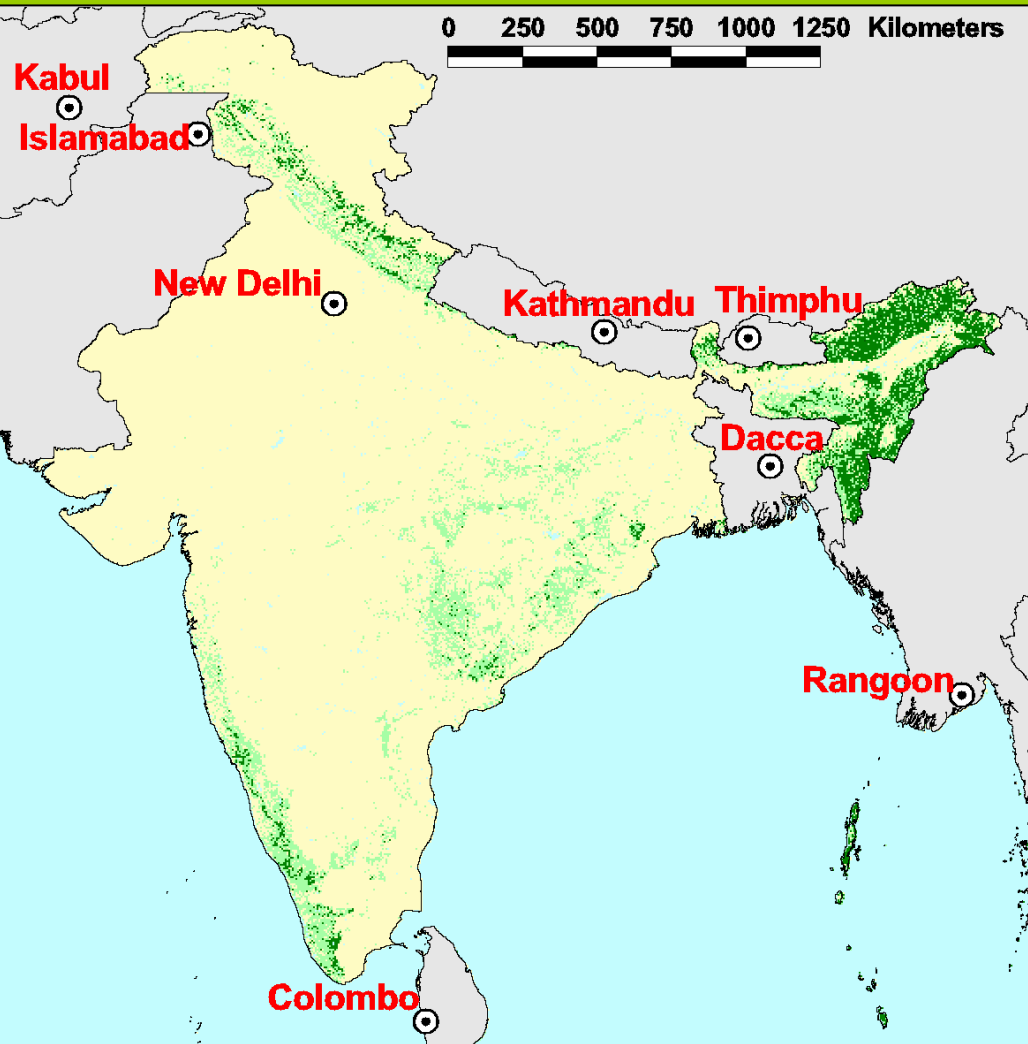


Forestry Education for Industry in India: Outlook for 2020

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India?



Land area	3,165,596 km ²
Population	1,068.6 Million

- | | |
|-------------------------------|---------------------------|
| ➤ Total forest area | 77.82 m ha |
| ➤ Part of forest of land area | 23.68 % |
| ➤ Forest per capita | 0.06 ha |
| ➤ Wood consumption per capita | 0.29 m ³ |
| ➤ No of Tribal Districts | 128(60% of the land Area) |

- The objective of any Education is to develop the student with skill, knowledge, capability to work in a team, system and strategic thinking, leadership quality with vision so that they become useful and effective citizen for the globe/nation.
- Different branches of Education has emerged keeping in mind the different societal needs.
- Forestry Education in India has also evolved to cater different societal needs at different point of time.

Earlier need for Forestry Education in India (*prior to 1980*)

- ✓ Forest protection
- ✓ Revenue generation through commercial use of the Forest

Evolution of Forestry Education in India

Period 1867-1886- Training of the Imperial Forest Service carried out at Nancy in France and Hanover in Germany . Other training colleges were Coopers hill college Oxford and Cambridge in England

Evolution of Forestry Education in India (contd.)

- Forest School for training rangers and foresters established at Dehra Dun in 1878 by the then local government, the Government of the North-West Provinces .
- It transferred to GOI in 1884 and named the Imperial Forest College.
- The Forest Research Institute as such came into being in 1906, as an adjunct to the Imperial Forest College.
- Professional forestry course of a high standard (Provincial Forestry Course) started for officers in 1912.

Evolution of Forestry Education in India (Contd.)

- After World War 1 (1920) the Indian Forest Service got Indianized.
- From 1926 onwards the new IFS probationers training course i.e Indian Forest Service course started in FRI Dehradun
- By 1938 former Indian Forest and Provincial Forest Services had been amalgamated into one gazetted service recruited on a provincial basis.
- Formal Forestry education began in few agri. univ. and other traditional univ. under graduate level after the recommendation of NCA (1976), currently 16 universities having P.G course on forestry and 45universitieshave UG course.
- Recently, in 2007 Forestry University set up at uttarakhand at Ranichouri

Changes in Forest Science

- The core of forestry education in most of the institutions was timber focused.
- Employment in this sector diminished rapidly, particularly because of the very rapid growth of the industrial and service sectors.
- Globally the forest sector's contribution to GDP has declined from about 1.6 percent in 1990 to 1.2 percent in 2000 (FAO, 2004) in India approx. 1%
- Job opportunities and profiles got changed. Many graduates were with no jobs to do.

NEED FOR COMMENCING SPECIALISED EDUCATION IN FOREST MANAGEMENT

THE THEN SCENARIO IN 1980s

- **Low Investment in Forestry leading to low productivity- The major cause of failure of Forestry sector to cope with the rising demands**
- **Thus efficiency in investments was required**
- **Efficiency of investments envisaged the need for developing management capabilities in forestry sector by creating forest managers besides technical foresters**
- **Thus need was felt to train the existing cadres and educate personnel by providing all management inputs of forestry sector to serve mainly in Forest Development Corporations and forest based industries. Thus IIFM was created in 1982**

But..... SCENARIO CHANGED in 1988 through forest policy which shifted the paradigm from production forestry to conservation forestry

- Significant changes in strategies and approaches of forest management in the country occurred after 1988 national forest policy
- Changes were also guided by the global trends in environment, forestry and development sectors.
- Pure centralized conservationist approach overturned towards decentralized, community based, participatory management strategy.
- Eventually led to dwindled demand of forest management personnel in Forest Development Corporations

Context of Forest Management

Technical

Political

**Precautionary Principle
in NRM**

**Forest Management
Imperatives**

**Global Public Policy
Paradigms**

Ecological

Socio-economic

FURTHER SIGNIFICANT SHIFTS IN FOREST MANAGEMENT ...1

- **Forest Depletion, Poverty, and environmental Degradation**
- **Forest Management in support of Rural Livelihood**
- **Appreciation of Tangible as well as to Intangible Benefits from forests**
- **Centralized to Decentralized Management**
- **Conservation to Development: An Interdisciplinary Role**
- **Regulatory to market and incentive based approaches**

FURTHER SIGNIFICANT SHIFTS IN FOREST MANAGEMENT ... 2

- **Sustainable Forest Management**
- **Timber to NTFP focus – changes in silvicultural practices, technology, marketing of timber to NTFP**
- **Involvement of NGOs in forest management**
- **Need to operationalise Forest Policies**
- **International Issues like CBD, Kyoto protocol, WTO, and IPR**
- **Millennium Development Goals – direct linkage between the first goal of poverty alleviation and the seventh goal of sustainable management of environment**

CHALLENGES BEFORE FORESTRY SECTOR IN THE CHANGING SCENARIO

- Diversification of Forestry education to provide manpower for industry i.e. Forest based Industries like paper, plywood, veneer etc. and to the developmental agencies who are concerned with production of forests
- Developing competence & offer specialized courses in integrated management such as environment , forestry, and development management
- Forge national and international collaboration.

Essentials considered for Holistic Forestry Education in the present Scenario

- Forestry Students must be good professional foresters but in addition will need the capacity to contribute to rural development, food security, sustainable natural resources management and poverty reduction.
- Forestry education must equip students on technical knowledge and management skills.
- Need for relooking the existing syllabus and provide for the requirement of the industry and sustainable management of forest as well achievement of the desired 33% forest cover in the country
- 3P models to cater to the needs of the industry

Appreciation for Forest Ecosystem Services- Need to put a price tag to the ecosystem Services from Forest

- Mechanisms have been developed for payment/rewards/compensation and market for ecosystem Services from Forest i.e. ecotourism, landscape, biodiversity, carbon sequestration and watershed services

Need for Forestry Education for Diversified Industry

- Woodcraft Industry
- Timber Industry- Plywood, furniture
- Herbal /medicinal plant Industry
- Product Based-Bamboo, Gums and resins, natural dyes
- Paper /pulp industry
- Carbon trading/ CDM project
- Bio-fuel industry
- Ecotourism industry
- Rural Development
- Banking industry

Various wood based industries and wood requirement in India

S.No.	Industry	No. of unit	
1	Panel Products		
		57(Registered)	
	Plywood	250(Small Scale)	
	Veneers	14	
	Blackboard/ Flush doors	60	
	Particle board	9	
	Fibre board	3	
2	Paper & Pulp		
	Paper & paper board	175	
	Newsprint	3	
	Raton & paper grade pulp	5	
3	Matches	5Big	
		1000(Small scale)	
		10000(Cottage scale)	
4	Sawmills		
	<i>Construction- 28%</i>		
	<i>Boxes-18%</i>		
	<i>Joinery- 27%</i>	23200	
	<i>Furniture- 11%</i>		
	<i>Sleepers- 8%</i>		
	<i>Others- 8%</i>		
5	Sports Goods	1383	
6	Seasoning kilns	255(Cap. 2.447 mm3)	
7	Preservation Plants	175(Cap. 0.200 mm3)	

Product and Input wise Demand and supply of wood (in million cu. m.)

Particulars	1985	1996	2001	2006
Wood demand for domestic furniture, agriculture, industries	50	64	73	82
Output from forests	24	12	12	12
Output from plantations, production, social, farm forestry	--	41	47	53
Deficit	26	11	14	17

Source: Ganpathy (1997); Saxena (1990)

Forest based Diversified industry



Bamboo processing



Waste generated in bamboo industry



Bamboo Based industries



Bamboo handicrafts

Forest based Diversified industry



NTFP Based industries



Dye industry



Nursery for raising seedlings



Plantation of *Embilica officinalis*

Existing manpower in Wood based industries

Industry	Managerial	Foreman	Skilled	Unskilled	Total
Panel products (Plywood & Veneer)	1022	2796	7240	15360	26418
Pulp, paper & hardboard	3500	17000	33000	66500	120000
Match Industry	248	310	868	1820	3246
Sawmills	84374	125938	337500	843750	1391562
Wood-working units	69424	127156	332104	537542	1066226
Bilding Industry	1500	7500	45000	450000	504000
Wood-Seasoning	562	3376	5062	9900	18900
Wood Preservation machinery for wood-	688	4124	6188	12374	23374
based industries & ancillaries.	250	600	16000	30000	46850
Total	161568	288800	782962	1967246	3200576

Existing important training facility of forest product technology

Existing training facilities in Forest Products Technology in India		
Organization & Courses	Duration	Level
I.P.R.I.T.I Bangalore		
▪ Courses in Plywood	3 Months	Supervisor
▪ Courses in Mechanical Wood Industries (Training Centre for Mechanical wood Industries)	Not known	Supervisor
F.R.I. Dehra Dun		
▪ Certificate course in Seasoning & Preservation	6 months	Supervisor
▪ Certificate Course in Paper Technology	6 months	Supervisor
▪ Diploma in Timber Grading	2 months	Grader
▪ Managers Course in Wood Working. Sawmilling & Finishing	4 months	Supervisor
▪ Apprentices Training in Composite Wood	3-6 months	Supervisor
▪ Orientation Course in Timber Engineering	1 month	Supervisor
Roorkee University		
▪ Degree Course in Pulp & Paper Technology	4 years	Manager
Seth Mukund Lal National College Yamuna nagar		
▪ Polytechnique Diploma Course in Paper Engineering	3 years	Supervisor
Prototype production -cun-training centre, Okhla		
▪ Course in Wood Working	Not Known	Foreman/ Artisan
Wood Working Institute, Bareilly		
▪ Course in Wood Working	Not Known	Foreman/ Artisan
▪ Course in Kiln Seasoning	Not Known	Kin Operator
Wood Working institute, Allahabad		
▪ Course in Wood Working	Not Known	Foreman/ Artisan

Role of Industries in Meeting the sectoral Demand & Promoting SFM

- Captive plantations in degraded forest lands and partnerships with communities
- Helping in seeking carbon credits from the international markets
- Establishing Environmental Cell in the industry is monitored by group of professionals including the FE institutes

Forestry education has geared up to provide such technical inputs in its syllabi and the graduates have successfully been working in international trading mechanisms for forest products and services

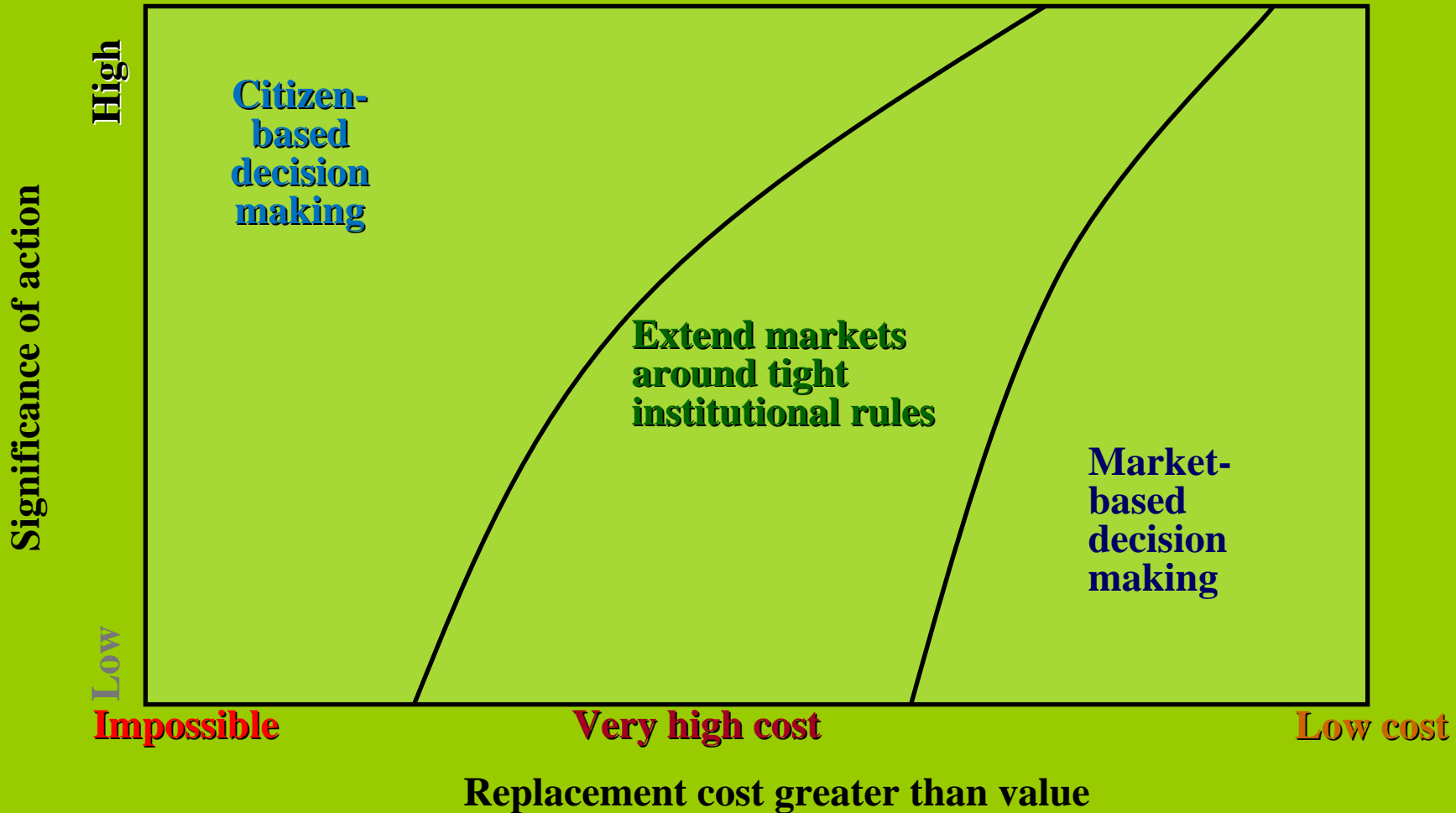
India's response Towards global Conventions to be followed for Industry

- *Framework Convention on Climate Change-1992*
- *Kyoto Protocol to the Framework Convention on Climate Change- 1997*
- *Convention on Biological Diversity-1992*
- *Vienna convention for Protection of the Ozone layer-1988*
- *Montreal Protocol on Substances that deplete the ozone Layer-1989*
- *Stockholm Convention on Persistent Organic Pollutants-2001*
- *Convention to Combat Desertification -1994*
- *Millennium Development Goals (MDGs)*

Forthcoming Topics for 2020 in Industrial Forestry

- Large scale industrial plantation in wastelands for meeting infrastructural increasing requirement for paper and pulp industries.
- More CDM linked forestry projects
- NTFP based enterprise projects for livelihoods
- Ecotourism projects
- River-bank and Coastal areas conservation projects
- Multi stake holder participation in managing Natural resources

Precautionary Principle-based Decision model



Some Action Points (*Food for thoughts*)

- All major industry must have their captive production of raw material
- Staff training and participatory curriculum development methodology.
- Implementation of curriculum revisions in accordance with the recommendations set out by this consultation.
- The adoption of flexible methodologies for updating curricula (including possibilities for core courses plus a range of elective courses).
- The adoption of innovative and interactive methods of teaching-learning processes, including experiential learning, distance education and the use of new information technologies (internet, teleconferencing, e-mail, computer based learning, etc).

Some Action Points (*Food for Thoughts*)

Need for developing mechanisms and tools for forestry education institutions to interact and exchange information

- Forestry education institutions do not sufficiently participate in the formulation of national forestry agendas.
- Networking among institutions at all levels of forestry education is vital. Professional associations should be encouraged and supported to cement collaboration.
- There is a need to establish mechanisms to facilitate co-operation and integration where possible, among education, research and development institutions in forestry and in related sectors.
- Forestry educators do not sufficiently participate in regional forestry and related networks to benefit from collaborative activities, information sharing, peer comparison, etc.
- There is a need for the United Nations Forum on Forests to acknowledge the essential role of forestry education, as the base for building capacity in the forestry sector, and to take up forestry education into its programme of work.

Some Action Points (*Food for Thoughts*)

- Should be expanded and complemented. Quality audits are needed to ensure high standards of education, including comparison at regional and international levels.
- There is a need to make forestry education more attractive and exciting. Countries should establish ways of providing space for forestry in public and private media to promote the image of forestry and the forestry profession. Forestry professional societies and education institutions should be pro-active in this role.
- Institutions and networks such as, ICFRE, Asia Forest Network, Regional Community Forestry Forum, APAFRI, Education Institutions and RECOFT are good examples of regional mechanisms to strengthen forestry education.

A photograph of a modern building's interior courtyard. The space is enclosed by a black metal railing. In the center, there is a large, circular skylight that allows natural light to illuminate the area. The floor is covered with a vibrant green lawn. To the left, there is a large glass window that offers a view of the outdoors, including a body of water and trees. The building's architecture features clean lines and a mix of materials, including concrete and wood. The overall atmosphere is bright and airy.

Thank You