as per the approved scheme.

3/4 (50)

C. Endangered Species Recovery Programme

The project for Endangered Species Recovery Programme (ESRP) in respect of four endangered species, i.e., Great Indian Bustard, Genetic Dolphin, Dugong and Manipur Deer was approved with budget out lay of 100.38 crore from 2015-2021. The detail of the projects and releases are as under:-

(Rs. in crore)

Sl. No.	Name of the project	Duration of the project	Total five years cost	Amount released (1st instalment in year 2015)	Amount released (2nd instalment)
1.	Habitat improvement and conservation breeding of the Great Indian Bustard: An integrated approach	5 years	33.85	9.95	
2.	Development of Conservation Action Plan for River Dolphins	5 years	23.00	4.60	4.60
3.	Recovery of Dugong and their habitats in India: An integrated participatory approach	5 years	23.58	5.17	
4.	Conservation of Manipur's Brow Antlered Deer or Sangai: An integrated approach	5 years	19.95	1.30	4.90

The 2nd instalment for Development of Conservation Action Plan for River Dolphins and Conservation of Manipur's Brow Antlered Deer or Sangai projects of Rs. 4.6 crore and Rs. 4.9 crore has already been released.

The matter is submitted before the Executive Committee of the National Authority for consideration and approval of Rs. 4.009 crore for recovery of Dugong and their habitats in India and Rs. 7.16 crore for habitat improvement and conservation breeding of the Great Indian Bustard for the year 2019-20 as per the approved scheme.

National Compensatory Afforestation Fund Management and Planning Authority
Indira Paryavaran Bhavan
Aliganj, Jor Bagh Road, New Delhi-110003
e-mail:igfdks.mef@gov.in (IGF(SU)
Ph:011-24695336 (IGF(SU)

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F. No. 11-100/2015-FC

Date: 28th March, 2019.

NOTE

A copy of 1st meeting of Executive Committee of National Compensatory Afforestation Fund Management and Planning Authority held on 08th March, 2019 under the Chairmanship of Director General of Forests & Special Secretary / Chairman, Executive Committee, Ministry of Environment, Forest and Climate Change is enclosed for information and necessary action.

Encl: As above

(D.K. Sinha)
Inspector General of Forests (SU)-cum-
Jt. Chief Executive Officer, National Authority

Distribution:

1. Director General of Forests and Special Secretary, Ministry of Environment, Forest and Climate Change, Government of India – Chairperson.
2. Additional Director General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change, Government of India – Member.
3. Additional Director General of Forests (Wildlife), Ministry of Environment, Forest and Climate Change, Government of India – Member.
4. Mission Director, National Mission for a Green India, Ministry of Environment, Forest and Climate Change, Government of India – Member
5. Financial Adviser, Ministry of Environment, Forest and Climate Change, Government of India - Member
6. Head of all Regional Offices of the Ministry of Environment, Forest and Climate Change.
7. Inspector General of Forests (Forest Conservation), Ministry of Environment, Forest and Comate Change, Government of India – Member.
8. Chief Executive Officer of the National Authority – Member Secretary.
9. Guard file.

28/03
DIG (SU)

2/4/19
National Authority
DEO

Minutes of 1st Meeting of Executive Committee of National Authority held at 12.00 noon Friday on 8th March, 2019

Chairman welcomed all participants present in the first meeting of the Executive Committee. A list of participants is at Annexure-I and the quorum was complete.

The Member Secretary briefed the functions and duties of the Executive Committee of the National Authority to the members present in the meeting. It was informed that the process of appointment of non-official members of the Executive Committee is in progress. The recommendations for candidates have been received and the last date for receipt of the recommendations is 14th March, 2019 and the screening will be done thereafter for preparation of panel for appointment by the Ministry as per the rule 15 of the CAF Rules 2018.

The Member Secretary informed that section 15 provides the functions and duties of the Executive Committee are under:

15. (*1*) The executive committee of the National Authority shall—

i. approve within three months from the date of receipt, annual plan of operations of State Authorities, with such amendments as it deems fit and proper;
ii. formulate proposals for schemes specified in sub-clause (*iii*) of clause (*b*) of section 5;
iii. execute schemes specified in sub-clause (*iii*) of clause (*b*) of section 5;
iv. deploy staff on contract or on deputation basis to the posts in the National Authority;
v. formulate proposals for creation of posts in the National Authority at the level of Assistant Inspector General of Forests and other officers;
vi. invest surplus amounts available in the National Fund;
vii. execute other day-to-day work in respect of receipt of amounts in the National Fund;
viii. maintain books of account and such other records;
ix. facilitate scientific, technological and other assistance that may be required by State Authorities;
x. present its decisions to the governing body of the National Authority for information;
xi. maintain and update a public information system on the National Authority and present all information on its transaction in the public domain;
xii. undertake any other work as may be assigned by the governing body of the National Authority or the Central Government, from time to time.

The following agenda items related to sub section 15(1)(i) and 15(1)(ii) only referred above were considered in the meeting.

Agenda Item No. 1 (New Scheme): Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE

The project proposal for strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement submitted by Indian Council of Forestry Research and Education (ICFRE) was placed before the Executive Committee. DG, ICFRE made a presentation of the project before the Executive Committee and apprised that the scheme will provide scientific intervention for restoring and improving the eco-system services. DG, ICFRE apprised the Committee the objectives and components of the schemes and deliverable of the schemes. The objectives of the scheme are as under:-

a) To undertake research aimed at enhancing the health and productivity of natural forests and plantations for augmenting ecosystem goods and services.
b) To undertake research aimed at efficient and sustainable resource use through value addition and development of appropriate technologies.
c) To establish a comprehensive national programme for conservation and development of Forest Genetic Resources.

d) To undertake policy research in forestry sector to analyze the policy gaps and determine concordant policies.
e) To undertake capacity building programmes for stakeholders, including forestry personnel, communities, tree growers and forest based industries.
f) To undertake an exclusive outreach programme taking research and technology to users through a comprehensive extension strategy.

The scheme has the following six components:

i. All India Coordinated Research Projects (AICRPs) ;
ii. National Programme for Conservation and Development of Forest Genetic Resources (FGR);
iii. Policy studies under Centre for Forest Policy Research;
iv. Capacity Building of State Forest Departments for developing "State REDD + Action Plans" under National REDD + Strategy;
v. Operationalization of Forestry Extension Strategy and Action Plan of ICFRE ;
vi. Operationalization of Human Resources Development Plan of ICFRE.

The scheme will be implemented by ICFRE Institutes. The total budget of the scheme was proposed to be **Rs. 313.67 crore** to be spent for a period of 5 years starting in FY 2018-19.

After considering the various components the Committee recommended for approval of this new scheme of ICFRE. It was further recommended that mid-term review should be done by independent experts and the scheme should be reviewed accordingly. It was pointed out that the annual plan for 2018-19 may be reconsidered due to the fact that the proposal was placed in March, 2019. The whole financial outlay may be reworked and submitted for final approval by the National Compensatory Afforestation Fund Management and Planning Authority.

Agenda Item No.2 (new Scheme):Monitoring Protocol for Plantations and Assets Created by State Forest Departments (SFDs) from the Compensatory Afforestation Fund by FSI, Dehradun

The Compensatory Afforestation Fund Act 2016 provides for the Constitution of Monitoring Group. The Ministry has assigned the responsibility to the FSI to develop the monitoring protocol for monitoring and evaluation of the works undertaken from Compensatory Afforestation Fund in the country.

The DG, FSI has submitted the scheme for **Rs. 13.14 crore** for developing monitoring protocol.

The following were explained by DG, FSI.

Objectives of monitoring

i. to monitor plantations raised under the APOs from CAMPA funds approved by MoEF&CC.
ii. to monitor other assets and activities implemented under the APOs.
iii. assess relevant parameters such as survival percentage and growth of plantations.
iv. to create a transparent monitoring platform accessible to different stake holders.

Scope of monitoring of Plantations

i. location and extent of plantations (area)
ii. estimate of species wise planted saplings
iii. estimate of survival percentage
iv. assess social & ecological impacts of the raised plantations

Scope of Monitoring Assets / Other Activities

i. Physical status of the activities/assets.
ii. Dimension/Extent/Quantum describing implemented work
iii. General assessment about the quality of implementation and its effectiveness

The DG, FSI proposed the framework of monitoring process and explained that the monitoring process will involve the following steps.

1. FSI will develop a Web-GIS based platform dedicated for the above monitoring purpose appropriate to meet the requirement and adequately scalable to meet future requirements. The Web-GIS platform will include application for automatic processing of data and statistical analysis.
2. Each (SFDs) will upload information about each activity implemented under the approved (APOs) as per the prescribed forms and schedule including photographs, latitude and longitude of the place of execution.
3. Each activity will be identifiable by an ID created by the system. Plantations and other activities will be assigned separate sets of IDs.
4. Using stratified random sampling design, the IDs of the plantations and other activities would be s elected by the software with a given sampling intensity for each State.
5. For plantations, strata would be in terms of geographical spread, age and size of plantations (area).
6. IDs of the selected samples for plantations of a State would then be assigned to the respective Regional Office of FSI for field data collection on the plantation sites selected in terms of IDs in the sample. The plantation sites would be reached using latitude-longitude with the help of GPS.
7. Field data would be collected on pre designed forms either in hard copies or on PDAs/ Mobiles in soft copy format using server based application.
8. An on-line Plantation Journal will be tagged with each Plantation Id on the Web-GIS Platform. Uploading of required information and regular updation will be the responsibility of the SFDs.
9. An annual calendar would be drawn for the above steps. Sampling of the plantations will be done annually after the planting season.
10. Data entry (or automatic capture through PDAs/Mobile) and data processing on the Web-GIS platform will lead to State wise report.
11. All the plantation locations, polygons, photographs uploaded by the SFDs along with data collected for monitoring will be available for viewing to the officials as per the authorisation schedule.
12. A mobile App to facilitate monitoring, access of information on raised plantations and crowd sourcing of ground truth will also be developed.

It was recommended that the scope of monitoring should be increased to the previous year plantation activities undertaken under CAMPA since beginning starting 1980. It was pointed out by some members that the fund for Compensatory Afforestation has been released since 2009 so the monitoring should be done for CA done after 2009. It was, however, agreed that the monitoring should be done for all plantations to have a database and also to ensure effective control. The financial requirement for this additional work may be worked out by FSI if required. The data of e-green watch may be incorporated with the web-

based GIS platform to be developed under this scheme and the new GIS platform should be user friendly and provide alerts in case of observation / data goes beyond critical limit.

Considering the components of proposal, the Committee recommended the scheme submitted by FSI with the observation to complete the works in time bound manner. The same will be put up to the National Compensatory Afforestation Fund Management and Planning Authority for final approval.

Agenda No. 3: Annnal Plan of Operation for the year 2019-20 of Chandigarh.

The Annual Plan of Operation of Chandigarh State Authority for 2019-20 was put up before the Executive Committee for examination and consideration. The Executive Committee considered and approved the APO of **Rs. 1.8749 crore** for the year 2019-20.

Agenda No. 4: Annual Plan of Operation for the year 2019-20 of Haryana

Agenda Item No. 5: Annual Plan of Operation for the year 2019-20 of Tripura

Additional Item No. 1: Annual Plan of Operation for the year 2019-20 of Madhya Pradesh

Additional Item No. 2: Annual Plan of Operations for the year 2019-20 Gujarat.

The APOs for Haryana, Tripura, Madhya Pradesh and Gujarat were placed for consideration of the Committee.

The AS&FA observed that the proposal / documents should be provided to members at least one week before the meeting for thorough examination. Other members also endorsed the views of AS&FA. It was recommended by the committee that the hard and soft copies of the APO should be provided to each member for their perusal. It was also observed by the ADG(FC) that these APOs should be examined by the concerned Regional Office and then discussed in the meeting. A letter to this effect may be sent to all the Regional Offices.

The Committee recommended to put up these APOs in the next meeting of Executive Committee after proper examination.

Agenda No. 6: Examination and approval of existing schemes funded by Ad-hoc CAMPA approved by National CAMPA Advisory Council (NCAC)

The member Secretary informed the Committee that the NCAC has approved following schemes implemented by various Institutions.

1. WII – UNESCO C2C Centre on world natural heritage management and tainting for the Asia Pacific Region at WII
2. WII – Conservation of Species
3. UCOST – Assistance to Uttrakhand Council for Science and Technology
4. FRI – Assistance to Centre of Excellence on Forest Genetic Resource
5. FSI – Support to FSI for Centre of Excellence/
6. FSI – Centre of Excellence – Part funding for forest fire monitoring project.
7. NICSI – e-Green Watch/Web based proposal monitoring system
8. IIFM, Bhopal – Support to Geo Informatics Centre

The following schemes were placed before the Executive Committee for consideration. Detailed presentations were made by the representatives of the Institutes implemented by the schemes.

A. National Program for Conservation and Development of Forest Genetic Resources

Project proposal entitled **"National Program for Conservation and Development of Forest Genetic Resources: Pilot Project Proposal** is being implemented at FRI, Dehradun.

The objectives of the project are-

1. Preparation of comprehensive inventory with population and threat status of 250 FGRs of Uttarakhand.
2. Preparation of priority list of FGRs with road map for their conservation and development with eco-distribution maps of 50 priority FGRs.
3. Collection and depositing of seed of 100 FGR species in Seed Banks towards medium and long-term conservation.
4. Evaluation and molecular characterization of 5 important FGRs of commercial importance.
5. Studying of genetic diversity and population structure of 5 important FGRs and initiation of their *in situ* conservation measures.
6. Establishment of Field Gene Banks of 10 FGR species of high conservation & commercial importance.
7. Protection of Indian FGR diversity through registration of specific landraces, varieties, clones, etc.
8. Producing starting planting material of at least 10 important phenotypically superior tree species for providing to SFDs for further multiplication for plantation programs.
9. Developing well studied, systematic and sustainable protocols for utilization of forest genetic resources for supporting livelihoods.
10. Development of comprehensive computerized database on FGR of Uttarakhand.

The project period is 2016-2020 with an outlay of **Rs. 861.20 lakhs.** So far Rs.664.55 lakh has been released under the scheme. The outlay for 2019-20 was proposed for Rs. 109.45 Lakh. The Committee after considering the scheme approved the continuation of Scheme and recommended for allocation of Rs. 109.45 Lakh for the year 2019-20 as per the approved scheme.

B. UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region

The total scheme was for **Rs. 18.66 crore** for a period of six years ending 2019.

The overall objective is to focus on natural heritage conservation issues with the aim to:

1. Contribute to the strengthening of capacities in the management of Natural World Heritage in the region;
2. Contribute to achieving a more balanced representation of properties from Asia and the Pacific on the World Heritage List;
3. Raise awareness among the general public and the youth in particular of the importance of Natural World Heritage and the need to protect it; and
4. Foster international cooperation on Natural World Heritage initiatives

So far, **Rs. 8.9737 crore** has been released to Wildlife Institute of Indian under this project.

The WII informed the Committee that the period may be extended for three years from 2019 to 2022 with 'no cost extension' to complete the pending works.

The Committee examined the proposal and recommended for the proposed extension for three years with 'no cost extension' with suggestions to rework the annual financial requirement component wise without increase in cost. Committee also approved of Rs. 3.4993 crore for the year 2019-20.

The Committee recommended that a third party independent evaluation may be done by experts including the members of the Committee.

C. Endangered Species Recovery Programme

The WII informed that the project for Endangered Species Recovery Programme (ESRP) in respect of four endangered species, i.e., Great Indian Bustard, Genetic Dolphin, Dugong and Manipur Deer was in progress and a total outlay of **Rs.100.38 crore** has been sanctioned for five years (from 2015-2021).

The Committee observed that the implementation of the scheme is very slow. It was pointed out by AS&FA that similar programme for Great Indian Bustard is being implemented by State Government and the programme is being funded by MoEF&CC. It appears that there is some duplicity. It was explained by WII that these two programmes have different objectives and purpose and this programme is implemented from CAMPA fund. After examining the proposal the Committee recommended for the approval of the ongoing scheme and release of **Rs. 7.16 crore** for Habitat improvement and conservation breeding of the Great Indian Bustard and release of **Rs. 4.009 crore** for Recovery of Dugong and their habitats in India as per the approved scheme.

D. Centre of Excellence for Forest Based Livelihoods in Uttarakhand, Uttarakhand State Council for Science & Technology, Dehradun (UCOST)

The UCOST has informed that the scheme **"Centre of Excellence for Forest Based Livelihood"** is in progress and outlay of Rs. 45,25,150.00 per annum for a period of five years was approved.

The overall objectives of the project are-

a) To collect all the available data on forest based produce with focus on non-timber products like medicinal plants and bamboo and to create a clearing house for the same.
b) To create a resource directory of various government and non-government organisations, private institutes and experts working in the area of forest livelihood.
c) To interact with people through Focused Group Discussion (FGD) and to estimate their dependence on forests for their livelihood.
d) To conduct socio-economic analysis and estimate cultural dependence of the forest fringe villages on forestry.
e) To do value and supply chain analysis for different forest products.

So far an amount of **Rs. 135,75,450.00** has been released to UCOST under the scheme.

UCOST has proposed the budget for 3rd and 4th year of **Rs. 73,01,838.00** and Rs. **69,56,838.00 respectively**. UCOST informed the Committee that the increase of amount is due to following reasons

(i) The salary budget of Senior Scientist and Scientists including DA @ 4% of the present scale and HRA @ 75% of the previous Grade Pay as are applicable on the date.

(ii) HRA @ of 20% of SRF ship.

(iii) For recruitment of two field assistants from 3rd year of the project.

The Committee examined the proposal and recommended continuity of this scheme approved by NCAC and increase in the outlay for 2018-19 and 2019-20 as proposed by the project proponent.

Additional Agenda Item-3: Establishing FSI Cell in Each State for Strengthening Monitoring and Forest Resource Assessment.

The scheme was submitted by the Forest Survey of India. DG, FSI has explained that State Forests Department (SFDs) are the major stakeholders of information generated by FSI. Almost every information generated by FSI is useful to SFDs particularly activities like Forest Fire, Forest Cover, Forest Types, Forest Inventory etc. are widely used by SFDs. Now with the implementation of Compensatory Afforestation Fund Act 2016 and Compensatory Afforestation Fund Rule 2018, the third party monitoring of plantations and activities implemented by SFDs utilizing the funds sanctioned from the Compensatory Afforestation Fund by MoEF&CC is proposed to be done by FSI. This will require very close coordination between FSI & SFDs and facilitation to SFDs on technical matters and methodology. The expert committee for formulation of Strategy to support additional carbon sink from forest and tree cover has also recommended creation of a FSI cell in each SFD for better coordination between FSI and SFDs. Accordingly, it is proposed that a FSI Cell is created in each State and selected UTs.

DG, FSI also explained the proposed functions of FSI Cell in the SFDs as under:-

1. Cell will act as a node for data exchange between SFDs & FSI.
2. All field activities will be coordinated with SFDs through FSI Cell.
3. For monitoring of plantations under CAMPA, all necessary inputs from SFDs will be obtained through FSI Cell.
4. FSI will also play an important role in imparting training on web based application like DSS, E-Green Watch, use of GPS, Forest Fire Monitoring at the state level and will also help SFDs in interpretation of FSI Data.
5. FSI Cell will also be a node for all web GIS services offered by FSI.
6. The cell will facilitate ground truthing of remote sensing based mapping activities of FSI, with the help of FSI cells in the States much higher intensity of ground truthing is possible.
7. Creation of FSI Cell will pave way for providing technical support to SFDs in preparation of Working Plans.
8. The cell will act as mini Training Center for the SFDs on geospatial technology applications and forest inventory and forest fire monitoring etc.
9. FSI cells in the State will facilitate implementation of State specific projects also.

The budget outlay proposed for the scheme is **Rs. 101.70 lakh** for one time expenditure on establishing FSI Cell (31 in number) and annual recurring expenditure of **Rs. 332.60 lakhs**.

The Committee examined the proposal and it was observed that the proposed cell will be responsible for uploading the shape files and coordinate with the State Forest Departments for uploading of other relevant data of the State for monitoring of the plantations and other activities undertaken under CAMPA and prepare reports for monitoring the progress in the work of assessment of forest wealth in the country.

The Committee recommended for approval of the scheme with the increased scope of work as observed in the meeting.

All the above schemes will also be put up to the Governing Body of the National Compensatory Afforestation Fund Management and Planning Authority for final approval.

The meeting ended with vote of thanks to the Chair.

Executive committee -
CEO, National Authority
MOEFCC.

chairman, Executive Committee
National Authority,
MOEFCC.

Annexure-I

List of participants

1. Shri Siddhanta Das, DGF&SS - Chairman
2. Shri Saibal Dasgupta, ADG(FC)/CEO, National Authority - Member
3. Shri P. Garg, AS&FA, MoEF&CC - Member
4. Shri V.K. Singh, APCCF (Central), Lucknow - Member
5. Shri A.K. Mohanty, IGF(FC), MoEF&CC- Member
6. Shri M.R.G. Reddy, Addl. PCCF, Regional Office, Chennai- Member
7. Shri Tejinder Singh, APCCF(CE), Regional Office, Bhopal- Member
8. Shri Kamaljit Singh, APCCF(C), Regional Office, Nagpur.- Member
9. Shri C.D. Singh, APCCF, Regional Office, Chandigarh- Member
10. Shri Kaushlesh P. Singh, APCCF(C), Regional Office, Bengaluru - Member
11. Shri Bharat Jyoti, APCCF (C), Regional Office, Ranchi - Member
12. Shri R.K. Samal, MoEF&CC, Regional Office, Bhubaneswar – Representative of APCCF(C), RO, Bhubaneshwar
13. Shri Rohit Tiwari, DIGF, MoEF&CC – Representative of Mission Director, National Mission for Green India, MoEF&CC.

List of other Participants

1. Dr. Suresh Gairola, DG, ICFRE
2. Dr. Subhash Ashutosh, DG, FSI.
3. Shri D.K. Sinha, IGF(SU/EAP)/Jt. CEO National Authority, MoEF&CC
4. Shri Ram Kumar, APCCF(M&E), Gujarat.
5. Shri S.D. Sharma, DDG(Research), ICFRE.
6. Dr. Ajeet Kaur, Sr. Scientist, UCOST
7. Dr. Piyush Joshi, Sr. Scientific Officer, UCOST
8. Shri Pawan Sharma, Dy. CEO, CAMPA, Haryana.
9. Shri Prakash Lakhchaura, DDG, FSI
10. Shri Manoj V. Nair, Scientist F, WII, Dehradun.
11. Dr. Advait Edgaonkar, Asst. Prof., IIFM, Bhopal
12. Dr. H.S. Ginwal, Scientist G, FRI, Dehradun.
13. Dr. Vimal Kothiyal, ADG(RP)
14. Ms. Ruchi Badola, Sc. G, WII.

15. Shri SA Husain, Sc. G, WII.
16. Ms. S. Dutta, Sc. G., WII.
17. Shri Anant Pande, Project Scientist, WII.
18. Shri D.P. Tyagi, CAMPA, Haryana.
19. Shri Rajesh Kumar, APCCF (CAMPA), Madhya Pradesh
20. Shri Naresh Kumar, DIGF(FC), MoEF&CC
21. Shri Vinod Kumar D.K., Wildlife Institute of India.
22. Shri Sandeep Sharma, AIGF(FC), MoEF&CC
23. Shri Charan Jeet Singh, Scientist (FC), MoEF&CC
24. Shri Vaibhav Gupta
25. Shri Rakesh Kumar
26. Shri Surjeet Kumar

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No.13-30/2019-NA
Government of India
Ministry of Environment Forest and Climate Change
(National Authority)

Indira Paryavaran Bhawan,
Jor Bagh, Aliganj,
New Delhi-110003
Dated the 6th December, 2019

OFFICE MEMORANDUM

The undersigned is directed to enclose herewith a copy of the minutes of 1st meeting of the Governing Body of the National Authority held on 15th November, 2019 under the Chairmanship of the Hon'ble Minister, Environment Forest & Climate Change for information and necessary action.

Encl. As above.

6.12.19

(Brijendra Swaroop)
Dy. Chief Executive Officer
National Authority

Distribution :

1. PS to Minister for Environment Forest and Climate Change;
2. The Secretary, Ministry of Environment, Forest and Climate Change, GoI
3. The Secretary, Ministry of Finance (Expenditure), GoI,
4. The Secretary, Ministry of Rural Development, GoI,
5. The Secretary, Department of Land Resources, GoI,
6. The Secretary, Ministry of Agriculture and Farmers' Welfare, GoI,
7. The Secretary, Ministry of Panchayati Raj, GoI,
8. The Secretary, Ministry of Tribal Affairs, GoI,
9. The Secretary, Ministry of Science and Technology, GoI,
10. The Secretary, Department of Space, GoI,
11. The Secretary, Ministry of Earth Sciences, GoI,
12. The Director General of Forests & Special Secretary, MoEF&CC.
13. Chief Executive Officer, National Institution for Transforming India (NITI) Ayog, GoI,
14. Principal Chief Conservator of Forest (HoFF), Department of Forest, Government of Chhattisgarh, Odisha, Telangana, Uttarakhand and Arunachal Pradesh.
15. The Additional Director General of Forests(FC)/Wildlife, MoEF&CC.
16. The Financial Advisor & Additional Secretary, MOEF&CC.
17. The Director General, ICFRE, Dehradun;
18. The Director General, Forest Survey of India, Dehradun;
19. The Director, FRI, Dehradun;

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20. The Director, The Wildlife Institute of India, Dehradun;
21. The Director General, Uttarakhand State Council for Science & Technology, Dehradun;
22. The Director, Bombay Natural History Society.
23. The Mission Director, National Mission for a Green India, , Ministry of Environment Forest & Climate Change, GoI,
24. Guard File.

Copy also forwarded to:

1. The Dy. Director General of Forests (Central), all Regional Offices of MoEF&CC.
2. IGF(FP), IGF(WL), IGF(FC), IGF(NAEB), IGF (FPD/SU/EAP), JCEO(NA), IGF(NTCA).
3. PPS to CEO(NA).

6.12.19

(Brijendra Swaroop)
Dy. Chief Executive Officer
National Authority

Minutes of Meeting

1st Meeting of the Governing Body of the National Authority

Venue: Teesta Hall, 1st Floor, Vayu Wing, Indira Paryavaran Bhawan, New Delhi
Time: 1100 hrs
Date: 15th November 2019
Participants: The list is enclosed

At the outset, the Chief Executive Officer, National Authority welcomed Hon'ble Minister, Environment, Forest & Climate Change and all the members of the Governing Body and the officers present in the meeting. Hon'ble Minister in his opening remark, emphasised on the utilisation of CAMPA funds as per provisions of the Compensatory Afforestation Fund (CAF) Act, 2016 and the Compensatory Afforestation Fund (CAF) Rules, 2018. He also stressed that importance needs to be attached to the activities related to catchment area treatment, soil & moisture conservation, fodder development, removal of weeds etc. and that these funds need to be treated as an additionality to the state budget. DGF&SS mentioned that these activities are being included in the APOs of the State Governments, which are being examined by the Executive Committee of the National Authority. The Governing Body would consider the schemes of various institutions for financing from the National Fund under sub-section 5 (b) (3) of the CAF Act, 2016.

CEO, National Authority explained that seven new schemes of ICFRE, FSI, BNHS, and IUCN would be taken up in this meeting. He also mentioned that four ongoing schemes of ICFRE, WII & UCOST, which were approved by the National CAMPA Advisory Council (NCAC) will also be discussed. CEO also mentioned that administrative matters of the National Authority will be taken up, as only three officers viz. CEO, Joint CEO and Dy. CEO have been appointed so far as per provisions of the CAF Act, 2016. The National Authority is in need of more posts of supporting staff/officers, which are to be created.

Hon'ble Minister solicited comments/views from the members of the Governing Body regarding strengthening of the National Authority. At this stage, Additional Secretary & Financial Advisor mentioned that the National Authority needs appropriate number of support staff and office space, in view of the volume of work and management of huge amount of CAMPA funds.

6.12.2019

(64)

DGF& SS also stated that various post as proposed in the agenda item no. 9 are required to be created and proper space for the office of the National Authority is urgently needed. Hon'ble Minister agreed with these views.

Thereafter, the Governing Body took up the agenda items for discussion. Head/representative of various institutions involved in the execution of the schemes made brief presentations.

Agenda Item No. 1: Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement

The scheme has been proposed by the Indian Council of Forestry Research &Education (ICFRE) at a cost of Rs. 313.67 crores to be implemented over a period of 6 years (2019-20 to 2024-25). The scheme will be implemented through the Research & Training Division of MoEF&CC.Director General, ICFRE explained that this scheme has been prepared with the following objectives:

a) To undertake research aimed at enhancing the health and productivity of natural forests and plantations for augmenting ecosystem goods and services.
b) To undertake research aimed at efficient and sustainable resource use through value addition and development of appropriate technologies.
c) To establish a comprehensive national programme for conservation and development of Forest Genetic Resources (FGRs).
d) To undertake policy research in forestry sector to analyse the policy gaps and determine concordant policies.
e) To undertake capacity building programmes for stakeholders, including forestry personnel, communities, tree growers and forest-based industries.
f) To undertake an exclusive outreach programme taking research and technology to users through a comprehensive extension strategy.

The proposal has been recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March 2019 for the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016,with following suggestions:

a) The mid-term review should be done by independent experts
b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

6.12.2019

ICFRE has submitted the reworked proposal vide letter no. 72(XVIII)/2018/ICFRE(R)/RP/Project Proposal/191 dated 01.11.2019. ICFRE has agreed to the recommendation of mid-term review by independent experts and requested the Ministry to nominate the independent experts for mid-term review of the scheme. The annual requirement of funds, as proposed by ICFRE is provided below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (in crore Rs)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

Decision: The Governing Body observed that ICFRE has reworked the scheme as per observations of the Executive Committed and approved the modified scheme.

Agenda No.2: Monitoring Protocol for Plantations and Assets created by State Forest Departments (SFDs) from the Compensatory Afforestation Fund

The scheme has been proposed by Forest Survey of India(FSI), Dehradun at a cost of Rs. 13.14 crores. The scheme will be implemented through the Survey and Utilization Division of MoEF&CC. The scheme proposes a capital expenditure of Rs 6.14 crores in first year and annual recurring expenditure of Rs 7.00 crores. The main objectives of the schemes as explained by the DG, FSI are:

i. To monitor plantations raised from CAMPA funds
ii. To monitor other assets and activities implemented from CAMPA funds
iii. To assess relevant parameters such as survival percentage and growth of plantations
iv. To create a transparent monitoring platform accessible to different stake holders
v. To create a National spatial database on Plantations raised under CAF

Scope of monitoring of compensatory afforestation, other assets created under CAMPA with frame work of monitoring process was explained by the DG, FSI.

The proposal has been recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March 2019for the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016, with following suggestions:

a) The scope of monitoring should be increased to include all the previous plantation activities undertaken under CAMPA to have a database and also to ensure effective control.

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b) The data of e-green watch may be incorporated to the Web-GIS based platform to be developed under this scheme
c) The new platform should be user friendly and should provide alerts in case of observation / data goes beyond critical limit
d) The works should be completed in a time bound manner
e) The whole financial outlay shall be reworked, if required and submitted to the Governing Body of the National Authority for final approval.

Decision: The Governing Body approved the scheme of FSI as recommended by the Executive Committee of the National Authority.

Agenda No. 3: Examination and Approval of Existing Schemes funded by the erstwhile Ad-hoc CAMPA and approved by the National CAMPA Advisory Council (NCAC)

Initially, the CAMPA funds vested with the Ad-hoc CAMPA were utilised for various schemes of forestry and wildlife management having ramification at the national level by various Institutions/State Forest Departments. These schemes were approved by the National CAMPA Advisory Council (NCAC). The list of these schemes is provided below:

1. WII – UNESCO C2C Centre on World Natural Heritage Management and Training for the Asia Pacific Region at WII.
2. WII – Conservation of Species
3. UCOST – Assistance to Uttarakhand Council for Science and Technology.
4. FRI – Assistance to Centre of Excellence of Forest Genetic Resource
5. FSI – Support to FSI for Centre of Excellence
6. FSI – Centre of Excellence – Part Funding for Forest Fire Monitoring Project.
7. NICSI – e-Green Watch/Web Based Monitoring System.
8. IIFM, Bhopal – Support to Geo Informatics Centre.
9. Nagar Van Yojana
10. School Nursery Yojana

Out of above ten ongoing schemes, four schemes were placed before the Executive Committee of the National Authority in its 1st meeting and the same are placed for consideration of the General Body meeting.

a) National Program for Conservation and Development of Forest Genetic Resources
b) UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region
c) Endangered Species Recovery Programme
d) Centre of Excellence for Forest Based Livelihoods in Uttarakhand,

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A. National Program for Conservation and Development of Forest Genetic Resources (FGRs): Pilot Project on 'Creation of Centre of Excellence on Forest Genetic Resources (CoFGR)' at FRI, Dehradun

This scheme is being implemented by Forest Research Institute, Dehradun through the Research & Training Division of MoEF&CC.The objectives are:

a) Preparation of a comprehensive inventory with population and threat status of 250 FGRs of Uttarakhand
b) Upgradation &digitization of Dehradun (DD) Herbarium
c) Preparation of priority list of FGRs with road map for their conservation and development with eco-distribution maps of 50 priority FGRs
d) Collection and depositing of seed of 100 FGR species in Seed Banks towards medium and long-term conservation
e) Evaluation and molecular characterization of 5 important FGRs of commercial importance
f) Studying of genetic diversity and population structure of 5 important FGRs and initiation of their in-situ conservation measures
g) Establishment of Field Gene Banks of 10 FGR species of high conservation & commercial importance
h) Producing starting planting material of at least 10 important phenotypically superior tree species for providing to SFDs for further multiplication for plantation programs
i) Developing well studied, systematic and sustainable protocols for utilization of forest genetic resources for supporting livelihoods
j) Development of comprehensive computerized database on FGR of Uttarakhand

The scheme has total outlay of Rs. 8.612 crores whereas Rs 6.646 crores have already been released. The scheme is for 5 years (2016-17 to 2020-21). The proposal for current year is of Rs. 1.095 crores.

The Executive Committee of the National Authority in its 1st meeting held on 8th March 2019 has recommended the continuation of the scheme and allocation of Rs. 1,095 crores for the year 2019-20for the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016.

Decision: The continuation of the scheme was approved by the Governing Body as recommended by the Executive Committee.

B. UNESCO Category 2 Centre (C2C) on Natural World Heritage Management and Training for the Asia-Pacific Region

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An ongoing scheme duly approved by NCAC is being implemented by the Wildlife Institute of India, Dehradun with following objectives:

a) Contribute to the strengthening of capacities in the management of Natural World Heritage in the region
b) Contribute to achieving a more balanced representation of properties from the Asia and the Pacific on the World Heritage List
c) Raise awareness among the general public and the youth in particular, of the importance of Natural World Heritage and the need to protect it
d) Foster international cooperation on Natural World Heritage initiatives.

The scheme duration is for six years from 2013-14 to 2018-2019 with an estimated outlay ofRs. 18.66 crores. Till date Rs 8.9737 crores have been released for the scheme. Monitoring of implementation and progress of the scheme is the responsibility of the Wildlife Division of MoEF&CC.

The Executive Committee of the National Authority in its 1st meeting held on 8th March 2019, has recommended the continuation of the scheme for another three years (up to 2021-2022) with no cost extension and allocation of Rs. 3.4993 crores for the year 2019-20for the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016, with following suggestions:

a) Independent evaluation should be done by a third party
b) Reworking of the financial requirement component wise in view of the above.

Decision: The continuation of the scheme was approved by the Governing Body as recommended by the Executive Committee.

C. Endangered Species Recovery Programme

An ongoing scheme of Wildlife Institute of India, Dehradun is in respect of four endangered species, i.e., Great Indian Bustard, Gangetic Dolphin, Dugong and Manipur Deer. The scheme is for five years from 2015-16 to 2020-21 with an approved total outlay of Rs. 100.38 crores. Till date Rs 6.646 crores have been released for the scheme. Monitoring of implementation and progress of the scheme is the responsibility of the Wildlife Division of MoEF&CC.

The Executive Committee of the National Authority, in its 1st meeting held on 8th March 2019, has recommended the following for the approval of the Governing Body of the National Authority as per the provisions contained in section 14(1)(iv) of the CAF Act, 2016:

1. Continuation of the scheme and release of Rs. 7.16 crores for habitat improvement and conservation breeding of the Great Indian Bustard
2. Continuation of the scheme and release of Rs. 4.009 crores for habitat improvement and recovery of Dugong

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Decision: The continuation of the scheme was approved by the Governing Body as recommended by the Executive Committee.

D. Centre of Excellence for Forest-Based Livelihoods in Uttarakhand

An ongoing scheme for five years, being implemented by the Uttarakhand State Council for Science & Technology, Dehradun (UCOST) with following main objectives:

i. To collect all the available data on forest-based produce with focus on non-timber products such as medicinal plants and bamboo, and to create a clearing house for the same
ii. To create a resource directory of various government and non-government organisations, private institutes and experts working in the area of forest livelihood
iii. To interact with people through Focused Group Discussion (FGD) and to estimate their dependence on forests for their livelihood
iv. To conduct socio-economic analysis and estimate cultural dependence of the forest fringe villages on forestry
v. To conduct value and supply chain analysis for different forest products

Till date Rs 1.357 crores have been released. Scheme implementing agency i.e. UCOST has asked upward revision of scheme due to increase in DA & HRA of SRF, Scientists and Sr Scientist and recruitment of two field assistants from 3rd year of the project. A revised budget of Rs 0.731 crores and Rs. 0.696 crores have been sought by Uttarakhand State Council for Science & Technology, Dehradun (UCOST) in the 3rd and 4th year respectively.

The Executive Committee of the National Authority in its 1st meeting held on 8th March 2019, has recommended the continuation of the scheme and increase in the outlay for 2019-20 and 2020-21 as proposed by the project proponentfor the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016.

Decision: The continuation of the scheme was approved by the Governing Body as recommended by the Executive Committee.

The Governing Body also considered the issue of continuation of ongoing schemes which were approved by the NCAC. The Governing Body decided that all ongoing schemes, which were approved by NCAC will be continued. However, a comprehensive review of all such schemes will be taken up by the Executive Committee of the National Authority.

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Agenda No. 4: Establishing an FSI Cell in Each State for Strengthening Monitoring and Forest Resource Assessment

A scheme for establishing a FSI Cell in each State/UT to strengthen monitoring and forest resource assessment with a capital outlay of Rs 1.6390 crores in the initial year and recurring expenditure of Rs 2.6915 crores annually was proposed with following main objectives:

i. State Forests Departments (SFDs) are the major stakeholders of information generated by FSI
ii. Almost every information generated by FSI is useful to SFDs, particularly activities like Forest Fire, Forest Cover, Forest Types, Forest Inventory etc. are widely used by SFDs
iii. The implementation of CAF Act, 2016 and CAF Rule, 2018 require the third-party monitoring of plantations and activities taken by SFDs utilizing the CAMPA funds by FSI
iv. This will require very close coordination between FSI & SFDs and facilitation to SFDs on technical matters and methodology
v. The expert committee for formulation of strategy to support additional carbon sink from forests and tree cover has also recommended creation of a FSI cell in each SFD, for better coordination between FSI and SFDs

These Cells will act as a node for data exchange between SFDs & FSI for monitoring of plantations, coordination of field activities, imparting training on web-based application like DSS, E-Green Watch, use of GPS, Forest Firer Monitoring at the state level. Creating of FSI Cells will pave way for providing technical support to SFDs in preparation of Working Plans etc. Total 32 cells will be created including one in MoEF&CC. The Executive Committee of the National Authority in its 1st meeting held on 8th March 2019, has recommended the scheme for the approval of the Governing Bodyof the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016.

Decision: The Governing Body approved the scheme as recommended by the Executive Committee of the National Authority and observed that a monitoring cell should also be created in the MoEF&CC under the National Authority.

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Agenda No. 5: Implementing the Central Asian Flyway National Action Plan with special focus on preparation of site-specific activity plan, capacity building, developing bird sensitivity map for setting up of wind energy and species action plans

A scheme for implementation of Central Asian Flyway National Action Plan with a total outlay of Rs 3.754 crores has been proposed by the Bombay Natural History Society (BNHS) for three years starting from 2019-20.Monitoring of implementation and progress of the scheme is the responsibility of the Wildlife Division of MoEF&CC. The main objectives are:

a) Developing site-specific actions and objectives related to conservation of migratory bird species and their habitats in Protected Area Plans (Both Management and Working Plans) and details of action to be taken for the non- protected areas
b) Impart training to forest staff and other stakeholders in various aspects of Migratory bird conservation
c) Preparation of Bird sensitivity mapping for setting up of wind farms and energy sector in India
d) Preparation of Single Species action plan for the 20 species prioritised in the National Action Plan

The main deliverables of the scheme are activity plans to be included in the protected area management plans or working plans for the prioritised CAF wetlands and land bird sites, activity plans for prioritised CAF non-protected wetlands and land bird sites, training of personnel of 17 states, preparation of bird sensitivity maps, national single species action plan for 20 species and standardised site specific plan for annual water bird census for prioritised wetlands. Year wise fund requirement is provided in a tabular form below:

(In crores Rs.)

2019-20	2020-21	2021-22	Total
1.6186	1.1987	0.9366	**3.7540**

The Executive Committee of the National Authority in its 3rd meeting held on 15th July 2019, has recommended it for the approval of the Governing Body of the National Authorityas per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016.

Decision: The Governing Body approved the scheme.

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Agenda No. 6: Proposal for Estimation of Economic Losses in Real Term Per Hectare Basis Due to Forest Fire in Uttarakhand and Madhya Pradesh

Indian Council of Forestry Research & Education (ICFRE), Dehradun has proposed a collaborative research scheme involving Forest Survey of India, Wildlife Institute of India, National Institute of Hydrology and GB Pant National Institute of Himalayan Environment & Sustainable Development for estimation of economic losses in real term per hectare basis due to forest fire in Uttarakhand and Madhya Pradesh. The objectives of the scheme are:

a) To quantify the forest loss in term of total economic value, i.e. monetary value on per hectare basis for the forest types in the states of Uttarakhand and Madhya Pradesh
b) Burnt area assessment and severity classification due to forest fire for the two states
c) Economic loss assessment of terrestrial flora due to forest fire on per hectare basis for the respective states
d) Economic loss assessment of faunal diversity due to forest fire on per hectare
e) Economic loss assessment of hydrological changes due to forest fireon per hectare basis for the respective states
f) Economic loss assessment of provisioning services and cultural value of forest produce loss due to forest fire on per hectare basis for specific forest types and extrapolated for the respective states

The duration of the scheme is two years with financial implication of Rs. 3.78 Crores.

The Executive Committee of the National Authority in its 3rd meeting held on 15th July 2019, has recommended it for the approval of the Governing Body of the National Authorityas per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016. It was also decided that the monitoring of the implementation of the scheme shall be the responsibility of the Forest Protection Division of MoEF&CC.

ICFRE has submitted a detailed proposal at a cost of Rs 3.79 crore plus taxes vide letter no. 1-89/2017-ADG(EM)/FFBDWL Study/ICFRE dated 01.11.2019. It is stated that the time schedule of the project is 24 months excluding the initial stakeholders meet with SFDs to finalize the study area and level of damage assessment for collection of baseline data in association with FSI.

Decision: The Governing Body approved the scheme.

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6.12.2019

Agenda No. 7: Execution of Readiness Activities for Implementation of REDD+ in India

Indian Council of Forestry Research & Education (ICFRE), Dehradun has proposed a scheme as per COP decision (Decision 1/CP.16) regarding evolving broad elements of a national REDD+ action plan with an outlay of Rs 2.646 crores for a period of 18 months. The objectives of the proposal are:

a) Development of a Safeguard Information System for REDD+ through stakeholder construction processes with an outlay of Rs.36.40lakh.
b) Capacity building of State Forest Departments for developing State REDD+ action plans under National REDD+ strategy with outlay of Rs.120.06lakh.
c) Development of REDD+ learning and knowledge sharing platform, web- based SIS module and networking of relevant stakeholders with outlay of Rs.30.00lakh.
d) Capacity building of the stakeholders on various aspects of REDD+ including safeguards at regional level with outlay of Rs.40.00 lakh.

The Executive Committee of the National Authority in its 3rd meeting held on 15th July 2019, has recommended the scheme for the approval of the Governing Body of the National Authorityas per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016 with a reduced time line of 9 months. It was decided that monitoring of implementation and progress shall be the responsibility of the Forest Policy Division of MoEF&CC.

ICFRE has submitted a revised timeline and outlay of the scheme. Now the scheme has been proposed at a cost of Rs 1.204 crores for a period of 9 months.

Decision: The Governing Body approved the revised scheme.

Agenda No. 8: Enhanced Capacity Building of Stakeholders and State Governments on Forest Landscape Restoration and Reporting Mechanism on Bonn Challenge

IUCN through National Afforestation & Eco-Development Board (NAEB) has proposed for enhanced capacity building of stakeholders of State Governments on reporting mechanism on Bonn Challenge with outlay of Rs 5.9 crores for a duration of 3.5 years. The objectives are:

a) Create a holistic country level focus on forest landscape restoration and Bonn Challenge.
b) Demonstrate India's leadership role in South Asia on Bonn Challenge.

In 2010, IUCN and partners developed the world of opportunity map world opportunity map which showcased that about 2 billion hectares of degraded

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land with potential of restoration is available globally. The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020 and 350 million hectares by 2030.The Government of India joined the Bonn Challenge pledge (At UNFCCC COP 21 at Paris in 2015 by agreeing to bring into restoration 13 million hectares of degraded land by 2020, and an additional 8 million hectares by 2030. This is one of the largest pledges from Asia. The proposal will be implemented on pilot basis in five states.

The Executive Committee of the National Authority in its 3rd meeting held on 15th July 2019, has recommended the scheme for the approval of the Governing Body of the National Authority as per provisions contained in sub-section 14(1) (iv) of the CAF Act, 2016.

The issue of including Telangana state was raised by the PCCF (HoFF)of the State who is also a member of Governing Body.

Decision: The Governing Body approved the scheme and suggested that 5 pilot states may be selected on the basis of performance.

Agenda No. 9: Administrative matters of National Authority

(A) 'In principle approval' for the creation of 37 posts for the office of National Authority and approval to fill up some of these posts temporarily on contract basis as per immediate requirement till these posts are created and filled up.

The National Authority has sought approval of the Governing Body for creation of four (4) Group 'A', fifteen (15) group 'B' and eighteen (18) group 'C' posts of officers and officials for National Authority under the provisions of Compensatory Afforestation Fund (CAF) Act, 2016 and CAF Rules, 2018. The proposal entails an estimated expenditure of Rs 2, 96, 07,600 (Rupees two crores, ninety-six lakh, seven thousand six hundred) annually. Approval has also been sought to fill up some of these posts temporarily on contract basis as per immediate requirement till these posts are created and filled up.

The National Authority has been constituted under CAF Act, 2016. It consists of a Governing Body, an Executive Committee, a Monitoring Group and an Administrative Support Mechanism for management of compensatory levies placed with National and State funds.

It was stated that the office of the National Authority has started functioning after joining of the CEO, the Jt. CEO and the Dy. CEO. A FA&CAO is likely to join soon and adequate support staff at different levels is required. CEO stated that after approval of Governing Body the proposal of creation of post will be processed for approval of the central government as per rules/guidelines issued by Government of India from time to time.

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Additional Secretary & Financial Advisor mentioned that National Authority needs appropriate number of support staff and an office space, in view of the volume of work and management of huge amount of CAMPA funds. DGF& SS also stated that various posts as proposed in this agenda item are required to be created and proper space for the office of National Authority is also urgently required.

Decision: The Governing Body approved 'in principle' the proposal of the National Authority for creation of 37 posts as mentioned in the agenda note. The approval of the central government for creation of these posts will be sought by the National Authority as per the rules/guidelines issued by the Government of India from time to time. In the meantime, the National Authority may hire consultants/contractual staff on need basis with the approval of the Executive Committee.

(B) Adoption of Delegation of Administrative and Financial Powers of MoEF&CC

Decision: The Governing Body observed that delegation of administrative and financial powers of MoEF&CC is applicable to the National Authority as it has been created as a part of the Ministry.

The meeting ended with a vote of thanks to Chair.

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ANJANI NANDAN SHARAN
6.12.2019

(अंजनी नन्दन शरण/ANJANI NANDAN SHARAN)
मुख्य कार्यकारी अधिकारी/Chief Executive Officer
राष्ट्रीय कैम्पा/National CAMPA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
M/o Environment, Forest and Climate Change
भारत सरकार, नई दिल्ली/Govt. of India,New Delhi

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सत्यमेव जयते

डॉ. सुरेश गैरोला, भा.व.से.
Dr. Suresh Gairola, IFS

कुलाधिपति, व.अ.सं. विश्वविद्यालय
Chancellor, FRI University

महानिदेशक
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
डाकघर न्यू फॉरेस्ट, देहरादून-248006
(आई एस.ओ. 9001:2008 प्रमाणित संस्था)

Director General
Indian Council of Forestry Research and Education
P.O. New Forest, Dehra Dun - 248 006
(An ISO 9001:2008 Certified Organisation)

No.72(XVIII)/2018/ICFRE(R)/RP/Project Proposals/191 Dated the 01st November 2019

To

The Additional Director General of Forests (CAMPA),
Ministry of Environment Forests and Climate Change,
Government of India
Indira Paryavaran Bhawan, Ali Ganj,
Jor Bagh Road, New Delhi -110003

Sub: Scheme proposed for funding under CAF "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" – reg

Sir,

This is with reference to the minutes of the first meeting of Executive Committee of National Compensatory Afforestation Fund Management and Planning Authority held on 8th March, 2019. ICFRE made a presentation on the scheme titled "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" consisting of six sub components. The committee has recommended for approval of this new scheme of ICFRE.

It was also recommended by the committee that a mid-term review should be done by independent experts. In this context, ICFRE agrees to the recommendation of mid-term review by independent experts and it is requested that the Ministry may nominate the independent experts for mid term review of the scheme in due course of time. It is also to inform that the provision of internal six monthly review of All India Coordinated Research Projects (AICRPs) with the external experts alongwith the members from ICFRE has already been made in the AICRP guidelines of ICFRE.

The composition of the Project Expert Group of the internal review is as under :

1.	Deputy Director General (Research)	–	Chairman
2.	Two Subject Matter Experts	–	Members
3.	National Project Coordinator (NPC)	–	Member
4.	Assistant Director General (RP)	–	Member
5.	Assistant Director General (M&E)	–	Convener
6.	Principal Investigator (PI)	–	Presenter

On the point of reworking the financial outlay, it is to mention that the scheme was proposed for funding with the presumption that the scheme will become operational in the last four months of 2018-19. The budget for the last four months of 2018-19 was worked out and presented in the document of the scheme at Annexure (II). As the scheme could not be placed for the approval of the Governing Body of

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National Authority in March 2019, the issue of reworking the financial requirement for 2018-19 has now become redundant. Now the amount shown as the requirement for 4 months of 2018-19 shall be required for the last 4 months of 2019-20. In another words, the scheme activities will be shifted by exactly one year. Accordingly, the financial requirement for the scheme period of 5 years (60 months) is given as under :-

Sl. No	Component	Budget* required for 4 months of 2019-20 (in Lacs)	2020-21	2021-22	2022-23	2023-24	2024-25 (8 months)	Total
1	All India Coordinated Research Projects (AICRPs)	2151	7861	3511	2812	2739	726	19800
2	National Program for conservation and development of FGR	1141	1142	711	634	605	967	5200
3	Studies by Center for Forest Policy Research (CFPR) of ICFRE	60	53	53	53	53	54	326
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans"	46	64	10	--	---	--	120
5	Operationalization of Human Resource Development Plan of ICFRE	41	307	287	249	249	0.00	1133
6	Operationalization of Forestry Extension Strategy and Action Plan for ICFRE	420	818	978	938	998	636	4788
Total		**3859**	**10245**	**5550**	**4686**	**4644**	**2383**	**31367**

*= Figures rounded off to nearest Lac Rs.

Yours faithfully

(Dr. S.C. Gairola)

(*l*) "prescribed" means prescribed by rules made by the Central Government in consultation with the State Governments under this Act;

(*m*) "State Authority" means the State Compensatory Afforestation Fund Management and Planning Authority constituted under section 10;

(*n*) "State Fund" means the State Compensatory Afforestation Fund established by each State under sub-section (*1*) of section 4;

(*o*) "State Government" includes Union territory Administration;

(*p*) "user agency" means any person, organisation or company or department of the Central Government or State Government making a request for diversion or de-notification of forest land for non-forest purpose or using forest land for non-forest purpose in accordance with the provisions contained in the Forest (Conservation) Act, 1980 and the rules made and guidelines issued, thereunder. 69 of 1980.

CHAPTER II

ESTABLISHMENT, MANAGEMENT AND UTILISATION OF NATIONAL COMPENSATORY AFFORESTATION FUND AND STATE COMPENSATORY AFFORESTATION FUNDS

Establishment of National Fund.

3. (*1*) With effect from such date as the Central Government may, by notification in the Official Gazette, appoint in this behalf, there shall be established for the purposes of this Act, a special Fund to be called the "National Compensatory Afforestation Fund" under the public account of India.

(*2*) The National Fund shall be under the control of the Central Government and managed by the National Authority in such manner as may be prescribed.

(*3*) On the date of establishment of the National Fund, all monies collected by the State Governments and Union territory Administrations which has been placed under the *ad hoc* Authority and deposited in the nationalised banks shall be transferred to the National Fund.

(*4*) There shall also be credited into the National Fund, by each State on yearly basis, ten per cent. of the funds realised from the user agencies in respect of the forest land diverted in their favour, which have been credited directly into the State Fund.

(*5*) There shall alsn be credited to the National Fund—

(*a*) grants-in-aid received, if any, by the National Authnrity;

(*b*) any loan taken or any borrowings made by the National Authority;

(*c*) any other sums received by the National Authority by way of benefaction, gift or donations.

(*6*) The monies received in the National Fund shall be an interest bearing fund under public accounts of India.

(*7*) The balance in the National Fund shall be non-lapsable and get interest as per the rate declared by the Central Government on year to year basis.

Establishment of State Fund.

4. (*1*) With effect from such date as each State Government may, by notification in the Official Gazette, appoint in this behalf, there shall be established for the purposes of this Act, a special Fund to be called the "State Compensatory Afforestation Fund-..... (name of State)" under public accounts of such State:

Provided that in case of Union territory having no legislature, such fund shall be established under the public account of Union of India with effect from such date as the Union territory Administration may, by notification in the Official Gazette, appoint in this behalf.

(*2*) The State Fund in each State shall be under the control of the State Government of such State and managed by the State Authority of such State, in such manner as may be prescribed.

(*3*) There shall be credited into the State Fund of a State—

(*i*) the unspent balance of all monies which has been transferred by *ad hoc* Authority to the State Compensatory Afforestation Compensatory Afforestation Funds

Management and Planning Authority constituted in such State in compliance of guidelines dated the 2nd July, 2009;

(*ii*) all monies transferable from the National Fund under clause (*a*) of section 5;

(*iii*) all monies realised from user agencies by such State towards compensatory afforestation, additional compensatory afforestation, penal compensatory afforestation, net present value, catchment area treatment plan or any money for compliance of conditions stipulated by the Central Government while according approval under the provisions of the Forest (Conservation) Act, 1980; and

69 of 1980.

(*iv*) the funds recoverable from user agencies by such State in cases where forest land diverted falls within the protected areas, that is, areas notified under sections 18, 26A or 35 of the Wild Life (Protection) Act, 1972 for undertaking activities relating to the protection of biodiversity and wildlife.

53 of 1972.

(*4*) A State Government may also credit to the State Fund constituted by it—

(*i*) grants-in-aid received, if any, by the State Authority;

(*ii*) any loan taken or any borrowings made by the State Authority;

(*iii*) any other sums received by the State Authority by way of benefaction, gift or donations.

(*5*) The monies received in the State Fund shall be an interest bearing fund under public accounts.

(*6*) The balance in each State Fund shall be non-lapsable and get interest as per the rate declared by the Central Government on year to year basis.

Disbursement and utilisation of National Fund.

5. Save as otherwise provided in this Act, the monies available in the National Fund shall be disbursed and utilised in the following manner, namely:—

(*a*) ninety per cent. of the all monies collected by a State, which has been placed under the *ad hoc* Authority and the interest accrued thereon, shall be transferred to the State Fund established in such state under sub-section (*1*) of section 4;

(*b*) the balance ten per cent. of all monies collected by the States and Union territory Administrations, which has been placed under the *ad hoc* Authority and the interest accrued thereon, and all fresh accrual to the National Fund, as provided in sub-section (*4*) of section 3, and the interest accrued thereon, shall be utilised for meeting—

(*i*) the non-recurring and recurring expenditure for the management of the National Authority including the salary and allowances payable to its officers and other employees;

(*ii*) the expenditure incurred on monitoring and evaluation of works executed by the National Authority and each State Authority;

(*iii*) the expenditure incurred on specific schemes approved by governing body of the National Authority.

Explanation.—For the purposes of this section, "scheme" includes any institute, society, centre of excellence in the field of forest and wildlife, pilot schemes, standardisation of codes and guidelines and such other related activities for the forestry and wildlife sector.

Disbursement and utilisation of State Fund.

6. Save as otherwise provided in this Act, the monies available in a State Fund shall be disbursed and utilised in the following manner, namely:—

(*a*) the money received for compensatory afforestation, additional compensatory afforestation, penal compensatory afforestation, catchment area treatment plan and

(*i*) Joint Chief Executive Officer of the rank not below the rank of a Conservator of Forests;

(*ii*) Financial Advisor and Chief Accounts Officer of the rank not below the rank of a Deputy Secretary in the State Government;

(*iii*) Deputy Chief Executive Officer of the rank not below the rank of a Deputy Conservator of Forests.

(5) The governing body of the State Authority may with the prior concurrence of the State Government create posts in the State Authority at the level of Assistant Conservator of Forests and other officials to assist the steering committee and executive committee in performance of its functions under the Act.

Term of office and conditions of service of members.

12. Save as otherwise provided in this Act, the terms of office and other conditions of the service of the members of the National Authority, executive committee, monitoring group, Chief Executive Officer and officials appointed by the National Authority, members of State Authority, steering committee and executive cnmmittee of each State Authority shall be such as may be prescribed.

Disqualifications.

13. A person shall be disqualified for being appointed as a member nf the National Authority, executive committee of the National Authority, a State Authority, steering committee and executive committee of a State Authority, monitoring group, if he—

(*i*) has been convicted and sentenced to imprisonment for an offence which, in the opinion of the Central Government, involves moral turpitude; or

(*ii*) is an undischarged insolvent; or

(*iii*) is of unsound mind and stands so declared by the competent court; or

(*iv*) has been removed or dismissed from the service of the Government or organisation or undertaking owned by the Government; or

(*v*) has, in the opinion of the Central Government, such financial or other interest in the National Authority or the concerned State Authority as is likely to affect the duties discharged by him of his function as a member.

CHAPTER IV

POWERS AND FUNCTIONS OF NATIONAL AUTHORITY AND STATE AUTHORITIES

Powers and functions of National Authority.

14. (*1*) The governing body of the National Authority shall—

(*i*) formulate broad policy framework for functioning of the National Authority and State Authorities as may be notified by the Central Government;

(*ii*) approve the annual report and audited accounts of the National Authority;

(*iii*) review reports on decision taken hy executive committee and monitoring group of the National Authority including investment decisions;

(*iv*) approve the proposal for the schemes specified in sub-clause (*iii*) of clause (*b*) of section 5;

(*v*) approve the proposals for creation of posts in the National Authority, subject to prior permission of the Central Government;

(*vi*) provide a mechanism to State Authorities to resolve issues of inter-State or Centre-State character;

(*vii*) formulate such procedures for delegation of financial and administrative powers to the National Authority and State Authorities as may be notified by the Central Government.

(2) The governing body of the National Authority shall meet at least once in six months.

(3) The governing body and executive committee of the National Authority and the monitoring group of the National Authority shall meet at such places and shall observe such rules and procedures in regard to transaction of business at its meeting, including the quorum thereat, as may he prescribed.

Powers and functions of executive committee of National Authority.

15. (1) The executive committee of the National Authority shall—

(*i*) approve within three months from the date of receipt, annual plan of operations of State Authorities, with such amendments as it deems fit and proper;

(*ii*) formulate proposals for schemes specified in sub-clause (*iii*) of clause (*b*) of section 5;

(*iii*) execute schemes specified in sub-clause (*iii*) of clause (*b*) of section 5;

(*iv*) deploy staff on contract or on deputation basis to the posts in the National Authority;

(*v*) formulate proposals for creation of posts in the National Authority at the level of Assistant Inspector General of Forests and other officers;

(*vi*) invest surplus amounts available in the National Fund;

(*vii*) execute other day-to-day work in respect of receipt of amounts in the National Fund;

(*viii*) maintain books of account and such other records;

(*ix*) facilitate scientific, technological and other assistance that may be required by State Authorities;

(*x*) present its decisions to the governing body of the National Authority for information;

(*xi*) maintain and update a public information system on the National Authority and present all information on its transaction in the public domain;

(*xii*) undertake any other work as may be assigned hy the governing body of the National Authority or the Central Government, from time to time.

(2) The executive committee of the National Authority shall meet at least once in every three months.

Functions of monitoring group.

16. (1) The monitoring group shall—

(*i*) evolve independent system for concurrent monitoring and evaluation of the works implemented in the States and Union territories utilising the funds released by the National Authority and State Authorities to ensure effective and proper utilisation of funds by utilising the services of the regional offices, of the Central Government in the Ministry of Environment, Forest and Climate Change:

Provided that the Central Government may also undertake third party monitoring and evaluation of the works implemented in the States and Union territories utilising the funds released by the National Authority and State Authorities through individual and institutional experts including remote sensing agencies;

(*ii*) inspect and undertake financial audit of works executed by utilising the funds released by the National Authority and State Authorities in the State and Union territories;

(*iii*) devise measures for transparency and accountability.

(2) The monitoring group shall meet at least once in three months.

Powers and functions of State Authority.

17. (1) The governing body of a State Authority shall—

(*i*) lay down the broad policy framework for the functioning of such State Authority within the overall framework notified by the Central Government on the recommendations of the National Authority;

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सत्यमेव जयते

डॉ. सुरेश गैरोला, भा.व.से.
Dr. Suresh Gairola, IFS

कुलाधिपति, व.अ.सं. विश्वविद्यालय
Chancellor, FRI University

महानिदेशक
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
डाकघर न्यू फॉरेस्ट, देहरादून - 248006
(आई.एस.ओ. 9001:2008 प्रमाणित संस्था)

Director General
Indian Council of Forestry Research and Education
P.O. New Forest, Dehra Dun - 248 006
(An ISO 9001:2008 Certified Organisation)

No.72(XVIII)/2018/ICFRE(R)/RP/Project Proposals/191 Dated the 01st November 2019

To

The Additional Director General of Forests (CAMPA),
Ministry of Environment Forests and Climate Change,
Government of India
Indira Paryavaran Bhawan, Ali Ganj,
Jor Bagh Road, New Delhi -110003

Sub: Scheme proposed for funding under CAF "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" – reg

Sir,

This is with reference to the minutes of the first meeting of Executive Committee of National Compensatory Afforestation Fund Management and Planning Authority held on 8th March, 2019. ICFRE made a presentation on the scheme titled "Strengthening Forestry Research for Ecological Sustainability and Productivity Enhancement" consisting of six sub components. The committee has recommended for approval of this new scheme of ICFRE.

It was also recommended by the committee that a mid-term review should be done by independent experts. In this context, ICFRE agrees to the recommendation of mid-term review by independent experts and it is requested that the Ministry may nominate the independent experts for mid term review of the scheme in due course of time. It is also to inform that the provision of internal six monthly review of All India Coordinated Research Projects (AICRPs) with the external experts alongwith the members from ICFRE has already been made in the AICRP guidelines of ICFRE.

The composition of the Project Expert Group of the internal review is as under :

1.	Deputy Director General (Research)	–	Chairman
2.	Deputy Director General (Extension)	–	Member
3.	Director (International Cooperation)	–	Member
4.	Two experts nominated by DG ICFRE	–	Members
5.	Assistant Director General (Biodiversity & Climate Change)	–	Member
6.	Assistant Director General (Research Planning)	–	Member Secretary

On the point of reworking the financial outlay, it is to mention that the scheme was proposed for funding with the presumption that the scheme will become operational in the last four months of 2018-19. The budget for the last four months of 2018-19 was worked out and presented in the document of the scheme at Annexure (II). As the scheme could not be placed for the approval of the Governing Body of

दूरभाष / Phone : 135-2759382 (O)
EPABX : 0135-2224855, 2224333 (O)
ई–मेल / e-mail : dg@icfre.org
फैक्स / Fax : 0091-135-2755353

National Authority in March 2019, the issue of reworking the financial requirement for 2018-19 has now become redundant. Now the amount shown as the requirement for 4 months of 2018-19 shall be required for the last 4 months of 2019-20. In another words, the scheme activities will be shifted by exactly one year. Accordingly, the financial requirement for the scheme period of 5 years (60 months) is given as under :-

Sl. No	Component	Budget* required for 4 months of 2019-20 (in Lacs)	2020-21	2021-22	2022-23	2023-24	2024-25 (8 months)	Total
1	All India Coordinated Research Projects (AICRPs)	2151	7861	3511	2812	2739	726	19800
2	National Program for conservation and development of FGR	1141	1142	711	634	605	967	5200
3	Studies by Center for Forest Policy Research (CFPR) of ICFRE	60	53	53	53	53	54	326
4	Capacity building of State Forest Departments for developing "State REDD+ Action Plans"	46	64	10	--	---	--	120
5	Operationalization of Human Resource Development Plan of ICFRE	41	307	287	249	249	0.00	1133
6	Operationalization of Forestry Extension Strategy and Action Plan for ICFRE	420	818	978	938	998	636	4788
Total		**3859**	**10245**	**5550**	**4686**	**4644**	**2383**	**31367**

*= Figures rounded off to nearest Lac Rs.

Yours faithfully

(Dr. S.C. Gairola)

Email adhoc-campa-mef@nic.in

[WARNING: ATTACHMENT UNSCANNED]Fw: URGENT: Request for providing the bank account details - reg;

From : ginwalhs@icfre.org Tue, Dec 31, 2019 04:23 PM

Subject : [WARNING: ATTACHMENT UNSCANNED]Fw: URGENT: Request for providing the bank account details - reg; 2 attachments

To : adhoc-campa-mef@nic.in

Cc : dir fri <dir_fri@icfre.org>

Sir,

The bank account detail of Director, Forest Research Institute, Dehradun for the ongoing project "**National Program for Conservation and Development of Forest Genetic Resources : Pilot Project on Creation of Center of Excellence**" is here under. This account number has already been provided to the National CAMPA Authority, MoEF&CC during 2016 and FRI has been receiving funds of this project on the same account.

Bank Account Number : 496902010088596

Branch : Union Bank of India, FRI Dehradun

IFSC Code :UBIN0549690

MICR Code : 248026003

Kind regards

Dr. H.S.Ginwal
Scientist G /Coordinator
Division of Genetics and Tree Propagation
Forest Research Institute
Dehradun 248195 (Uttarakhand), India
Tel. No. 091 135 2224382

-----Forwarded by H S Ginwal/FRI/icfre on 12/31/2019 04:07PM -----

To: Group Coordinator Research FRI/FRI/icfre, head silviculture/icfre, H S Ginwal/FRI/icfre@icfre
From: Director FRI/icfre
Date: 12/31/2019 02:43PM
Subject: Fw: URGENT: Request for providing the bank account details - reg;

With warm regards

vii. A separate interest bearing account shall be opened which shall be made available at the time of audit to the internal/C&AG Audit Party.

viii. Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

ix. The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

x. Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

xi. In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

xii. The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. All previous amounts of interest accrued on the funds released by Ad-hoc CAMPA will be taken into account as the income/instalment received from the National Authority. The Utilization Certificate The progress report will include satellite photographs/photographs of physical deliverable with date and latitude-longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

xiii. BNHS shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

xiv. If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

xv. There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

xvi. The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

xvii. Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

xviii. BNHS is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

9. The scheme will be implemented through the Wildlife Division of MoEF&CC.

01.01.2020

DFA

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File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated : December, 2019

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding.

Sir/Madam,

The undersigned is directed to refer to the revised proposal submitted by ICFRE, Dehradun vide their letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the above subject scheme and convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total project cost of Rs.313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following conditions :

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (in crore Rs.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. The undersigned is also directed to convey the sanction of the competent authority to release the payment of Rs.23.15 crores (Rupees twenty three crores fifteen lakhs only) as first instalment out of Rs.38.59 crores to be released during the current financial year 2019-20.

6. The expenditure incurred is adjustable to the Demand No.25 of Ministry of Environment Forest and Climate Change under the following heads during the financial year 2019-20.

Scheme	Budget Head	Amount (in crores)
Grants-in-Aid General	2406.04.102.01.00.31	23.15

7. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

8. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.

(ii) The grant shall be utilized by 31st March, 2020.

(iii) Strict economy should be observed so as to keep the actual expenditure to the minimum.

(iv) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.

(v) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.

(vi) The expenditure is to be incurred as per the allocation of the funds.

(vii) A separate interest bearing account shall be opened which shall be made available at the time of audit to the internal/C&AG Audit Party.

(viii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(ix) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(x) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(xi) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xii) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xiii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiv) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xvi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xvii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xviii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

9. The scheme shall be implemented through the Research and Training Division of MoEF&CC.

10. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

11. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No._____ dated_____ .

Yours faithfully,

(Brijendra Swaroop)
Dy. Chief Executive Officer

Copy to :

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, M/o Environment, Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, M/o Environment, Forest & Climate Change, New Delhi
8. DIG (RT), M/o Environment, Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. Ministry of Finance (Department of Expenditure), New Delhi
11. Sanction Folder/ Guard File

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File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 2nd January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the above subject scheme mentioned in subject and convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

02.01.2020

9/c

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. The undersigned is also directed to convey the sanction of the competent authority to release the payment of ₹23.15 crores (Rupees twenty three crores fifteen lakhs only) as first instalment of ₹38.59 crores to be released during the current financial year 2019-20.

6. The expenditure incurred is adjustable to the Demand No.25 of Ministry of Environment Forest and Climate Change under the following heads during the financial year 2019-20.

Scheme	Budget Head	Amount (Rupees in Cr.)
Grants-in-Aid General	2406.04.102.01.00.31	23.15

7. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "Director General of ICFRE, whose bank details are given below:

Account Name	Director General of ICFRE
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No.	496902010088596
Bank Name	Union bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

8. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

9. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) The grant shall be utilized by 31st March, 2020.
(iii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iv) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.

02.01.2020

(v) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.

(vi) The expenditure is to be incurred as per the allocation of the funds.

(vii) A separate interest bearing account shall be opened which shall be made available at the time of audit to the internal/C&AG Audit Party.

(viii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(ix) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(x) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(xi) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xii) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xiii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiv) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xvi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xvii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xviii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xix) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xx) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xxi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xxii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated

02.01.2020

in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xxiii) IUCN is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

10. The scheme will be implemented through the NAEB of MoEF&CC.

11. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

12. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

02.01.2020

(Brijendra Swaroop)
Dy. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

02.01.2020

(Brijendra Swaroop)
Dy. Chief Executive Officer

DFA

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 6th January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the above subject scheme mentioned in subject and convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

06.01.2020

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. The undersigned is also directed to convey the sanction of the competent authority to release the payment of ₹23.15 crores (Rupees twenty three crores fifteen lakhs only) as first instalment of ₹38.59 crores to be released during the current financial year 2019-20.

6. The expenditure incurred is adjustable to the Demand No.25 of Ministry of Environment Forest and Climate Change under the following heads during the financial year 2019-20.

Scheme	Budget Head	Amount (Rupees in Cr.)
Grants-in-Aid General	2406.04.102.01.00.31	23.15

7. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No.	496902010089666
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

8. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

9. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) The grant shall be utilized by 31st March, 2020.
(iii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iv) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.

(v) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.

(vi) The expenditure is to be incurred as per the allocation of the funds.

(vii) A separate interest bearing account shall be opened which shall be made available at the time of audit to the internal/C&AG Audit Party.

(viii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(ix) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(x) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(xi) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xii) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xiii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiv) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xvi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xvii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xviii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

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11. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

12. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

(Rakesh Kumar)
Technical Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Rakesh Kumar)
Technical Officer

Email 192

adhoc-campa-mef@nic.in

[WARNING: ATTACHMENT UNSCANNED]IICFRE Account Numbers for receiving of funds from National Authority – CAMPA – Regarding Regarding

From : adg rp <adg_rp@icfre.org>

Subject : [WARNING: ATTACHMENT UNSCANNED]IICFRE Account Numbers for receiving of funds from National Authority – CAMPA – Regarding Regarding

Mon, Jan 06, 2020 11:50 AM

1 attachment

To : brijendra96moef@gmail.com, BRIJENDRA SWAROOP <dyceo-ncampa@nic.in>, SANJAY KUMAR OJHA <chh081@ifs.nic.in>, Ad-hoc CAMPA <adhoc-campa-mef@nic.in>

Cc : ddg admin <ddg_admin@icfre.org>, adg admin <adg_admin@icfre.org>, us budget <us_budget@icfre.org>

Sir,

Please find attachment regarding ICFRE Account Numbers for receiving of funds from National Authority – CAMPA.

Regards,

DR. Vimal Kothiyal
Assistant Director General (Research Planning)
Indian Council of Forestry Research and Education
(An autonomous Body of Ministry of Environment & Forests), Govt. of India
P.O. New Forest , DehraDun - 248006
Uttarakhand

Email: adg_rp@icfre.org
Phone: 0135 - 2753290 (Work), Fax: 0135 - 2757775

scanned let to National campa reg accounts for receiving funds.docx
572 KB

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No. 75/2019/ICFRE(R)/RP/SFRESPE(CAMPA)/AICRPs/Main File /12
Indian Council of Forestry Research & Education
(An Autonomous Body of the Ministry of Environment, Forests & Climate Change, GOI)
P.O New Forest Dehradun 248006

Dated the 6th January, 2020

To,

Shri Brijendra Swaroop,
Dy. Chief Executive Officer,
Ministry of Environment, Forests & Climate Change,
(National Authority),
Indira Paryavaran Bhavan, Jor Bagh Road,
New Delhi-110 003

Sub: ICFRE Account Numbers for receiving of funds from National Authority – CAMPA – Regarding

Ref: 1. Your Letter No.13-28/2018/CAMPA dated 2nd January 2020
2. Your Letter No.13-35/2019/NA dated 2nd January 2020
3. Your Letter No.13-36/2019/NA dated 2nd January 2020

Sir,

Kindly refer to your above letters regarding approval of ICFRE Schemes/Projects by National Authority CAMPA. The following accounts were created on 03.01.2020 for receiving the grants from National Authority CAMPA. The details of accounts against the scheme/projects are as under :

Sl. No.	Name of Scheme / Projects	Account No.	Account Name	Name of Branch & IFSC Code
1.	Strengthening forestry research for ecological sustainability and productivity enhancement, ICFRE **No.13-28/2018/ CAMPA dated 2nd January 2020**	496902010089666	SFRESPE CAMPA	Union Bank of India, FRI, PO New Forest, Dehradun UBIN0549690
2.	Estimation of economic losses in real term per hectare basis due to forest fire in Uttarakhand and Madhya Pradesh **No.13-35/2019/NA dated 2nd January 2020**	496902010089667	FIRE UK MP CAMPA	-do-
3.	Execution of readiness activities for implementation of REDD+ in India, ICFRE **No.13-36/2019/NA dated 2nd January 2020**	496902010089668	S I S CAMPA	-do-

The account number mentioned in your letters at sl. No.1, 2 and 3 belong to other project and should not be used here for transfer of funds.

Yours faithfully

6/1/2020

(Dr. Vimal Kothiyal)
ADG (Research Planning), ICFRE

Copy to :
1. DDG (Admin.), ICFRI, for information pl.
2. Accounts Officer, ICFRE for information and needful pl.
3. Under Secretary, ICFRE for information and needful pl.

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 6th January, 2020

To,

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Ministry of Environment Forest & Climate Change
New Delhi.

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2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

Rakesh
06.01.2020

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Grants-in-Aid General	2406.04.102.01.00.31	23.15

7. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

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Rakesh 06.01.2020

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(xvi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.
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Letter issued on 07/01/2020.

Yours faithfully,

Rakesh 06.01.2020

(Rakesh Kumar)
Technical Officer

Copy to:

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3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
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11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
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Rakesh 06.01.2020

(Rakesh Kumar)
Technical Officer

File No.13-28/2018-CAMPA
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Ministry of Environment, Forest & Climate Change
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Dated: 6th January, 2020

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Yours faithfully,

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
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12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

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FORM CAM - 14
(Para 2.6.1)

BILL RETURN MEMO

Token No..**10448**
(To be returned in original with reply noted in the right hand column)

Pay and Accounts Office : **[075126]PAO(Environment), New Delhi** **Bill No. CP00006351 Dated : 09-01-2020** **No. of enclosoures (in words):**
To the : [275127]DDO(Cash), New Delhi

Your Bill No. CP00006351 for Rs.231500000 is returned herewith for the reason(s) stated below with the request that you will kindly remedy the defect pointed out before resubmission and instruct your office to avoid similar errors or omissions in future.

Signature..... Suman

Designation.....

Reason of Returning: DDO Div Div

1. sanction date mismatch.certificate of separate bank account needed.mention whether it is recurring or non recurring. agency name is differ in sanction and pfms.

DDO

NA

Environment Forest & Climate Change
(Grants in Aid Bill)

DDO Code 275127 **Bank Code** 110026014

Demand No. 25 MHS 11111 SCCD 192 Amount 23,15,00,000 Grant No. 0

Bill No CAM/GIA/0002 Bill date :09/01/2020 Financial Year : 2019-2020

Major Head : 2406 SubHead 04.102.010031PL Sanction No. 14006

Sub Head Name : GRANTS IN AID GENERAL

Sl.No	Pay To (Postal Address) 2	Bank Name(Branch Address) 3	Account No 4	MICR Code 5	IFSC Code 6	Amount 7
	CAMPA ()	UNION BANK OF INDIA ()	496902010089666		UBIN0549690	231,500
					Total :	2315000

Amount Rs 23,15,00,001 (Twenty Three Crores Fifteen Lacs One Only)

Received A Sum Of Rs 23,15,00,000 (Twenty Three Crores Fifteen Lacs Only)

During the amount sanctioned under the Government Of India

Ministry/Department Forest & Climate Change Letter No: 13-28/2018-CAMPA

Dated 09/01/2020

Certified that : I have no reason to belive that the grantee Institute is invloved in corrupts practices.

Payment To Be Made Through ECS

Appropriation for the year	89,80,00,000	Final Requirement	89,80,00,0(
Amount Of Bill Annexed	23,15,00,000	Expenditure Including This Bill	25,04,42,0(
		Balance (From final requirement)	64,75,58,0(

Signature and Designation of the Drawing Officer

Warrant for Payment for Rs. 23,15,00,000 (Twenty Three Crores Fifteen Lacs Only)

Treasury

Voucher No.

Pay and Accounts Officer

020 15:57.11

PUBLIC FINANCIAL MANAGEMENT SYSTEM

BILL

Financial Year : 2019-2020

PAO Code : 075126 **PAO Description :** PAO(Environment), New Delhi

DDO Code : 275127 **DDO Description :** DDO(Cash), New Delhi

IFD No. : 14006-IFD	**IFD Date :** 24-12-2019	
Sanction No. : 13-28/2018-CAMPA	**Sanction Date :** 08-01-2020	**Sanction Amount :** 231500000

Token No. :		**Token Date :**
Voucher No. :		**Voucher Date :**
Bill No. : CP00006351	**Bill Date :** 09-01-2020	**Bill Amount :** 231500000

Accounting Classification

Expenditure

S.NO.	Object Head Description	LOA No.(if any)	Grant No	Function Head	Object Head	Category	Amount
1	GRANTS-IN-AID GENERAL		025	2406041020100	31	5	231500000

D.D.O. ... Min. of Environment ... Jor Bagh, New Delhi-110003

205

09-01-2020 15:57.11

PUBLIC FINANCIAL MANAGEMENT SYSTEM

E-Payment Details

S.NO	Beneficiary Name/ Agency Name	Bank and Branch Name	IFSC Code	Account No.	Gross Amount	Deductions	Net Amount (Rs.)	NPS
1	SFRESPE CAMPA FRI	UNION BANK OF INDIAFOR EST RESEARCH INSTITUTE - DE	UBIN0549690	496902010089666	231500000	0	231500000	
				Total :	231500000	0	231500000	

D.D.O.
Min. of Environment, Forest & Climate Change
Indira Paryavaran Shawan
Jor Bagh, New Delhi-110003

2020 15:57.11

PUBLIC FINANCIAL MANAGEMENT SYSTEM

2. I Certify that the expenditure included in this bill could not, with due regard to the interest of the public service be avoided. I Certify that to the best of my knowledge and belief, the payments entered in this bill except items noted below, have been duly made to the parties entitled to receive them and relevant vouchers for sum above Rs. 500/- are attached to this bill; credit bills (above Rs.500/-) relating to the said exceptions which exceed the balance of the permanent advance are attached and relevant stamped receipts will be forwarded as soon as the amounts are paid on receipt of the amount drawn on this bill. I have, as far as possible, obtained vouchers for sums less that Rs. 500/- which are listed in GAR 28 and I am responsible that they have been so defaced or mutilated that they can not be used again. All work bills are annexed.

4. Certified that all the articles detailed in the vouchers attached to the bill and in those retained in my office have been accounted for in the Stock Register.

3. Certified that the purchases billed for have been received in good order, that their quantities are correct and their quality good and according to specification, that the rates paid are not in excess of the accepted and the market rates and that suitable notes of payment have been recorded against the indents and invoices concerned to prevent double payments.

4. Certified that-

(a) The expenditure on conveyance hire included in this bill was actually, incurred was unaviodable and is within the scheduled scale of charges for the conveyance used, and

(b) The Goverment servant concerned is not entitled to draw travelling allowance under the ordinary rules for the journey, and is not granted any compensatory leave and does not and will not recive any special remuneration for the performance of the duty which necessitated the journey.

* 5. Certified that the monetary or quantitative limits prescribed by the goverment in respect of items of contingencies included in the bill have not been exceeded.

* This Certificate is required when proper store accounts of materials and stores purchase are required to be maintained.

Accounting Head : 025 - 2406041020100 - 31 - 5

Appropriation for the current year : 898000000

Expenditure including this bill : 231500000

Amount of work bill annexed : 231500000

Balance available : 666500000

Signature and Designation of the Drawing officer

Dated.....

09-01-2020 15:57.11

PUBLIC FINANCIAL MANAGEMENT SYSTEM

Passed for payment of Rs.(in figures)/-(Rupees in words) :	231500000/- (Twenty-Three Crores Fifteen Lakhs R (s) Only)

DDO Maker

DDO Checker

Cheque Drawing D.D.O

D.D.O Forest & Min. of Environment & Forest & Climate Change, Paryavaran Bhawan Jor Bagh, New Delhi-110003

For use in Pay and Account Office

Passed for payment of Rs.(in figures)/-(Rupees in words) :	231500000/- (Twenty-Three Crores Fifteen Lakhs (s) Only)

D.D.O Forest & Min. of Environment & Forest & Climate Change, Paryavaran Bhawan Jor Bagh, New Delhi-110003

Objected to Rs.....

Reason of Objection.....

Jr./Sr. Accountant

A.A.O

Pay and Accounts Officer

DCA/CA/CCA

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 6th January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the above subject scheme mentioned in subject and convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

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4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. The undersigned is also directed to convey the sanction of the competent authority to release the payment of ₹23.15 crores (Rupees twenty three crores fifteen lakhs only) as first instalment of ₹38.59 crores to be released during the current financial year 2019-20.

6. The expenditure incurred is adjustable to the Demand No.25 of Ministry of Environment Forest and Climate Change under the following heads during the financial year 2019-20.

Scheme	Budget Head	Amount (Rupees in Cr.)
Grants-in-Aid General	2406.04.102.01.00.31	23.15

7. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No.	496902010089666
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

8. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

9. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) The grant shall be utilized by 31st March, 2020.
(iii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iv) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.

(v) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.

(vi) The expenditure is to be incurred as per the allocation of the funds.

(vii) A separate interest bearing account shall be opened which shall be made available at the time of audit to the internal/C&AG Audit Party.

(viii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(ix) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(x) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(xi) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xii) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xiii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiv) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xvi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xvii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xviii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xix) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xx) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xxi) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xxii) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated

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in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xxiii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

10. The scheme will be implemented through the Research and Training (RT Division) of MoEF&CC.

11. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

12. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

D.D.O.
Min. of Environment, Forest &
Indira Paryavaran Bhawan
Jor Bagh, New Delhi-110003

LIL

adhoc-campa-mef@nic.in

Email

Request to furnish the information regarding queries raised by the Pay & Account Officer, MoEF&CC

From : Ad-hoc CAMPA <adhoc-campa-mef@nic.in> Tue, Jan 21, 2020 02:25 PM

Subject : Request to furnish the information regarding queries raised by the Pay & Account Officer, MoEF&CC

To : sureshgairola <sureshgairola@icfre.org>, dwii <dwii@wii.gov.in>, director <director@bnhs.org>

Cc : Anjani <an.sharan@nic.in>, SANJAY KUMAR OJHA <chh081@ifs.nic.in>, BRIJENDRA SWAROOP <dyceo-ncampa@gov.in>

Dear Sir/Madam,

Following queries have been raised by Pay & Account Officer before release of first instalment to the concerned institutions:-

1 Certificate for opening separate bank account for the scheme has not been provided
2 It is not clear whether expenditure is recurring or non-recurring
3 Organizations, which have received grants-in-aid from any of the divisions of MoEF&CC, are required to submit pending UCs, if any.

These queries have been intimated to the concerned officer of your organization telephonically.

It is requested to furnish the desired information without any delay.

National Authority,
Ministry of Environment, Forest & Climate Change,
New Delhi - 110 003.
Phone : 011-24368006
Telefax : 011-24368007

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No. 75/2019/ICFRE(R)/RP/SFRESPE(CAMPA)/AICRPs/Main File /12
Indian Council of Forestry Research & Education
(An Autonomous Body of the Ministry of Environment, Forests & Climate Change, GOI)
P.O New Forest Dehradun 248006

Dated the 6th January, 2020

To,

Shri Brijendra Swaroop,
Dy. Chief Executive Officer,
Ministry of Environment, Forests & Climate Change,
(National Authority),
Indira Paryavaran Bhavan, Jor Bagh Road,
New Delhi-110 003

Sub: **ICFRE Account Numbers for receiving of funds from National Authority – CAMPA – Regarding**

Ref: **1. Your Letter No.13-28/2018/CAMPA dated 2nd January 2020**
2. Your Letter No.13-35/2019/NA dated 2nd January 2020
3. Your Letter No.13-36/2019/NA dated 2nd January 2020

Sir,

Kindly refer to your above letters regarding approval of ICFRE Schemes/Projects by National Authority CAMPA. The following accounts were created on 03.01.2020 for receiving the grants from National Authority CAMPA. The details of accounts against the scheme/projects are as under :

Sl. No.	Name of Scheme / Projects	Account No.	Account Name	Name of Branch & IFSC Code
1.	Strengthening forestry research for ecological sustainability and productivity enhancement, ICFRE **No.13-28/2018/ CAMPA dated 2nd January 2020**	496902010089666	SFRESPE CAMPA	Union Bank of India, FRI, PO New Forest, Dehradun UBIN0549690
2.	Estimation of economic losses in real term per hectare basis due to forest fire in Uttarakhand and Madhya Pradesh **No.13-35/2019/NA dated 2nd January 2020**	496902010089667	FIRE UK MP CAMPA	-do-
3.	Execution of readiness activities for implementation of REDD+ in India, ICFRE **No.13-36/2019/NA dated 2nd January 2020**	496902010089668	S I S CAMPA	-do-

The account number mentioned in your letters at sl. No.1, 2 and 3 belong to other project and should not be used here for transfer of funds.

Yours faithfully

Kothiyal 6/1/2020

(Dr. Vimal Kothiyal)
ADG (Research Planning), ICFRE

Copy to :
1. DDG (Admin.), ICFRE for information pl.
2. Accounts Officer, ICFRE for information and needful pl.
3. Under Secretary, ICFRE for information and needful pl.

Recurring

Sanction Details

Controller:	079-ENVIRONMENT and FORESTS	**Sanction Status:**	**Approved**
Sanction Number:	13-28/2018-CAMPA	**Sanction Date:**	28/01/2020
Sanction Type:	Transfer (DDO Bill)	**Sanction Amount:**	70140000
IFD Number:	14006	**IFD Date:**	24/12/2019
Scheme:	3493-ESTABLISHMENT EXPENDITURE (EF&CC)	**PAO:**	075126-PAO(Environment), New Delhi
DDO:	275127-DDO(Cash), New Delhi	**Remarks:**	Kindly approve

Created By:	pdcampa	**Created On:**	30/01/2020 11:05:30 AM
Modified By:	pdcampa	**Modified On:**	30/01/2020 11:08:30 AM

File Uploaded: Ecological - Recurring.pdf

Account Details:

Grant	Department (For UT Grants Only)	Function Head	Object Head	Category	Amount	External PAO	Available Budget
025 - M/o Environment, Forests and Climate Change		2406041020100 - NATIONAL AUTHORITY	31 - GRANTS-IN-AID GENERAL	5 - VOTED	70140000		-304474667

Agency Details:

Sr.No	Agency Name	City	District	State	Country	Gross Amount	Deduction Amount	Net Amount	Payee Remarks
1	Indian Council of Forestry Research and Education Dehradun	Dehradun	CENTRAL AGENCY	CENTRAL AGENCY	INDIA	70,140,000	0	70,140,000	approve

Sanction Approved Successfully.

Payee Details | Print Sanction Order | Back

Vandecutting.

Sanction Details

Controller:	079-ENVIRONMENT and FORESTS	**Sanction Status:**	**Approved**
Sanction Number:	13-28/2018-NA	**Sanction Date:**	28/01/2020
Sanction Type:	Transfer (DDO Bill)	**Sanction Amount:**	161400000
IFD Number:	140006	**IFD Date:**	24/12/2019
Scheme:	3493-ESTABLISHMENT EXPENDITURE (EF&CC)	**PAO:**	075126-PAO(Environment), New Delhi
DDO:	275127-DDO(Cash), New Delhi	**Remarks:**	Kindly approve

Created By:	pdcampa	**Created On:**	30/01/2020 10:55:23 AM
Modified By:	pdcampa	**Modified On:**	30/01/2020 10:57:32 AM

Account Details:

Grant	Department (For UT Grants Only)	Function Head	Object Head	Category	Amount	External PAO	Available Budget
025 - M/o Environment, Forests and Climate Change		2406041020100 - NATIONAL AUTHORITY	31 - GRANTS-IN-AID GENERAL	5 - VOTED	161400000		-234334667

Agency Details:

Sr.No	Agency Name	City	District	State	Country	Gross Amount	Deduction Amount	Net Amount	Payee Remarks
1	Indian Council of Forestry Research and Education Dehradun	Dehradun	CENTRAL AGENCY	CENTRAL AGENCY	INDIA	161,400,000	0	161,400,000	approve

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 28th January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding non-recurring expenditure.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the scheme mentioned in subject and to convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) [Rs. 261.1 crore recurring + Rs. 52.57 crore non-recurring] for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. It has been informed by ICFRE letter No. 75/2019/ICFRE(R)/RP/SFRESPE (CAMPA)/AICRPs/Main File dated 22.01.2020 that the non-recurring component of the scheme is Rs.52.57 crore. In addition, the current year break up for non-recurring expenditure is Rs.26.90 crore.

6. The undersigned is also directed to convey the sanction of the competent authority to release the payment of 16.14 crore {Sixteen crore fourteen lakhs only (60% of Rs.26.90 crore)} as the 1st instalment of non-recurring grant during current financial year 2019-20.

7. The expenditure involved will be met from within the Sanctioned Budget Grant of Ministry of Environment Forest and Climate Change under Demand No.25, 2406 Major Head, 04.102 (Minor Head)-01.00.31 Grant-in-aid-General towards Grants-in-aid to ICFRE for the financial year 2019-20.

8. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No. Saving	496902010089666
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

9. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

10. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iii) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.
(iv) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.
(v) The expenditure is to be incurred as per the allocation of the funds.

(vi) The interest bearing account shall be made available at the time of audit to the internal/C&AG Audit Party.

(vii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(viii) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(ix) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(x) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xi) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiii) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xiv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xv) The fixed assets created out of this grant shall not be disposedoff without concurrence of this Ministry.

(xvi) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xvii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xviii) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xix) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xx) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xxi) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xxii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xxiii) ICFRE shall ensure implementation of Expenditure Advance and Transfer (EAT) Module of the PMES as well as re-imbursement of funds through DBT.

11. The scheme will be implemented through the Research and Training (RT Division) of MoEF&CC.

12. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

13. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 28th January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding recurring expenditure.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the scheme mentioned in subject and to convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) [Rs. 261.1 crore recurring + Rs. 52.57 crore non-recurring] for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. It has been informed by ICFRE letter No. 75/2019/ICFRE(R)/RP/SFRESPE (CAMPA)/AICRPs/Main File dated 22.01.2020 that the recurring component of the scheme is Rs.261.1 crore. In addition, the current year break up for recurring expenditure is Rs.11.69 crore.

6. The undersigned is also directed to convey the sanction of the competent authority to release the payment of 7.014 crore {Seven crore one lakhs and forty thousand only (60% of Rs.11.69 crore)} as the 1st instalment of recurring grant during current financial year 2019-20.

7. The expenditure involved will be met from within the Sanctioned Budget Grant of Ministry of Environment Forest and Climate Change under Demand No.25, 2406 Major Head, 04.102 (Minor Head)-01.00.31 Grant-in-aid-General towards Grants-in-aid to ICFRE for the financial year 2019-20.

8. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No. Saving	496902010089666
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

9. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

10. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iii) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.
(iv) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.

(v) The expenditure is to be incurred as per the allocation of the funds.

(vi) The interest bearing account shall be made available at the time of audit to the internal/C&AG Audit Party.

(vii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

(viii) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(ix) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(x) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xi) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiii) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xiv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xv) The fixed assets created out of this grant shall not be disposed off without concurrence of this Ministry.

(xvi) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xvii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xviii) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xix) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

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(xxii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xxiii) ICFRE shall ensure implementation of Expenditure Advance and Transfer (EAT) Module of the PMES as well as re-imbursement of funds through DBT.

11. The scheme will be implemented through the Research and Training (RT Division) of MoEF&CC.

12. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

13. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Email **adhoc-campa-mef@nic.in**

Strengthening of Forestry Researach for Ecological Sustainability and Productivity Enhancement - ICFRE: Approval regarding non-recur/recuring

From : Ad-hoc CAMPA <adhoc-campa-mef@nic.in> Fri, Jan 31, 2020 11:49 AM

Subject : Strengthening of Forestry Researach for Ecological Sustainability and Productivity Enhancement - ICFRE: Approval regarding non-recur/recuring

2 attachments

To : K. M. Mahesh <ps2mefcc@gov.in>, RAO B.V <bv.rao67@nic.in>, SIDDHANTA DAS <dgfindia@nic.in>, Dr Anup Kumar Nayak <adgwl-mef@nic.in>, SANJAY KUMAR <adgfc-mef@nic.in>, NORTH CENTRAL REGIONAL OFFICE <moef.ddn@gov.in>, roefccc1@gmail.com, VK Singh <rocz.lko-mef@nic.in>, Dy DGF Chandigarh <ronz.chd-mef@nic.in>, ROR MoEFCC <ro.ranchi-mef@gov.in>, K.P. SINGH <rosz.bng-mef@nic.in>, RABINDRA KUMAR SAMAL <roez.bsr-mef@nic.in>, Dy. Director General <rowz.bpl-mef@nic.in>, apccfbhopal@gmail.com, goimoefrolko@gmail.com, Shri. V N Ambade <apccfcentral-ngp-mef@gov.in>, roshill@gmail.com, Praveen Garg <asfa-mef@nic.in>, igfwl <igfwl-mef@nic.in>, igf fp mef <igf.fp.mef@gov.in>, PDAESM <pdaesm@cag.gov.in>

Cc : Anjani <an.sharan@nic.in>, chh081@nic.in, BRIJENDRA SWAROOP <dyceo-ncampa@gov.in>, Dr. Suneesh Buxy DIGF RT <digfrt-mef@nic.in>, dg@icfre.org, sureshgairola <sureshgairola@icfre.org>

Dear Sir/Madam,

Kindly get the attached file on above mentioned subject.

National Authority,
Ministry of Environment, Forest & Climate Change,
New Delhi - 110 003.
E-mail : adhoc-campa-mef@nic.in

Icfre Non Recurring.pdf
1 MB

Ecological - Recurring.pdf
1 MB

Email **dyceo-ncampa@gov.in**

With Regards,

PFMS

Sanction Approved Mail

From : cpsms-mof@nic.in Thu, Jan 30, 2020 10:57 AM

Subject : Sanction Approved Mail

To : dyceo-ncampa@gov.in

Dear User :pdcampa

You have approved the sanction successfully. The sanction details are given below :

Controller:	079-ENVIRONMENT and FORESTS	**Sanction Status:**	Approved
Sanction Number:	13-28/2018-NA	**Sanction Date:**	28/01/2020
Sanction Type:	Transfer	**Sanction Amount :**	161400000
IFD Number:	140006	**IFD Date:**	24/12/2019
Plan Scheme:	3493-ESTABLISHMENT EXPENDITURE (EF&CC)	**PAO:**	075126-PAO(Environment), New Delhi
DDO:	275127-DDO(Cash), New Delhi	**Remarks:**	

Sr.No	Agency Name	City	Amount
1.	**Indian Council of Forestry Research and Education Dehradun**	**Dehradun**	**161400000.0000**

In case you have not approved this sanction, please contact DDO/PAO immediately for returning the sanction and not to pay the same.

NOTE: This is an auto-generated mail from PFMS, please do not reply to this mail.

Email dyceo-ncampa@gov.in

With Regards,

PFMS

Sanction Approved Mail

From : cpsms-mof@nic.in Thu, Jan 30, 2020 11:08 AM

Subject : Sanction Approved Mail

To : dyceo-ncampa@gov.in

Dear User :pdcampa

You have approved the sanction successfully. The sanction details are given below :

Controller:	079-ENVIRONMENT and FORESTS	**Sanction Status:**	Approved
Sanction Number:	13-28/2018-CAMPA	**Sanction Date:**	28/01/2020
Sanction Type:	Transfer	**Sanction Amount :**	70140000
IFD Number:	14006	**IFD Date:**	24/12/2019
Plan Scheme:	3493-ESTABLISHMENT EXPENDITURE (EF&CC)	**PAO:**	075126-PAO(Environment), New Delhi
DDO:	275127-DDO(Cash), New Delhi	**Remarks:**	

Sr.No	Agency Name	City	Amount
1.	**Indian Council of Forestry Research and Education Dehradun**	**Dehradun**	**70140000.0000**

In case you have not approved this sanction, please contact DDO/PAO immediately for returning the sanction and not to pay the same.

NOTE: This is an auto-generated mail from PFMS, please do not reply to this mail.

FORM CAM - 14
(Para 2.6.1)

BILL RETURN MEMO

Token No..**11326**
(To be returned in original with reply noted in the right hand column)

Pay and Accounts Office : **[075126]PAO(Environment), New Delhi**
Bill No. CP00006838 Dated : 31-01-2020
No. of enclosoures (in words):

To the : [275127]DDO(Cash), New Delhi

Your Bill No. CP00006838 for Rs.70140000 is returned herewith for the reason(s) stated below with the request that you will kindly remedy the defect pointed out before resubmission and instruct your office to avoid similar errors or omissions in future.

Signature.....Suman.....

Designation.....

Reason of Returning:

1. UC is pending. Agency name is differ in sanction order and PFMS.A certificate to opening of separate interest bearing bank account is required.

Mehra
10/2/2020

Compa

No UC is pending in respect of CAMPA fund. In addition, the User Agency has already submitted UCs in respect of funds released to it by other divisions physically during 2017-18 and 2018-19 to Mr. Rakesh of PLAO.

(2) The certificate regarding opening of a separate interest bearing bank account is enclosed.

13/02/2020
Joint CEO, National Authority

DDO

Mehra
13/2/2020

FORM CAM - 14
(Para 2.6.1)

BILL RETURN MEMO

Token No..**11327**
(To be returned in original with reply noted in the right hand column)

Pay and Accounts Office : **[075126]PAO(Environment), New Delhi** **Bill No. CP00006839 Dated : 31-01-2020** **No. of enclosoures (in words):**
To the : [275127]DDO(Cash), New Delhi

Your Bill No. CP00006839 for Rs.161400000 is returned herewith for the reason(s) stated below with the request that you will kindly remedy the defect pointed out before resubmission and instruct your office to avoid similar errors or omissions in future.

Signature.....

Designation.....

Reason of Returning:

1. Agency name and IFD No mismatch in sanction order and PFMS. A certificate to opening of separate interest bearing bank account is required.

10/2/2020

(i) ~~Agency name~~ The mismatch of Agency name & sanction order on PFMS portal has been rectified
IFD Dy No is 114006 dated 24.12.2019.
The error is regretted. A revised S.O. has been issued
(ii) The certificate regarding opening A separate interest bearing bank account is enclosed.

13/02/2

Joint CEO, N.A

DDO

14/2/2020

Environment Forest & Climate Change

(Grants in Aid Bill)

A.7.

683
31/01/20

DDO Code 275127 **Bank Code** 110026014

Demand No. **25** MHS **11111** SCCD **192** Amount **16,14,00,000** Grant No. : **0**

Bill No **CAM/GIA/0007** Bill date :**31/01/2020** Financial Year : **2019-2020**

Maior Head : **2406** CP6839 SubHead **04.102.010031PL** Sanction No. **14006**

Sub Head Name : **GRANTS IN AID GENERAL**

V.No	Pay To (Postal Address)	Bank Name(Branch Address)	Account No	MICR Code	IFSC Code	Amou
1	2	3	4	5	6	7
1	SFRESPE CAMPA ()	UNION BANK OF INDIA ()	496902010089666		UBIN0549690	161,400
				Total :		**1614000**

Under Rs **16,14,00,001 (Sixteen Crores Fourteen Lacs One Only)**

₹ 11327 3/2/2020

Received A Sum Of Rs **16,14,00,000 (Sixteen Crores Fourteen Lacs Only)**

Being the amount sanctioned under the Government Of India

Environment Forest & Climate Change Letter No: **13-28/2018-CAMPA**

Dated **28/01/2020**

Certified that : I have no reason to belive that the grantee Institute is invloved in corrupts practices.

Payment To Be Made Through ECS

CCA received for return

Appropriation for the year	**89,80,00,000**	Final Requirement	**89,80,00,0(**
Amount Of Bill Annexed	**16,14,00,000**	Expenditure Including This Bill	**33,43,96,2(**
		Balance (From final requirement)	**56,36,03,8(**

Signature and Designation of the Drawing Officer

D.D.O.
Min. of Environment, Forest & Climate Change
Jor Bagh, New Delhi-110003

Passed for Payment for Rs. **16,14,00,000 (Sixteen Crores Fourteen Lacs Only)**

Payment By

Cheque No.

Date

Category :

Pay and Accounts Officer

1-2020 14:50.36

PUBLIC FINANCIAL MANAGEMENT SYSTEM

BILL

Financial Year : 2019-2020

PAO Code : 075126 **PAO Description :** PAO(Environment), New Delhi

DDO Code : 275127 **DDO Description :** DDO(Cash), New Delhi

IFD No. : 140006	**IFD Date :** 24-12-2019	
Sanction No. : 13-28/2018-NA	**Sanction Date :** 28-01-2020	**Sanction Amount :** 161400000

Token No. :		**Token Date :**
Voucher No. :		**Voucher Date :**
Bill No. : CP00006839	**Bill Date :** 31-01-2020	**Bill Amount :** 161400000

Accounting Classification

Expenditure

S.NO.	Object Head Description	LOA No.(if any)	Grant No	Function Head	Object Head	Category	Amount
1	GRANTS-IN-AID GENERAL		025	2406041020100	31	5	161400000

D.D.O.
Min. of Environment, Forest &
Climate Change
Indira Paryavaran Bhawan
Jor Bagh Road, New Delhi-110003

PUBLIC FINANCIAL MANAGEMENT SYSTEM

E-Payment Details

S.NO	Beneficiary Name/ Agency Name	Bank and Branch Name	IFSC Code	Account No.	Gross Amount	Deductions	Net Amount (Rs.)	NPB
1	SFRESPE CAMPA FRI	UNION BANK OF INDIAFOR EST RESEARCH INSTITUTE - DE	UBIN0549690	496902010089666	161400000	0	161400000	
				Total :	161400000	0	161400000	

1. I Certify that the expenditure included in this bill could not, with due regard to the interest of the public service be avoided. I Certify that to the best of my knowledge and belief, the payments entered in this bill except items noted below, have been duly made to the parties entitled to receive them and relevant vouchers for sum above Rs. 500/- are attached to this bill; credit bills (above Rs.500/-) relating to the said exceptions which exceed the balance of the permanent advance are attached and relevant stamped receipts will be forwarded as soon as the amounts are paid on receipt of the amount drawn on this bill. I have, as far as possible, obtained vouchers for sums less that Rs. 500/- which are listed in GAR 28 and I am responsible that they have been so defaced or mutilated that they can not be used again. All work bills are annexed.

2. Certified that all the articles detailed in the vouchers attached to the bill and in those retained in my office have been accounted for in the Stock Register.

3. Certified that the purchases billed for have been received in good order, that their quantities are correct and their quality good and according to specification, that the rates paid are not in excess of the accepted and the market rates and that suitable notes of payment have been recorded against the indents and invoices concerned to prevent double payments.

4. Certified that-

(a) The expenditure on conveyance hire included in this bill was actually, incurred was unaviodable and is within the scheduled scale of charges for the conveyance used, and

(b) The Goverment servant concerned is not entitled to draw travelling allowance under the ordinary rules for the journey, and is not granted any compensatory leave and does not and will not recive any special remuneration for the performance of the duty which necessitated the journey.

*** 5.** Certified that the monetary or quantitative limits prescribed by the goverment in respect of items of contingencies included in the bill have not been exceeded.

* This Certificate is required when proper store accounts of materials and stores purchase are required to be maintained.

Accounting Head : 025 - 2406041020100 - 31 - 5

Appropriation for the current year : 898000000

Expenditure including this bill : 161400000

Amount of work bill annexed : 161400000

Balance available : 736600000

Signature and Designation of the Drawing officer

D.D.O.

Min. of Environment, Forest &

Climate Change

Dated.....

31-01-2020 14:50.36

PUBLIC FINANCIAL MANAGEMENT SYSTEM

Passed for payment of Rs.(in figures)/-(Rupees in words) : 161400000/- (Sixteen Crores Fourteen Lakhs Rupe Only)

DDO Maker | **DDO Checker** | **Cheque Drawing D.D.O**

For use in Pay and Account Office

Passed for payment of Rs.(in figures)/-(Rupees in words) : 161400000/- (Sixteen Crores Fourteen Lakhs Rupee(s) Only)

Objected to Rs.....

Reason of Objection.....

Jr./Sr. Accountant | **A.A.O** | **Pay and Accounts Officer**

DCA/CA/CCA

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 28th January, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding non-recurring expenditure.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the scheme mentioned in subject and to convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) [Rs. 261.1 crore recurring + Rs. 52.57 crore non-recurring] for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

30/1/2020

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. It has been informed by ICFRE letter No. 75/2019/ICFRE(R)/RP/SFRESPE (CAMPA)/AICRPs/Main File dated 22.01.2020 that the non-recurring component of the scheme is Rs.52.57 crore. In addition, the current year break up for non-recurring expenditure is Rs.26.90 crore.

6. The undersigned is also directed to convey the sanction of the competent authority to release the payment of 16.14 crore {Sixteen crore fourteen lakhs only (60% of Rs.26.90 crore)} as the 1st instalment of non-recurring grant during current financial year 2019-20.

7. The expenditure involved will be met from within the Sanctioned Budget Grant of Ministry of Environment Forest and Climate Change under Demand No.25, 2406 Major Head, 04.102 (Minor Head)-01.00.31 Grant-in-aid-General towards Grants-in-aid to ICFRE for the financial year 2019-20.

8. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Bank Account No. Saving	496902010089666
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

9. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

10. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
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(v) The expenditure is to be incurred as per the allocation of the funds.

(vi) The interest bearing account shall be made available at the time of audit to the internal/C&AG Audit Party.

(vii) Payments are to be made by direct bank transfer (DBT) and no cash payment is to be made.

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(x) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xi) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

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(xxiii) ICFRE shall ensure implementation of Expenditure Advance and Transfer (EAT) Module of the PMES as well as re-imbursement of funds through DBT.

11. The scheme will be implemented through the Research and Training (RT Division) of MoEF&CC.

12. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

13. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.14006 dated 24.12.2019.

Yours faithfully,

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
7. IGF (FC)/(WL)/FPD/SU, Environment Forest & Climate Change, New Delhi
8. DIG (RT), Environment Forest & Climate Change, New Delhi
9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

D.D.O.
Min. of Environment, Forest &
Climate Change
Indira ... Bhawan
Jor Bagh ... 110003

(29)

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the following bank accounts are interest bearing account.

Sr No	Name	Saving Account Number
1	SFRESPE CAMPA	4969020100896666
2	FIRE UK MP CAMPA	4969020100896667
3	S I S. CAMPA	4969020100896668

5/2/2020

Accounts Officer
(ICFRE, Dehradun)

File No.13-28/2018-CAMPA
Government of India
Ministry of Environment, Forest & Climate Change
(National Authority)

Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi-110003.
Dated: 13th February, 2020

To,

The Pay & Accounts Officer
Ministry of Environment Forest & Climate Change
New Delhi.

Sub: Strengthening of Forestry Research for Ecological Sustainability and Productivity Enhancement – ICFRE: Approval regarding non-recurring expenditure.

Sir/Madam,

I am directed to refer to the reworked proposal submitted by ICFRE, Dehradun vide letter No.72(XVIII)2018/ICFRE(R)/RP/Project Proposals/191 dated 01.11.2019 on the scheme mentioned in subject and to convey the approval of the Governing Body of the National Authority under Section 14 (1) (iv) of the Compensatory Afforestation Fund (CAF) Act, 2016 for the scheme at a total cost of ₹313.67 Cr. (Rupees three hundred thirteen crores and sixty seven lakhs only) [Rs. 261.1 crore recurring + Rs. 52.57 crore non-recurring] for carrying out approved activities of the scheme during financial year 2019-20 to 2024-25 from the National Fund created under Section 3 of CAF Act, 2016.

2. The scheme was recommended by the Executive Committee of the National Authority in its 1st meeting held on 8th March, 2019 for the approval of the Governing Body of the National Authority as per provision contained in Section 14 (1) (iv) of the CAF Act, 2016 with the following suggestions:

(a) The mid-term review should be done by independent experts.
(b) The annual plan for 2018-19 shall be reconsidered due to the fact that the proposal was placed in March, 2019.
(c) The whole financial outlay shall be reworked and submitted to the Governing Body of the National Authority for final approval.

3. The ICFRE has agreed to the recommendations of mid-term review by independent experts and requested the Ministry to nominate the independent expert for the mid-term review of the scheme. The annual requirement of the funds as proposed by the ICFRE as below:

2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total (Rs. in Cr.)
38.59	102.45	55.50	46.86	46.44	23.83	313.67

4. The Governing Body of the National Authority in its 1st meeting held on 15th November, 2019 approved the scheme as recommended by the Executive Committee of the National Authority.

5. It has been informed by ICFRE letter No. 75/2019/ICFRE(R)/RP/SFRESPE (CAMPA)/AICRPs/Main File dated 22.01.2020 that the non-recurring component of the scheme is Rs.52.57 crore. In addition, the current year break up for non-recurring expenditure is Rs.26.90 crore.

6. The undersigned is also directed to convey the sanction of the competent authority to release the payment of 16,14,00,000 {Sixteen crore fourteen lakhs only (60% of Rs.26.90 crore)} as the 1st instalment of non-recurring grant during current financial year 2019-20.

7. The expenditure involved will be met from within the Sanctioned Budget Grant of Ministry of Environment Forest and Climate Change under Demand No.25, 2406 Major Head, 04.102 (Minor Head)-01.00.31 Grant-in-aid-General towards Grants-in-aid to ICFRE for the financial year 2019-20.

8. The Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change is hereby authorized to prepare and submit the bill for this payment to Pay and Accounts Officer, Ministry of Environment, Forest and Climate Change, New Delhi, who will direct Corporation Bank of India, Lodhi Road, CGO Complex, New Delhi to make the payment electronically in favour of "SFRESPE CAMPA", whose bank details are given below:

Account Name	SFRESPE CAMPA
Bank Address	Union Bank of India, FRI Dehradun
Saving Bank Account No.	496902010089666
Account Type	Saving
Bank Name	Union Bank of India
MICR Name	248026003
IFSC Code	UBIN0549690

9. The aforesaid amount shall be spent in accordance with the scheme and no deviation from the approved items of expenditure shall be made without prior concurrence of the National Authority.

10. The released amount is subject to adherence of following terms and conditions:

(i) The approved activities shall be carried out according to Rule 3 of CAF Rules, 2018, i.e. as per the provisions of the Government Accounting Rule, 1990 and the General Financial Rules, 2017 as applicable from time to time.
(ii) Strict economy should be observed so as to keep the actual expenditure to the minimum.
(iii) The works are to be executed as per the sanctioned scheduled of rate applicable in the area.
(iv) The infrastructure created will be fully utilized for the purpose for which they have been sanctioned.
(v) The expenditure is to be incurred as per the allocation of the funds.
(vi) The separate interest bearing account shall be made available at the time of audit to the internal/C&AG Audit Party.

(vii) *Payments are to be made by direct bank transfer (DBT) and no cash payment* is to be made.

(viii) The payment of engagement of labour for various works should be made only through DBT and the details of the same with supporting documents should be submitted along with the utilization certificate and progress report.

(ix) Evidence of deposit of TDS/GST in case of contract payments and GST in case of purchase of leviable goods are obtained along with utilization certificate.

(x) In case of employment through contract, copy of PF and ESI of employees shall be furnished, wherever applicable.

(xi) The Utilization Certificate (as prescribed in GFR), duly audited expenditure statement and Quarterly Progress Report shall be submitted to this Authority before any proposal for subsequent grant. The progress report will include satellite photographs/photographs of physical deliverable with date and latitude–longitude coordinates (wherever applicable) before and after implementation, and shall be submitted in time. The progress report and photos shall also be uploaded on the website of the implementing agency as well as the Ministry for public access.

(xii) ICFRE shall carry out the monitoring and evaluation of works undertaken seriously and the proposal for second instalment should also include the details of mid-term monitoring and evaluation report.

(xiii) If the implementation agency does not use the fund for the purpose for which it was given, it has to refund the same with interest.

(xiv) There should not be any overlapping of activities under the scheme with the activities/ongoing schemes of Central/State Government.

(xv) The fixed assets created out of this grant shall not be disposedoff without concurrence of this Ministry.

(xvi) Details of number of persons hired/man days generated/amount utilized for carrying out approved activities should clearly be indicated in the expenditure statement. Number of persons hired in various categories (ST/SC) should also be indicated.

(xvii) ICFRE is required to maintain a stock register for equipments/machineries etc. purchased from these funds.

(xviii) ICFRE shall ensure implementation of Expenditure Advance and Transfer (EAT) Module of the PMES as well as re-imbursement of funds through DBT.

11. The scheme will be implemented through the Research and Training (RT Division) of MoEF&CC.

12. ICFRE will ensure nomination of the independent experts and their terms and conditions by MoEF&CC for the purpose of mid-term review of the scheme.

13. This sanction issues with the concurrence of Integrated Finance Division of the Ministry Environment Forest and Climate Change vide their Dy. No.114006 dated 24.12.2019.

Yours faithfully,

Encl: Certificate regarding interest bearing Bank Account.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Copy to:

1. PS to Hon'ble Minister, Environment Forest & Climate Change, New Delhi
2. PPS to Secretary, Environment Forest & Climate Change, New Delhi
3. PPS to DGF&SS, Environment Forest & Climate Change, New Delhi
4. PPS to ADG (FC)/ADG (WL)/ADG (NA), Environment Forest & Climate Change, New Delhi
5. PPS to AS&FA, Environment Forest & Climate Change, New Delhi
6. Deputy Director General of Forests (Central), all Regional Offices, Ministry of Environment, Forest and Climate Change
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9. Principal Director (Audit), Scientific Department, AGCR Building, New Delhi
10. The Director (Expenditure), Ministry of Finance (Department of Expenditure), New Delhi.
11. Director, ICFRE, Dehradun.
12. Drawing and Disbursing Officer, Ministry of Environment, Forest and Climate Change.
13. Sanction Folder/ Guard File.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

Sanction Details

Controller:	079-ENVIRONMENT and FORESTS	**Sanction Status:**	**Approved**
Sanction Number:	13-28/2018-CAMPA	**Sanction Date:**	13/02/2020
Sanction Type:	Transfer (DDO Bill)	**Sanction Amount:**	161400000
IFD Number:	114006	**IFD Date:**	24/12/2019
Scheme:	3493-ESTABLISHMENT EXPENDITURE (EF&CC)	**PAO:**	075126-PAO(Environment), New Delhi
DDO:	275127-DDO(Cash), New Delhi	**Remarks:**	Kindly approve
Created By:	pdcampa	**Created On:**	13/02/2020 07:15:55 PM
Modified By:	pdcampa	**Modified On:**	13/02/2020 07:41:14 PM
File Uploaded:	Eco-ICFRE non rec.pdf		

Account Details:

Grant	Department (For UT Grants Only)	Function Head	Object Head	Category	Amount	External PAO	Available Budget
025 - M/o Environment, Forests and Climate Change		2406041020100 - NATIONAL AUTHORITY	31 - GRANTS-IN-AID GENERAL	5 - VOTED	161400000		-582541667

Agency Details:

Sr.No	Agency Name	City	District	State	Country	Gross Amount	Deduction Amount	Net Amount	Payee Remarks
1	Indian Council of Forestry Research and Education Dehradun	Dehradun	CENTRAL AGENCY	CENTRAL AGENCY	INDIA	161,400,000	0	161,400,000	approve

Sanction Approved Successfully.

Payee Details | Print Sanction Order | Back

भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
INDIAN COUNCIL OF FORESTRY RESEARCH & EDUCATION
(पर्यावरण वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार की एक स्वायत्त परिषद्)
(An Autonomous Body under the Ministry of Environment Forest & Climate Change, Government of India)
डाकघरः न्यू फॉरेस्ट, देहरादून – 248 006 (उत्तराखण्ड)
P.O. New Forest, DEHRADUN– 248 006 (Uttarakhand)

संजय पाण्डेय
SANJAY PANDEY
लेखा अधिकारी
Accounts Officer

दूरभाष संः 0135 - 2224861 (O)
Phone No.: 0135 - 2224838 (O)

No/ संख्या: 7-36/2019/A.O./ICFRE

Date/दिनांक: 18-02-2020

CERTIFICATE

This is to certify that CAMPA Projects at Indian Council of Forestry Research and Education, Dehradun established under the scheme of the Ministry of Environment, Forest and Climate Change (MoEF &CC) with official address Indian Council of Forestry Research and Education, Dehradun due hereby certify the following :-

1. The host Institute (Indian Council of Forestry Research and Education, Dehradun) is maintaining a separate bank account for the purpose of accommodating the Grant sanctioned by MoEF&CC for CAMPA activities and to facilitate transactions.

2. That, the details of separate bank account for CAMPA is as follows:-

Name of the beneficiary	Name of Bank where A/c of org. held with Address	Saving Bank A/c No.	IFSC Code
Indian Council of Forestry Research and Education, Dehradun	SFRESPE CAMPA	496902010089666	UBIN 0549690

(Sanjay Pandey)
Accounts Officer
I.C.F.R.E. (Hq.)

भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
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P.O. New Forest, DEHRADUN– 248 006 (Uttarakhand)

संजय पाण्डेय्
SANJAY PANDEY
लेखा अधिकारी
Accounts Officer

दूरभाष संः **0135 - 2224861 (O)**
Phone No.: 0135 – 2224838 (O)

No/ संख्या: 7-36/2019/A.O./ICFRE

Date/दिनांक: 18-02-2020

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Indian Council of Forestry Research and Education, Dehradun	Fire UK MP CAMPA	496902010089667	UBIN 0549690

(Sanjay Pandey)
Accounts Officer
I.C.F.R.E. (Hq.)

भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
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(An Autonomous Body under the Ministry of Environment Forest & Climate Change, Government of India)
डाकघर: न्यू फॉरेस्ट, देहरादून – 248 006 (उत्तराखण्ड)
P.O. New Forest, DEHRADUN- 248 006 (Uttarakhand)

संजय पाण्डेय
SANJAY PANDEY
लेखा अधिकारी
Accounts Officer

दूरभाष संः 0135 - 2224861 (O)
Phone No.: 0135 - 2224838 (O)

No/ संख्या: 7-36/2019/A.O./ICFRE

Date/दिनांक: 18-02-2020

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(Sanjay Pandey)
Accounts Officer
I.C.F.R.E. (Hq.)

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P.O. New Forest, DEHRADUN- 248 006 (Uttarakhand)

संजय पाण्डेय
SANJAY PANDEY
लेखा अधिकारी
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दूरभाष संः 0135 - 2224861 (O)
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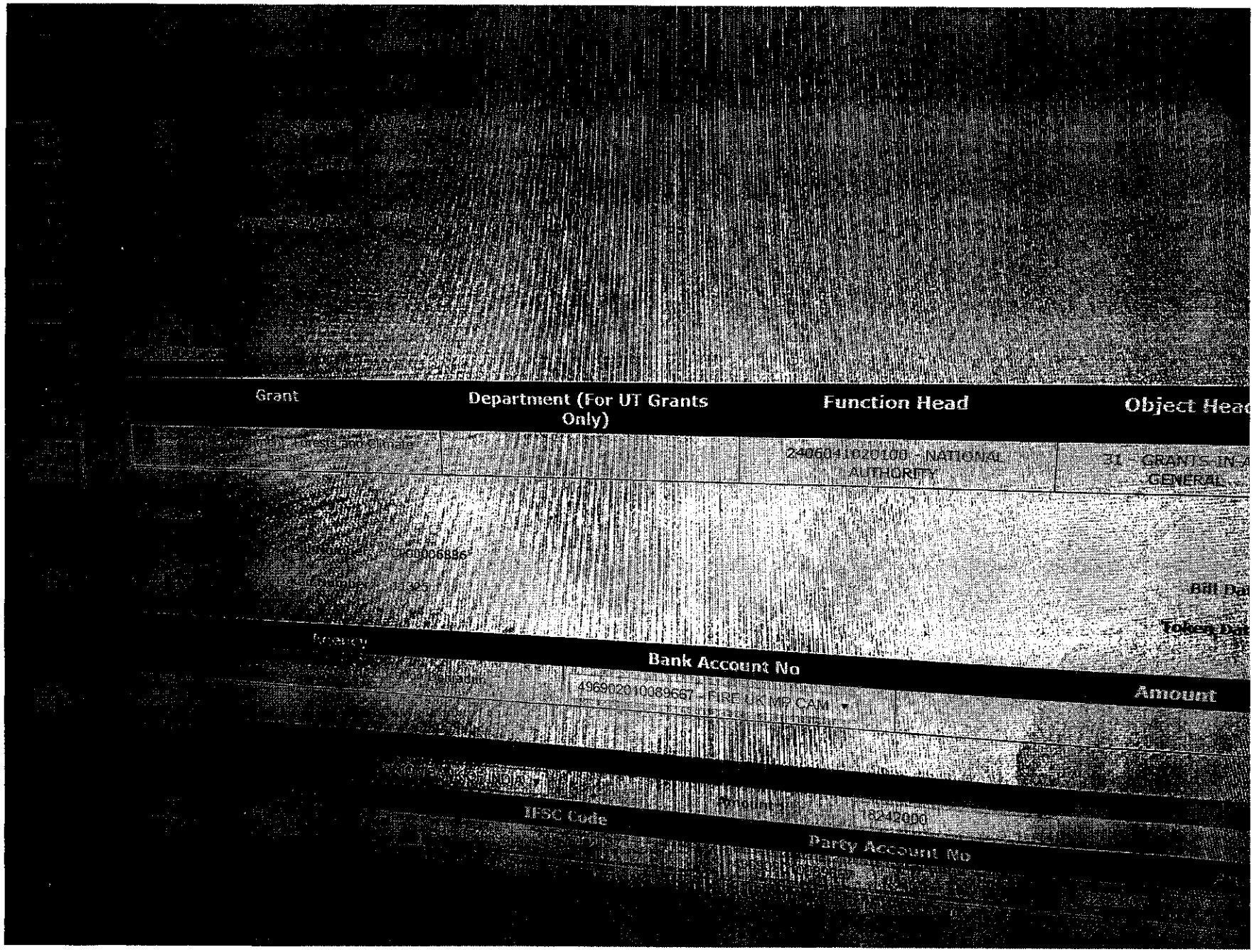
Indian Council of Forestry Research and Education, Dehradun	SFRESPE CAMPA	496902010089666	UBIN 0549690

(Sanjay Pandey)
Accounts Officer
I.C.F.R.E. (Hq.)


Grant
Department (For UT Grants Only)
Function Head
Object Head
2406041020100 - NATIONAL AUTHORITY
31 - GRANTS-IN-A GENERAL
Bank Account No
Amount
IFSC Code
Party Account No

From pre-page:

The CAF Act, 2016 is in force with effect from 30.09.2018, leading to establishment of two funds namely, the 'National Fund' under the public account of India and the 'State Fund' under the public accounts of such State (Section 3 and 4 of CAF Act, 2016 refer)

2. Section 3 (3) of the Act provides for – "On the date of establishment of the National fund, all monies collected by the State Government and Union Territories Governments which has been placed under *ad hoc* Authority and deposited in the nationalized banks shall be transferred to the National fund." Hence, the balance fund available with NICSI, which is the balance of fund released by Ad-hoc CAMPA, should have been transferred to the National Fund first. It appears that NICSI has not been submitting progress report and UC. In addition, it did not submit the current scheme under section 5 (b) (iii) of the Act for the consideration of the EC timely, i.e. before the last extension given to NICSI expired on 31st December, 2019.

3. Hon'ble Minister, in the past, has allowed utilizing unspent balance available with the States for carrying out mandatory activities up to March 2020. This has been done as many States could not complete the procedural formalities as laid down by the finance department. In addition, any change in financial mechanism during middle of financial year would have adverse effect on the speed and progress of the works in the field. May please peruse related noting pages (p-26 to 31/C) and letters (p-32 to 37/C) which were issued after Hon'ble Minister's approval.

4. The critical role of "PARIVESH" portal has been explained in the previous note. Hence, it is proposed to seek the approval of Hon'ble Minister for allowing NICSI to utilize the unspent balance available with it for running of portal till March, 2020 or till sanction order is issued in respect of proving grants-in-aid to NICSI from the National Authority, whichever is later.

(Sanjay Kumar Ojha)
Jt. Chief Executive Officer

CEO

F. No. PAO/MoEF&CC/Pre-check/2019-20/9618-21

PAY AND ACCOUNT OFFICE
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
INDIRA PARYAVARAN BHAWAN,
JOR BAGH ROAD, NEW DELHI

Date: 21th Feb. 2020

OFFICE MEMORANDUM

Sub:- Points to be checked before submitting the bills of Grants-In-Aid in PAO office-reg.

Following checklist may be adhered to before submitting the bills of Grants-In-Aid:-

1. All pending UC must be submitted with or before submission of bills.
2. If funds are available, EAT must be started.
3. Recurring/Non-Recurring should be clearly mentioned in Sanction Order.
4. DBT Progress report must be submitted with bills if scheme falls under DBT Scheme.
5. Name of Scheme alongwith code should be clearly mentioned in Sanction order.
6. Name of Agency and Purpose of Grant must be clearly mentioned in the Sanction Order.
7. All details filled on PFMS portal must be match with Sanction order.
8. All accrued interest and other earning against Grants-in-aid must be deposited to CFI, Government of India.
9. A certificate for separate bank account must be submitted with sanction order.

This issues with the approval of CCA, MOEF&CC.

Sr. Accounts Officer

To,

1. All Divisional Heads
2. DDO Cash.
3. DDO NMNH.
4. DDO NAEB.

Pay and Account Office
Ministry of Environment, Forest & Climate Change

Observation of PAO:-

Sl. No.	Observation	Remarks	
1	UC is pending.	**Yes**	**No**
2	If funds are available, EAT must be started.	**Yes**	**No**
3	DBT Progress report is required, if scheme falls under DBT Scheme.	**Yes**	**No**
4	Recurring/Non-Recurring should be clearly mentioned in Sanction Order.	**Yes**	**No**
5	Name of Scheme alongwith code should be clearly mentioned in Sanction order.	**Yes**	**No**
6	Name of Agency and Purpose of Grant must be clearly mentioned in the Sanction Order.	**Yes**	**No**
7	All accrued interest and other earning against Grants-in-aid must be deposited to CFI, Government of India.	**Yes**	**No**
8	A certificate for separate bank account must be submitted with sanction order.	**Yes**	**No**
9	All details filled on PFMS portal must be match with Sanction order.	**Yes**	**No**
a	Sanction Date	**Yes**	**No**
b	IFD Number	**Yes**	**No**
c	IFD Date	**Yes**	**No**
d	Bank Account Number	**Yes**	**No**
e	IFSC code	**Yes**	**No**
f	Function Head	**Yes**	**No**

Agency Name

Amount	CP/Token No	Status of Budget

Remarks- Pass Return

Submitted Please.