



Summary of Report of
the Sub Group IV on
Forestry Institutional &
Technology
Management

Under the Working Group on
**Forestry and Sustainable Natural
Resource Management**
for
The Twelfth Five Year Plan
(2012-2017)

by
Dr. V. K. Bahuguna
Director General, ICFRE
Dehradun - 248006

Executive Summary
*(Report of the Sub Group IV on
Forestry Institutional & Technology Management)*

The contribution of forests to economic activity and livelihoods is not reflected in the GDP. During XII Five year Plan, Institutional & Technology Management support in Forestry is required for enhancing the productivity of forests, increasing the economic contribution of forests and enhancing the GDP growth rate during XII Five year Plan.

2. GDP growth for the 11th Plan is likely to be 8.2%, which is although less than the target of 9%, but is a remarkable achievement given the worst drought in 30 years and the global recession. One of the booming areas contributing to this growth is Information Technology Sector. Encouraged by the growth rate achieved during the XI Plan, the Government of India has proposed a target range of GDP growth of 9 to 9.5% for the XII Plan. Under this scenario, the forest sector is going to face a greater pressure as this sector has not only to keep itself embraced with the pace of technology development but also has to prepare itself for providing requisite support to the industrial sector. Access to livelihood, clean environment and development equity are going to be the major challenges of the XII Plan. Keeping this in view, the Steering Committee on Environment, Forests and Wildlife and Animal Welfare for the Twelfth Five Year Plan has constituted a Working Group on **Forestry and Sustainable Natural Resource Management** and an important sub group under this working group is constituted on '**Forestry Institutional & Technology Management**', with the mandate to identify thrust areas for an enabling environment for forestry sector and to make recommendations for policy initiatives and programmes.

3. This sub group is of the view that the role of the forests is going to increase manifold during the XII Plan and the forestry sector should get adequate focus in order to meet the new challenges. The need of the hour is for convergence and synergy among different stakeholders working in the field of environment and forests. The Environmental Wing, Forestry Wing and State Forest Departments, need to work together to meet the emerging challenges in the field of forest and environmental conservation, forest based livelihood, water and bio-diversity conservation and climate change. The Central Board of forestry should be revived under the chairmanship of the Prime Minister. Furthermore, ICFRE and its institutes have been leading the forestry research in the nation over more than a century. They should be given greater functional and financial autonomy and ICFRE should be declared as the 'Centre of Excellence' through an

act of parliament. If forestry research suffers, it will have adverse implication on ecology, food and water security of the country.

4. The forestry research in the states should also be strengthened and coordinated with appropriate technical support from ICFRE to address the global challenges that the world is facing today. The tropical and subtropical countries of the developing world have to play a major role in the mitigation of climate. The ICFRE is the first DOE from India to be accredited by UNFCCC and can undertake functions of validation, verification and certification of CDM projects for climate change mitigation under the sectoral scope of 'Afforestation and Reforestation'. This would help forge further such linkages. A REDD-plus Bureau should be established under ICFRE to allow a phased approach to address the drivers of deforestation across different States of India.

5. The professionalism in the forestry sector also needs to be more focused as the foresters will have to bear multifunctional responsibilities in future. The post of Director IGNFA should be re-designated as Director General (Forestry Training) in order to have focused approach for the training of forestry professionals. Also, the DFE and the Central Forest Academy Principal are in the same rank causing a problem of command and control. This should be sorted out by up grading the post of DFE. The IIFM is one of the leading institutes in the field of Management Education in Forest and Allied Sectors which aims to provides leadership in professional forestry management aimed at environmental conservation and sustainable development of Ecosystems. The ongoing study on 'The Economics of Ecosystems and Biodiversity in India (TEEB-I)' under the overall coordination of the IIFM needs to be further strengthened which will further support implementation of GIM at the national level. Research and training on all aspects related to production of plywood and other panel products from wood would be covered by IPIRTI.

6. During the last few decades, the village level institutions have gained strength and they should play a greater role in forest management. The efforts of JFM committees should be synergised with those of other village level institutions by suitable amendment in the Panchayat Raj Act.

7. Today, we are living in the age of technology and the forestry sector should also capitalise on the gains of technology revolution. Forest Survey of India is the leading and nodal agency at national level dedicated to forest resources assessment of country for more than last 40 years. Now, there is an urgent requirement of real time monitoring of forest fires and forest cover in eco-sensitive zones. The forest resource assessment activities need to be strengthened at the

national as well as at the States level under a coordinated programme. The Forest Survey of India can be adequately strengthened to play a nodal role in this regard. A robust mechanism for forest resource assessment needs to be established wherein data nodes can be created at the state levels, coordinated by a central node at FSI. This would also require creation of adequate infrastructure and capacity building of forestry professionals. Similarly, Wildlife Institute of India should strengthen itself through institutional and technological advancement to remain in the forefront as a professional leader to provide capacity to 'Lead Change' and address emerging challenges of wildlife conservation or 'Conservation in Transition'. The technological advancement has now made it possible to identify species from their parts and products used in illegal trade of wildlife. The modern RS/GIS tools could effectively be used for both routine management and monitoring of the protected areas resources and thereby assisting in wildlife conservation. Remote monitoring of the wildlife is also possible through 'Sensor Network Technology'. The network should also be strengthened for continuous wildlife disease surveillance and monitoring in and around protected areas for checking emerging infectious diseases which are transmitted through wild animals and birds.

8. The Sub Group is also of the opinion that there is a tremendous pressure on the forests due to conflicts among various stakeholders and utter shortage of Forestry personnel due to non filling up of the posts. There is also an urgent need to enhance the motivation level of the forest personnel. They should be given parity with the other uniformed staff as the police personnel. The beats should be reorganised to reduce over burden and there should also be other motivational schemes such as subsidised ration, scholarships to their children, forest housing corporations, special incentives for anti poaching activities, adequate equipments and capacity building and medi-claim and group insurance facilities.

9. The population pressure, scarcity of essential resources and a rapid pace of change in environment has thrown open new global challenges. With its strong forest legacy and forest professionalism, India can play a leading role by suitably adopting the institutional and technological advancements.

Summary of Report of the Sub Group IV on Forestry Institutional & Technology Management

I Introduction

In the first meeting of the Working Group on Forestry and Sustainable Natural Resource Management held on 25.07.2011, it decided to constitute five Sub- Groups under the Working Group. On Forestry Institutional & Technology Management, Sub-Group IV is constituted with the following composition:

| S.No | Name of Member | Designation |
|------|--|-----------------|
| 1 | Dr. V.K.Bahuguna, Director General, ICFRE, Dehradun | Chairman |
| 2 | Dr. A.K.Mukherjee, Retd. DG & Spl. Secy of Forests | Co-Chairman |
| 3 | Dr. H.D.Kulkarni, Chief of Plantation and Farm Forestry, ITC Limited | Member |
| 4 | Dr. R.B. Lal, Director, IIFM, Bhopal | Member |
| 5 | Dr. S.S.Negi, Director, FRI, Dehradun | Member Convenor |
| 6 | Shri P.R. Sinha, Director, Wildlife Institute of India, Dehradun | Member |
| 7 | Director, IPIRTI | Member |
| 8 | Director General, FSI, Dehradun | Member |
| 9 | Director, IGNFA, Dehradun | Member |
| 10 | Director, DFE, Dehradun | Member |
| 11 | Jt. Secy, DoPT | Member |
| 12 | Shri. Priya Ranjan, AIGF (RT), Ministry of Environment & Forest | Co-Convenor |

The primary task of this Sub-Group is to identify thrust areas for an enabling environment for forestry sector and make recommendations for policy initiatives/ programmes for Forest Information Management, strengthening of forest research, capacity building, technological Upgradation, infrastructural development, forest resource assessment, augmenting flow of funds in the forestry sector, and motivation and morale of forest personnel.

II Backdrop

GDP growth for the 11th Plan is likely to be 8.2%, which is although less than the target of 9%, but is considered to be a remarkable achievement given the worst drought in 30 years and the global recession. Based on this, the Planning Commission has proposed a target range of GDP

growth of 9 to 9.5% during the XII Plan. The basic objective for the Twelfth Plan must be **faster, more inclusive and sustainable growth**.

A meeting of the steering committee was organized by Planning Commission of India on Environment, Forest, Wildlife and Animal welfare, under the chairmanship of Dr. K. Kasturirangan, Member Planning Commission on 19th May 2011. The members discussed the strategies for XII Plan highlighting several challenges to the sector with respect to implementation of schemes, target versus finance match and governance issues. The Chairman indicated that the access to livelihood, clean environment and development equity is a major challenge of the XII Plan. He also appreciated the efforts recently been made for modern data management put in by the sector and expressed the need augmentation of effort for efficient monitoring of implementation effectiveness and building up of a strong decision support tool consistent with the best practices in the world. It was also emphasized that more number of Centres of Excellence should be created in the XII Plan. Thus the sector specific sub group was formed on Institutional and Technology Management with the experts to address all challenges and recommend effective coordination and convergence.

III Schemes and Status during XI Plan

The XI Plan emphasized that ongoing paradigm change in the forestry sector necessitated fundamental orientation and attitudinal changes of the personnel in line with multifarious roles of forests, corresponding variety of externalities, and for coping with traditional forestry management practices. This includes social sensitivities along with the scientific basis of the processes of nature. It was envisaged to design an integrated capacity building programme for forestry personnel including training of trainers for State frontline staff training institutions and to enable stakeholders to understand the perspective of conservation in human well being by providing them state-of-the-art information and knowledge base. Specific mandates were given to different forestry institutions:

Indian Council of Forestry Research and Education (ICFRE)

The management of research and education needs to be supported by enabling decision making through consultation and in a professional capacity.

- The Council should have specific separate mandates regarding the administration of its institutes and co-ordination of research.
- For the plan period, 50% of the total grants-in-aid to ICFRE will be earmarked exclusively for research and education. The Council will encourage its institutes to collaborate with other institutions of repute in relevant fields including State Forest Research Institutes.

- Research programmes will be oriented towards meeting the priority areas of productivity, genetic improvements, ecosystem research, and updating growth and yield parameters required for analysis in management planning. Management of natural forests for improvement of their profile will be the main focus.
- Nation-wide long-term genetic improvement programmes for indigenous species, screening of Indian species for fast growing, short rotation alternatives for traditional species for industry and protocols for survey, inventory, and management planning for NTFP, medicinal, and aromatic plants in forests will be launched.
- Specific thrust will be given for developing technologies and processes for agro-forestry and social forestry. Quality seed and planting material programmes in public or private sector will be supported by credible testing and certification regimes.
- A forest biodiversity network will be established for integrating the available information on one platform and for studies in the left out areas. It will be compatible with the management planning systems of forest administration and the other existing/evolving information resources.
- Inter-sectoral impacts, trade, and market aspects of forest economics, ecosystem research, policy research, and concerns of climate change including carbon trade methodologies, will be taken up.

Wildlife Institute of India (WII)

Apart from the training, research, and advisory role of WII, the new approaches would include developing workable framework for mainstreaming conservation in development projects and policies, empirical studies on processes for ecological impacts of developmental projects and human activities, strengthening common property resource management, and developing expertise in managing wildlife in isolated and fragmented landscapes. The use of modern tools and technology and development of analytical capabilities will be undertaken.

Forest Survey of India (FSI)

- Present scope of the FSI is limited to the assessment of tree canopy cover. The information is not sufficient for objective assessment and planning for the sector.
- Scope of interpretation of satellite data for tree cover will include separate canopy status in forest lands, Forest 71 patterns of degradation, and state of commercial plantations. With redefined green cover, appropriate indicators compatible with the technologies used by FSI need to be developed. Monitoring of ecological status of landscapes/habitats in terms of the dynamics of vegetation and early warning systems, productivity, consumption, and supply from forest and non-forest resources will be taken up. On the basis of these priorities, rationalization of the present network of regional units and manpower will be taken up. The

scope, definition, and components of FSI inventories will be decided at an expert group level, in order to render them compatible with various national and international formats, definitions, and organizations for collaboration.

Indian Institute of Forest Management (IIFM)

IIFM has emerged as a premier forestry institution and has contributed to the development of criteria and indicators for sustainable forest management and participatory forest management processes. Based on an evaluation, IIFM intends to enlarge its educational and management development programmes as well as policy-relevant research focused on forestry and its linkages with rural institutions and natural resource-based rural livelihoods. The Institute will take up policy and development research including the valuation of ecosystem services, evaluation of the economy of participation in natural resource, especially forest management, and modelling of impact of climate change on livelihood and forest resources.

Indian Plywood Industries Research and Technology Institute (IPIRTI)

Besides the specific mandate of developing technologies for efficient utilization of wood in structural material, development and promotion of technologies for alternative and efficient use of residual waste like bamboo, husk, wood waste, small wood, etc., will be the thrust areas. Better utilization of the agro-forestry species including treatments for longevity of the products will be the focus of research for utilization. Apart from its own grants in aid, IPIRTI will be integrated with ICFRE for wood utilization research and technology. Technology transfer being the mandate of IPIRTI, professional courses on wood technology should be planned.

Many of the issues envisaged in the XI Plan, as shown above, could not be addressed due to paucity of funds or due to non-availability of funds. These are again included in the proposed XII Plan proposal.

IV Challenges

Today, the biggest challenge in front of forest and wildlife sector is to ensure long-term survival and betterment of forest and wildlife of India and at the same time the safeguarding of the interests of the forest dependent populace.

In an era of globalization and rapid economic integration in a fast changing world and consequent pressure on the natural resources, the role of forests too has become very crucial for maintaining the hydrological cycle; sustaining the food and water security; conservation of biodiversity; mitigating the effects of climate change and providing livelihood support to millions of poor people living in India. This has increased the mandate of institutes; those are involved in forestry research, manifold. The tropical climate and fragile ecological situation

prevailing in many parts of the country necessitate that, if India has to sustain 9% plus rate of growth in our economy, massive investment will have to be made in the forestry sector, on the lines of roads, power and other infrastructure projects. The role of the forests in providing food and ecological security becomes all the more important. In this regards the setup for Forestry Institutions, Institutional Changes and Forest Technology need to be deliberated seriously for delivering outputs at a faster pace.

V Strategies

In order to meet the challenges as enumerated above, the foremost requirement is to strengthen the forest research infrastructure in the states and to build scientific ecological thinking among masses through continuous extension strategies. Guidance, direction and appropriate liaison at national level is required to steer and if need be, reorient the forestry research to be in consonance with the national developmental priorities. The ICFRE has the appropriate scientific strength and forest legacy to take the lead role. The manpower, equipments and other infrastructure of research of ICFRE should be strengthened so that it could cater to the research needs of all the states and UTs through its institutions/centres or through MoUs with the research institutions of the states. Ideally speaking, the research in the states should be confined to applied research such as production of seedlings through tissue culture/micro-propagation, seed development, maintenance of sample plots and preservation plots, taking stock of soil carbon and biomass, etc. and they have a better role in the extension of research findings to the field. Although CAMPA funds are outside the consolidated funds of Government of India and hence are outside the purview of the Planning Commission, however, the guidelines of CAMPA provide the scope for utilization of this fund for Research, training and capacity building. Therefore, a corpus of **Rs 1000 crores**, through CAMPA Fund is proposed to be created under MoEF to meet the needs of infrastructure for the field staff in all the states/UTs. In addition, a corpus of **Rs 1000 crores**, through CAMPA Fund, is proposed to be created under ICFRE for strengthening research strength of eight institutes and four centres of ICFRE and to provide sustained extension programmes through them and also to cater to the research/extension/education infrastructure needs of the states and UTs.

The FSI will be the nodal agency to develop a robust mechanism for forest resource assessment, through state of the art technologies, and integrating all the states for developing real time monitoring system. The WII will be the nodal agency to '*Build Capacity for Wildlife Conservation*' in the country and to provide capacity to address emerging challenges of wildlife conservation. The IIFM will provide the leadership in professional forestry management aimed at environmental conservation and sustainable development of Ecosystems. The research and training support on all aspects related to production of plywood and other panel products from

wood and other lignocellulosic materials will be provided by the IRIRTI. The knowledge and skills to the professional foresters, at all levels, and help them to develop competence for managing the country's forest and wildlife resources on a sustainable basis, will be provided through the IGNFA and the DFE.

The integrated efforts of all these institutions, coupled with appropriate technological bolster, would lead to create the appropriate scientific thinking that is essential for upgrading and utilising the invaluable natural resources on a sustained basis.

VI Recommendations

1. Institutional Changes (Ref. p 1-4: Main Report)¹

- i) Revival of 'Central Board of Forestry' as an instrument for wider consultations and convergence of ideas on forest resources management,
- ii) ICFRE to be recognized as an Institution of Excellence by an Act of Parliament which would enable it to gain the freedom and flexibility to work as an Institution of Excellence and would also lead to better coordination, planning and networking with other national/international organizations,
- iii) Re-designation of the post of Director IGNFA to DG (Forestry Training) for grooming future forest professionals/managers in an integrated manner,
- iv) Up grading the post of DFE,
- v) Establishment on National Non-Timber Forest Products Board for developing the NTFP sector in a focused manner,
- vi) Better utilization of the CAMPA funds to meet the goals of its creation for compensating loss of the environmental and ecosystem services,
- vii) Creation of interface between different village-level institutions such as JFMs and Gram sabha, and
- viii) Convergence in the functioning of officers at the District and State level to check Left Wing Extremism.

2. Forest Resource Assessment and Information Management (Ref. p 5-20: Main Report)

Forest Resource assessment provides the basis for long term planning of forestry activities both at national and state levels and the forest resources of a country cannot be managed sustainably unless well thought strategy for their overall development is prepared based on the their assessment. In order to suitably integrate the development of IT sector in the field of forest management, following new activities are proposed in the XII five year plan:

¹ Main Report is the 'Report of the Sub Group IV on Forestry Institutional & Technology Management', enclosed with this Summary Report as Annexure.

- i) Creation of spatial database/NFIS (including forest area as layer) and adequate networking with the State/UT Forest Departments,
- ii) Near real time Monitoring of forest fires,
- iii) Near real time monitoring of Forest Cover in Eco-Sensitive zone to keep a close watch on the ecologically sensitive areas,
- iv) Monitoring of incremental carbon stock by intensifying the current inventory work and involving States Forest Departments as partner in this endeavor,
- v) Monitoring of plantation & other activities under centrally sponsored schemes for applying course correction whenever and wherever necessary,
- vi) Integrated information system for monitoring of Centrally Sponsored Schemes,
- vii) Creation of R&D Unit at FSI HQ,
- viii) Creation of new zonal offices of FSI and strengthening of existing ones,
- ix) Establishing Robust mechanism for Forest Resource Assessment using Forestry Geomatics Centres with state of art equipments and trained manpower,
- x) Establishment of centralized data node and Information Nodes in State Forest Departments,
- xi) Strengthening Knowledge Capability of WII to deal with emerging challenges
 - a) National Wildlife Forensic Research Facility to develop web-enabled wildlife forensic database
 - b) Protected Areas Geodatabase at Enterprise Level using modern RS/GIS tools
 - c) Wildlife Health and Disease Research and Monitoring Facility
 - d) Remote Monitoring of Wildlife Populations in case of terrestrial as well as aquatic species
- xii) Establishment of WII's Regional Centres to create gateway to wildlife information and hub of regional expertise, cooperation and collaboration for improved strategies for 'conservation' amidst 'all round development' and human security.

3. Strengthening Forestry Research (Ref. p 21-37: Main Report)

A. Indian Council of Forestry Research and Education

- i) Strengthening research infrastructure of ICFRE for better scientific performance (Laboratories, scientific equipments, library, manpower, capacity building, etc.),
- ii) Scientific strength of ICFRE should be increased as research is needed in emerging fields like forest hydrology, climate change, forest economics, forest management, productivity enhancement, frontier areas of research in genetics and genetic engineering, Biodiversity, wood science and technology etc. Erstwhile abolished 53 posts of scientists should be revived and around 75 new posts of scientists and 25 posts of foresters should be created,

- iii) Synergy among different stakeholders to meet the emerging challenges in the field of forest and environmental conservation, forest based livelihood, water and bio-diversity conservation and climate change,
- iv) Creation of Corpus fund of Rs 1000 crore through CAMPA Fund,
- v) Strengthening of forestry extension programme through Van Vigyan Kendras,
- vi) Creation of a Directorate of Environmental Management and Accounting
- vii) Upgrading of the post of Secretary ICFRE
- viii) Strengthening forestry research in states, and
- ix) Establishment of REDD (plus) Bureau,

B. Wildlife Institute of India

Research development is required to properly understand the dynamics of ecosystem and wildlife resources. Despite sincere efforts by various institutions, quality wildlife research is just confined to about 20% protected areas, while majority PAs, and other conservation reserves face the deficiency of basic research inputs such as desired baseline information, ecological understanding, reliable data on biology, ecology, management and socio-economic aspects.

The organization is expected to provide capacity to ‘Lead Change’ and address emerging challenges of wildlife conservation or ‘*Conservation in Transition*’. WII is required to augment ongoing wildlife research manifold in order to overcome the current deficiency. Further, it is proposed to adopt ‘adaptive management approach’ through experimental research and All India Coordinated projects on priority conservation themes (habitat and invasive species management, wildlife population and animal damage control, long term ecological monitoring, and buffer zone management).

To achieve these goals, in addition to ‘Strengthening Knowledge Capability of WII’ as mentioned in point 2 above, advanced technologies such as Remote Sensing and GIS, GPS, Radio/Satellite Telemetry, Camera Traps, Molecular and DNA Based analysis, etc. will also be integrated with field conservation efforts.

C. Indian Institute of Forest Management, Bhopal

- a. Creation of Advance Centre for Policy Analysis at IIFM,
- b. Establishment of National Portal on JFM covering impact of JFM on livelihood, ecosystem and Forestry & Environment,
- c. Intensive study in 5 states (Andhra Pradesh, West Bengal, Himachal Pradesh, Sikkim, Maharashtra and Andaman and Nicobar Islands) under “The Economics of Ecosystem & Biodiversity” (TEEB) Project,

- d. In depth studies in various functional areas of management in relation to Forestry & Environment such climate change, Human Resource Management, Institutional mechanism for inter-departmental coordination, Marketing and Supply Chain, Ecotourism, Certification, Sustainable Forest Management, Gender-Equity in Natural Resource Management, Micro-finance and Rural Enterprises etc., and
- e. Documentation of best practices in forestry management related to value addition of NTFP, Micro-enterprise setting, Forest Management, Natural Resource Management, People's Participation, Biodiversity Conservation, Community Forestry etc. through audio-visual documentary.

D. Indian Plywood Industries Research & Training Institute, Bangalore

Guided by the shortage of prime timbers from forests, the Institute is pursuing two pronged strategy for bridging the gap between demand and supply for industrial round wood, namely:

- (i) Development of appropriate processing technologies for efficient utilization of plantation grown tree species for manufacturing quality wood and panel products including plywood of different grades, block boards, flush door shutters, particle board and medium density fibre board, and
- (ii) Evolving technologies for using non-wood renewable fibers to manufacture alternates to wood, including development of environment and people friendly products from bamboo.

4. Capacity Building (Ref. p 38-46: Main Report)

A. Indira Gandhi National Forest Academy

- a. Training of trainers, i.e. skill upgrading of faculty of IGNFA,
- b. Exposure (Foreign) visit to IFS Probationers,
- c. School forest (Model forest/Training forest), i.e. to have a patch of forest adjoining Dehradun for the competence based learning in the field condition,
- d. Mid-career training of IFS Officers to be continued in the XII Plan, and
- e. Centre for Forest Policy Research for updating training inputs to budding foresters in contemporary and futuristic management regimes.

B. Directorate of Forest Education (DFE)

- a. Augmenting the capacity of DFE to bridge the gap between existing and required training need for SFS, FROs and Frontline Staff
- b. Induction Training of State Forest Service Officers (2-yr Diploma Course),
- c. Induction Training of Forest Range Officers (18 month Certificate Course),
- d. Mid-career training of SFS officers

- e. General Refresher Courses for in-service State Forest Service Officers/ Forest Range Officers(FROs)
- f. Creation of Database Cell at Directorate for establishing linkages with State FDs

5. Technological Upgradation (*Ref. p 47-52: Main Report*)

- a. Upgrading Office and Field Management Tools,
- b. Human Resource Development,
- c. Enhancing Productivity of Forests,
- d. State-of-art technology for conservation of wildlife,
- e. Information Technology Upgrading and Integration Scheme to address the shortcomings and upgrade requirements of all state forest departments and forestry institutions.

6. Infrastructure Development (*Ref. p 53-55: Main Report*)

The research infrastructure and also the supporting infrastructure of various forestry organizations and state forest departments have become grossly inadequate and out-dated to cope up with the emerging research requirements. For upgrading the level of forestry research to the international standard, modernization of labs, replacement of age old out-dated equipment with modern state of art scientific equipment for carrying out research in frontline areas, up-gradation of libraries and human resource development are essentially required.

7. Motivation and Morale of Forest Personnel (*Ref. p 56-61: Main Report*)

Structure of forest organization should gear up to have a delivery mechanism for interface with the public which can inspire the confidence of the people.

- a. Subsidized Ration to Forest Personnel,
- b. Scholarships to the children of forest personnel,
- c. Formation of Forest Housing Corporations in the states,
- d. Beat system reforms to reduce the over-burden on forest guards,
- e. Parity of forest subordinate staff with the police personnel, and
- f. Incentives for anti-poaching operations.

VII Monitoring and Evaluation mechanism

There will be three-way monitoring and evaluation mechanism for the schemes and programmes that would be undertaken by different institutions during XII Plan:

- a. Concurrent evaluation through external agencies to be nominated/selected by MoEF/the Institution,

- b. Internal monitoring committees in all institutions headed by the head of the concerned organization and having members from the MoEF and the Planning Commission, and
- c. Mid-term evaluation of each scheme/programme by an independent evaluator.

VIII Expected Outcomes

In general, if the fund flow as proposed is assured, we will be able to effectively address the major issues such as resource management, professional forestry trainings, biodiversity and wildlife conservation, maintaining the hydrological cycle, sustaining the food and water security, mitigating the effects of climate change and providing livelihood support to millions of poor people living in India. Also the fund flow in tribal/forest fringe areas will help in addressing the forest conservation and livelihood issues in the tribal areas which will further help in checking left-wing extremism. The synergy between JFM and Panchayat will lead to better participation of the gram sabha in natural resource management. The specific outcomes expected through the proposed interventions are as follows:

- Revival of Central Board of Forestry will lead to a focused approach on policy development and implementation issues in the forestry sector in the country,
- Research in forestry would be strengthened by providing autonomy to ICFRE through an Act of Parliament which in turn will help in better management of forests and biodiversity of the country,
- All forestry institutions and SFDs would get assured research and infrastructure support through corpus created out of CAMPA fund,
- The professional trainings capacity building of the forest managers at all levels would be more focused and integrated,
- The NTFP sector will be more developed through National NTFP Board and will help in sustainable development of our natural resources,
- Technological upgradation would be done at all institutional and SFDs level and all states/UTs would be interlinked to achieve real-time assessment and monitoring of forest resources,
- Motivation and morale of the forest staff would be boosted through staff-based schemes such as subsidized ration, scholarships, housing, beat reform, parity with police personnel and incentives for anti poaching activities, and
- Interface would be created among different village level institutions and that would bring a convergence at district and state levels to check left wing extremism.

IX Financial Requirements

| SI No. | Activity | Amount (Rs crore) |
|--------|--|----------------------|
| 1 | FSI New activities | 280 |
| 2 | Establishing Robust mechanism for Forest Resource Assessment | 220 |
| 3 | Establishment of centralized data node and Information Nodes in State Forest Departments | 32 |
| 4 | WII – Institutional and Technology Advancement | 175 |
| 5 | Research Support to ICFRE and the States | 1000* |
| 6 | Research Support to IIFM | 230 |
| 7 | Research Support to IPIRTI | 40 |
| 8 | WII – Augmentation of Wildlife Research | 30 |
| 9 | Capacity Building – IGNFA | 183 |
| 10 | Capacity Building – DFE | 85 |
| 11 | Capacity Building – IPIRTI | 24 |
| 12 | Capacity Building – IIFM | 229 |
| 13 | WII - Wildlife Training | 20 |
| 12 | Capacity Building – ICFRE | 6 |
| 13 | Technological Upgradation | 105 |
| 14 | Infrastructure Development | 2575* |
| 15 | Motivation and Morale of Forest Personnel | 1265 |
| | TOTAL | 6499 |

**Note: Through CAMPA fund*

- *a corpus of Rs 1000 crore is proposed for research support to ICFRE and the States, and*
- *a corpus of Rs 1000 crore is proposed for infrastructure development in the States*

X Annexure

- ✚ Main Report: “**Report of the Sub Group IV on Forestry Institutional & Technology Management**”, under the Working Group on Forestry and Sustainable Natural Resource Management; by **Dr. V. K. Bahuguna**, Director General, Indian Council of Forestry Research and Education, Dehradun.