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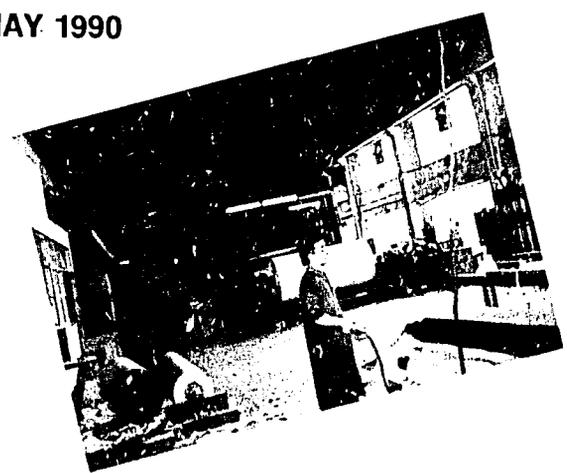
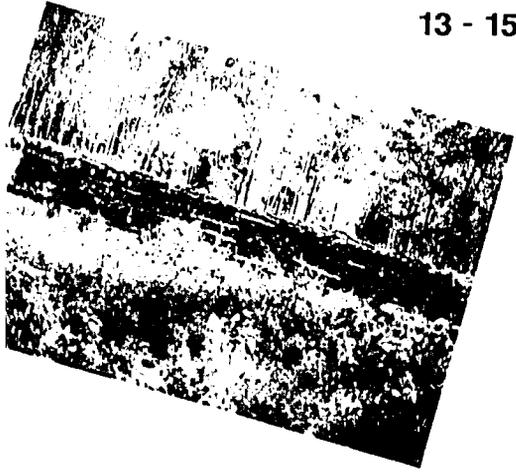
PROCEEDINGS OF THE



WOOD PRODUCERS - USERS SEMINAR

LAHORE

13 - 15 MAY 1990



ORGANIZED BY THE
OFFICE OF THE INSPECTOR GENERAL OF FORESTS
MINISTRY OF FOOD, AGRICULTURE AND COOPERATIVES
GOVERNMENT OF PAKISTAN AND
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
ISLAMABAD

GOVERNMENT OF PAKISTAN
MINISTRY OF FOOD, AGRICULTURE & COOPERATIVES



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TABLE OF CONTENTS

	PAGE
ACKNOWLEDGEMENTS	i
PREFACE	ii
GROUP PHOTOGRAPHS OF PARTICIPANTS	iii
INTRODUCTION	
Purpose of the Seminar	1
OPENING PRESENTATIONS	
Dr. C. M. Anwar Khan, Chairman, PARC	2
Dr. Niels L. Martin, FAO Representative	7
Mr. Harry Dickherber, USAID Representative	8
Dr. Charles R. Hatch, Winrock International FP&D Project	10
Mr. Abeedullah Jan, Inspector General of Forests	12
Dr. Mahboob-ur-Rehman, Minister of State for Food, Agriculture & Cooperatives	15
PLENARY SESSION PRESENTATIONS	
Mr. Lester A. DeCoster, Vice President American Forest Council	16
Mr. S. Ijaz Ahmed Siddiqui, Tree Farmer Attock	25
Mr. Ghazi Marjan, Conservator of Forests NWFP, Peshawar	27
Mr. Javed Niaz, Chief Executive Orient Match Company	36
Mr. Anwar Masrur, Chief Conservator of Forests Punjab, Lahore	40
Mr. G. Ali Shabbir, Chairman Ali Trading Company	47
Mr. Sultan Ali Barq, President FEATS	50
Mr. Mohammad Jehangir, President All Pakistan Furniture Mfg. Association	60
Mr. Bahauddin Sirhindi, Chief Conservator of Forests Sindh, Hyderabad	61
Mian Rafiq Ahmad, Chairman PMOA	67
Ch. Muhammad Sadiq, Chief Conservator of Forests Azad Kashmir, Muzaffarabad	71
Dr. K. M. Siddiqui, Director General Pakistan Forest Institute, Peshawar	82

	PAGE
WORKING GROUP RECOMMENDATIONS	
Summary of Group Recommendations	94
Working Group I - Constraints on Production	96
Working Group II - Wood Production-Wood Consumption Imbalances	98
Working Group III - Ensuring Effective Colla- boration between Producers and Users	101
Working Group IV - Standardization of Social Forestry Programs	104
Working Group V - Need for Industrial Forestry	105
CLOSING	
Mr. Abeerullah Jan, Inspector General of Forests	107
APPENDICES	
A. Seminar Program	111
B. List of Participants	114
C. Working Group Chairmen, Rapporteurs, and Members	116

ACKNOWLEDGEMENTS

This seminar was sponsored by the Office of the Inspector General of Forests, Ministry of Food, Agriculture and Cooperatives, Government of Pakistan, and by the United States Agency for International Development. Technical assistance was provided by the Winrock International Institute for Agricultural Development under the Forestry Planning and Development Project. Local support in Lahore was provided by the Punjab Forest Department and the Lahore Chamber of Commerce and Industry.

The management owes gratitude to all those who helped in organizing the seminar, who contributed to the success of the seminar, and who helped in bringing out the seminar's proceedings.

SPONSORS

PREFACE

Forestry in Pakistan is passing through a phase of transformation and the emphasis is gradually shifting, and rightly so, from conventional forestry to social and farm forestry. It was for the first time in the history of Forest service that farmers, industrialists, and government functionaries got together in one forum to deliberate upon their needs, interest and desire to strengthen the private sector of Pakistan's forest economy.

The high market demand for woody raw materials, the willingness of farmers to grow trees on farm lands in association with agriculture crops and the ability of provincial forest departments to provide technical support have provided raison d'etre for the success of this collaborative effort. It is my ardent hope and firm belief that this seminar represents the beginning of a new era of tripartite collaboration which will lead to the eventual let up in the wood shortage in Pakistan.

It is, therefore, a pleasure and a privilege to present to you the seminar proceedings. This document identifies resource supply and demand issues for both the short-term and long-term needs, but also presents some success stories and identifies some particular opportunities for future collaboration.

The farmers hold the key to the success of farm forestry in Pakistan and the wood based industry holds promise for the farmers to pursue this course. I wish them a glorious success.



1.9.90

Abeerullah Jan
Inspector General of Forests
1 September, 1990

GROUP PHOTOGRAPHS OF PARTICIPANTS

OPENING SESSION



Group photograph of the participants with the Chief Guest
Dr. Mahboob ur-Rehman, Minister of State for Food, Agriculture & Cooperatives
taken at the occasion of opening ceremony.

CLOSING SESSION



Group photograph of the participants taken at the occasion of closing ceremony.

INTRODUCTION

PURPOSE OF THE SEMINAR

Sometimes, in starting something new and different, we underestimate our potential for success. As a consequence, we sometimes miss opportunities which can make a real difference to our future.

The purpose of this seminar is to reflect on the success which farmers are having in the growing of trees, as a cash crop, on marginal and untillable lands; and, to capitalize on that success by strengthening the farm to market linkages so that wood producers and wood users can grow together in economic strength.

When the Forestry Planning and Development Project started in 1985, under joint sponsorship of the Government of Pakistan and the U.S. Agency for International Development, it was hoped that the provincial forest departments could successfully motivate and teach farmers to become tree growers - and eventually market producers - of wood products. We are pleased to note that they have done their job well, and that over 30,000 farmers have planted more than 35 million trees as a result.

This success in growing trees on farms is adding rapidly to the potential timber supply of Pakistan. But now it is time to take a bold new step in the development of this new, privately owned resource, and bring the industrial wood users into full partnership with the farmers and foresters to continue the effort.

This seminar is designed to find ways to make this happen. Farmers, foresters, and industrialists share the podium to tell their own stories and share their own ideas and visions for the future. Then, they sit together in working groups to identify and discuss their individual and mutual constraints, problems, and ideas. Finally, they develop a new degree of familiarity, trust, and respect for each other which will lead to new and improved working relationships.

We have identified the common problem: shortage of wood to meet Pakistan's market demand. Now, we will find, through the tripartite efforts of foresters, farmers, and industrialists, new ways to solve that problem for ourselves and our future generations.

OPENING PRESENTATIONS

OPENING REMARKS

By

Dr. C. M. Anwar Khan
Chairman: Pakistan Agricultural Research Council
Secretary: Agricultural Research Division

In Islam there is prohibition of destruction of trees during war and planting of trees is strongly advocated in the Holy Quran and the Hadith. In recent history, since the beginning of accelerated industrial development, particularly after later half of twentieth century, pressure on the biosphere increased more rapidly than ever before. Accelerated population, over-cutting of the forests and economic growth has contributed greatly to deterioration of the environment. The problem relating to environment and the need to protect and preserve it from further deterioration has lately drawn national and international attention.

Demands for cropland, fuel, timber and overgrazing have caused widespread deforestation leading to desertification, erosion and flooding. More than 60% of the land in Pakistan has either already or is likely to be affected by desertification. Considerable damage has been done to our terrestrial ecosystem, where forests are disappearing at the rate of one percent every year.

There are historical evidences quoting statements of rich endowments of land, water, vegetation and livestock in the country which were considered to be inexhaustible and spontaneously regenerating. However, in past several decades demand on land has been increasing both for primary production as well as for developmental needs. Due to increase in population and greater socio-economic aspirations man has been extending his activities to higher and steeper slopes with fragile soil and water resources base. This has affected the physiographic linkage in the hilly slopes, plateaus and plains or upland-low-land interactions to a considerable degree.

In spite of the fact that wood is scarce and expensive most of the wood is used in solid form and its considerable quantity is wasted during various processing operations to manufacture different products. There are only few manufacturing units in the country for particle-board, plywood, fibre-board, etc. and none for making pulp and paper from woody raw material. All newsprint and long-fibre pulp is imported. Most of the energy of about 18 million m³ of wood, which is consumed annually as fuel by majority of people in urban and rural areas, is wasted as efficiency of cooking stoves is hardly 15 to 20 percent.

**Steps needed to meet the increased demand
of wood in the country**

1. Expansion of government forests.
2. Intensive management of existing government forests.
3. Raising energy plantations on marginal lands.
4. Promoting Agro-forestry campaigns involving farming community.
5. Planting multipurpose, fast growing tree species in the form of high density plantations.
6. Selection of species for development of arid and semi-arid, saline and waterlogged areas.
7. Control of pests and diseases of trees to avoid loss of firewood and timber.

PARC has also been playing a key role in the development forestry sector by initiating various projects in forestry discipline in order to increase wooded area in the country and to bridge the gap between production and demand of wood and wood products. Techniques have been developed for planting on arid and semi-arid areas of the country, stabilization of sand dunes and utilization of waterlogged and saline areas. Agroforestry activities in the form of social forestry programs are also getting high priority as these offer a great potential for increased rural employment and income through local people participation.

TABLE 1: PARC COMMITMENTS

- The role of PARC for decreasing financial support to research institutions and provincial forestry departments will be rectified.
- Like other sub-sectors of agriculture, PARC believes that real crisis is productivity per unit area, resource and time. Whatever measures might be used PARC will support any program which will enhance the productivity and over all national production.
- The new trend with which the foresters have come out to work in energy forestry and social forestry programs, will get full support to increase forestry resource in the country.
- problem lands in Pakistan are plenty and to make every inch of such lands productive, PARC would support any activity directed towards the rehabilitation of these problem lands in the country.
- In PARC we shall continue to provide manpower and research facilities to strengthen the agriculture research system in the country.
- How PARC can help you, I look forward to hear from you.

TABLE 2: PARC FINANCIAL SUPPORT FOR RESEARCH IN FORESTRY SECTOR

(Million Rs.)

<u>YEAR</u>	<u>PK-480</u>	<u>CURRENT</u>	<u>DEVELOPMENT</u>	<u>TOTAL</u>
1973-74	0.572	-	-	0.572
1978-79	1.983	0.620	-	2.603
1983-84	1.581	7.654	0.020	9.225
1984-85	4.224	3.864	1.000	9.088
1985-86	3.316	4.389	1.780	9,485
1986-87	3.847	4.544	1.430	9.821
1987-88	1.750	4.099	0.650	6.499
1988-89	1.072	3.641	0.535	5.248
1989-90	1.170	3.540	3.455*	8.165

- * - Construction of Central Herbarium 2.00 m.Rs.
- Strengthening of National Herbarium 0.60 m.Rs.
- PAK-German Beekeeping Project 0.855 m.Rs.

TABLE 3: PARC SUPPORT FOR MANPOWER DEVELOPMENT IN FORESTRY SECTOR - (1973-74 TO 1989-90)

i. PARC

<u>FIELD OF TRAINING</u>	<u>M.Sc.</u>	<u>Ph.D.</u>
General Forestry	10	-
Range Management	1 (diploma)	4
Watershed Management	-	1
Range Ecology	-	1
Wildlife Management	-	1
Range & Forest Ecology	-	1
TOTAL:	11	8

TABLE 4: PARC SUPPORT FOR MANPOWER DEVELOPMENT IN FORESTRY SECTOR - (1973-74 TO 1989-90)

ii. PROVINCES

<u>FIELD OF TRAINING</u>	<u>M.Sc.</u>	<u>Ph.D.</u>
Range Management	1	4
Range Mgt. & Forestry	-	1
Watershed Management	1	2
Range Ecology	-	1
Forestry	-	3
Forest Ecology	-	1
Sericulture	-	1
Animal & Range Sciences	-	1
TOTAL:	2	16

TABLE 5: IMPORTANT RESEARCH PROJECTS/PROGRAMS

<u>NAME OF SUB-SECTOR</u>	<u>NO. OF PROJECTS</u>
Forestry	8
Range Management	1
Dry Land Farming	1
Watershed Management	1
Resource Inventory	1
Agro-Forestry	2
Cottage Industry	2
Wildlife Management	1
Flora of Pakistan	2
TOTAL:	19

IN SUMMARY

I believe that the three major components of today's seminar namely:

The foresters (the Technical Advisers and Managers); The farmers (the wood producers, the critical factor); and Wood users (the industrialists), constitute the potential triangle, which must together discharge their responsibilities to ensure resource and research based scientific land use, for the prosperity and welfare of Pakistan as well as to provide lead in the developing countries, with replicable models, for sustainable development.

For each and every inch from Khunjab to Sindh Delta (Thatta), from Chitral to Run of Kutch and from Kashmir to Turbat, I assure you Sir, that we do have the required knowledge and technologies to enhance the productivity and make Pakistan green. Once the political will, the policy and participative social integrated land use models are adopted and minimum critical resources (National as well as International) are provided, Pakistan can soon become a unique model where even deserts shall bloom. We do have will to fight such apparently impossible!

If there is anyone professional group to lead in this green energy revolution on 70% of land mass of Pakistan without doubt, they are the foresters! However, the new generation of foresters must decide to adopt resource and research based forestry!

The participative management as well as development models, wherein Public Sector must encourage, support and strengthen the private sector including farmers and industry/private enterprenure, is our vision for future forestry. The PARC is ready to participate in this model and transform agriculture/forestry in Pakistan.

Thank you.

WORKING TOGETHER TO DEVELOP FOREST RESOURCES

Summary of Remarks at Seminar

By

Dr. Niels L. Martin
FAO Representative

It is a real pleasure to represent FAO at this Seminar, I commend the organizers of this meeting for their foresight in bringing together both producers and users of the important resources that come from our forests.

I grew up in the big timber country in the state of Oregon in the U.S.A. There I saw the many different products that can be produced, not only lumber and wood products from the trees but many minor forest products as well. The same is true of the forests here in Pakistan. Forests are used here for timber and wood products, resins, fuel wood, livestock fodder and various medicine and food products. The most important thing about these resources is that they are renewable and under proper management, production can not only be sustained but can be dramatically increased.

The users of wood and other forest products can be instrumental in greatly increasing the amount and quality of Pakistan's forest resources. The creation of demand and paying a fair price for forest products encourages planting of more trees and improve management of existing forests. This will occur as landowners realize that many different products may be profitably harvested from private forest land.

Government and industry should provide extension education and technical guidance to the owners of private lands so those owners will understand the benefits they can realize from both natural and planted forests, so they will know how to manage their forest lands for optimum returns on a sustained yield basis and so they will know how to harvest and market the products from those lands for the best returns to their investment and labor.

By working together-and this type of meeting is an excellent beginning-wood and forest product producers and users can develop this industry so that it will make a major impact on the economy and people of Pakistan, providing more economical products and at the same time increasing the income to the producer. Not to be forgotten is the favorable impact improvement of forest lands will have on the environment of the nation. Water quality will be improved soils will not only improve in quality but can actually be increased in quantity, and the air itself can become cleaner through the filtering and oxygen generating capabilities of increased plant life.

Working together producers and users can accomplish much and with continued efforts such as this seminar they will accomplish much.

REMARKS

By

Mr. Harry Dickherber
USAID Representative
Islamabad

Chief Guest Dr. Anwar Khan, Inspector General of Forests Abeer Ullah Jan, distinguished panel, ladies and gentlemen:

Four and one-half years ago the Government of Pakistan and the United States Agency for International Development joined in launching an ambitious program in social forestry with the hope of solving the impending crisis of fuelwood scarcity by enlisting the involvement of farmers in the planting and growing of trees for their own consumption and as a cash crop.

Our information showed that farmers were already producing about 80% of the fuelwood being consumed in Pakistan. With that base of experience available, we set out to improve on that production by putting forest departments into a direct assistance role to farmers. The foresters became advisors, trainers, and motivators -- and the farmers have responded by growing and planting over 35 million nursery seedlings since the 1985-86 season. This program, to date, has involved over 700 farmers as nursery operators and nearly 30,000 farmers as tree planters.

Happily, the trees are growing well and are beginning to approach market size in the earlier plantations. Now, the job of the Forestry Planning and Development Project is to bring those tree farmers into contact with the wood-using industries so that both sides may profit from this enterprise.

One way the Project hopes to bring tree farmers into contact with wood-using industries is through the use of non-government organizations. Individuals and groups of wood producers and wood users, working together, could extend the number of trees that are planted and insure the long-term sustainability of this important activity. The Project is actively seeking ways to increase and strengthen the involvement of non-government organizations in farm forestry programs.

The United States Agency for International Development has also joined with the Government of Pakistan to support the training of individuals who are employed by agricultural industries. You will be pleased to note that the wood-using industries of Pakistan are considered as agricultural industries under this initiative. Utilization of the wood raw

materials grown on farms may require adjustments in the manufacturing processes of the current and potential wood-using industries. Industries can use this program to train their employees, both in Pakistan and overseas, in methodologies to increase the quality and quantity of products made from these new wood raw material resources. The social forestry project can help the private wood-using industries capitalize on this training opportunity for their employees.

This seminar is an important step in the forging of a broader and stronger working relationship between farmers as producers, industries as users, and foresters as technical advisors to both.

I want to assure you that USAID is wholly supportive of this effort.

REMARKS

By

Dr. Charles R. Hatch
Chief of Party
Winrock International representative
Forestry Planning & Development Project

Minister of State, Honored Guests, Delegates

Since my family name is Hatch, I believe it makes me ideally suited to speak to you on the chicken or egg problem that has brought us all together today. If Pakistan's wood-using industries are to meet the nation's wood products demands they need a continuous supply of wood raw materials, and if the private farm forestry producers are to grow more trees they need to have continuous marketing opportunities for their produce. The objective of the seminar during the next two and one-half days is to begin to address this dilemma: that is, to identify and strengthen linkages between wood producers and wood users

If farm forestry is to succeed, it is absolutely essential that wood producers and wood users better understand each other's concerns and requirements. This seminar formally facilitates dialogue between these two groups. During this seminar we will hear from private farm producers, the public forest departments, the wood using industry, and following our working group sessions, the joint recommendations from these groups. These recommendations will be used as a road map to strengthen linkages between wood producers and wood users.

The concept of a non-government organization collaborating with private wood producers, wood-using industries and government technology transfer programs is not new. Later this morning Lester DeCoster of the American Forest Council will outline the experience of the American Tree Farm Program. It is a nongovernment program that has over 40 years of experience bringing private wood producers and wood using industries in north America together in a program of cooperation and mutual benefit. These linkage to work and are mutually beneficial to both groups. The Forestry Planning and Development Project believes the Pakistan farmer and wood using industry recognize that need and are ready to develop collaborative linkages with each other.

In closing, I'd like to repeat a couple of numbers that really emphasize the opportunities that can accrue to Pakistan through a closer linkage between private wood producers and the wood using industry. In 1987, my most recent statistic and as pointed out in the President's message, Pakistan's 12th highest foreign exchange expenditure was for wood and paper

products - 2.5 billion rupees annually. That is over 2 billion rupees each year which could be spent for the purchase of tree crops in rural Pakistan. The opportunities presented to Pakistan by shifting that expenditure from overseas producers to domestic producers should excite everyone in this room. The working group recommendations to strengthen private wood producer - wood user linkages can help initiate that shift.

Winrock International looks forward to its role of assisting the Office of the Inspector General of Forests in the implementation of programs to strengthen the forestry sector in Pakistan; a sector which links farm producers, the forest departments and wood using industries.

Thank you.

KEY NOTE ADDRESS

By

Mr. Abeerullah Jan
Inspector General of Forests

"Social Forestry - Facing the Challenge Together"

In the Name of Allah, the most beneficial and merciful

Your Excellency Minister of State for Agriculture, Dr. Mahboob-ur-Rehman; Mr. Secretary Dr. C. M. Anwar Khan; FAO Representative Dr. Martin; USAID Representative Mr. Dickherber; FP&DP Representative Dr. Hatch; respected colleagues, learned guests, ladies and gentlemen:

It is a matter of great pleasure and profound satisfaction for me and for the Ministry of Food and Agriculture, Government of Pakistan, to have arranged a dialogue and encourage an inter-action between tree growers and wood users through this seminar in the historic city of Lahore which is the heart of Pakistan and the center of its cultural activities.

I, therefore, feel privileged to extend a very warm welcome to the distinguished Chief Guest, eminent foreign delegates, leading wood industrialists, senior serving and retired forest officers and all of you, ladies and gentlemen, for your participation in the seminar and your presence in the inaugural function which, of course, is a source of great encouragement for me and other co-sponsors, USAID and Winrock International.

Forestry in Pakistan has strong and weak areas, and plus and minus dimensions, because of varied climate, changing landscape and rising topography from east to west and South to North. Our coniferous forests in Hazara, Malakand, Murree Hills and Azad Kashmir; irrigated plantations in Punjab; riverain forests in Sindh; juniper forests in Balochistan; and mangrove forests along Sindh and Balochistan coast are impressive and unique in many respects and are second to none in Asia.

The stunning beauty of our deodar forests of Neelum valley in Azad Kashmir, Kaghan valley in Hazara, and Punjkora valley in Dir Kohistan, and their productive potential and constructional utility, are simply un-matched and un-paralleled. These forests are three times more productive than similar forests in Europe or North America.

The history of planned management of our mountain forests in the north and irrigated plantations in the south, spanning over more than 100 years, is a tribute to the professional competence of the service, particularly its stalwarts who are present here, and they deserve praise and appreciation of the entire Forestry Community.

As regards the negative aspects of forestry, we have the lowest percentage of forest area in Asia. Among SAARC countries, Pakistan's position is particularly depressing. According to FAO Year Book 1984; Bhutan has 70% area under forests followed by Sri Lanka with 36%, Nepal with 31%, India with 22% and Bangladesh with 14%. What we have, is not even worth mentioning.

Whatever little forests we have are not evenly distributed. Four-fifths of the total forest area is located in the Himalaya, Karakoram and Hindu Kush regions which constitute 16% of the total landmass of the country. The remaining one-fifth is spread all over, in three provinces Punjab, Sindh and Balochistan, which constitute 84% of land surface. The small percentage of forest area and its extremely irregular distribution are our major handicaps.

This situation has, obviously, given rise to many problems. All our forests yielding constructional timber are located in the north and are remote, difficult and remain snow bound in winter. Consequently, extraction of timber is slow, inefficient, wasteful and expensive.

On the other hand, major consumption centers of wood and wood products, population, industry and economic activities are concentrated in big cities like Karachi, Hyderabad, Sukkur, Multan, Lahore, Faisalabad, Sargodha and Sialkot. In the recent past, Rawalpindi and Islamabad have been picking up industrial and construction activities also.

In case of industrial raw-material, the situation is even more perplexing. Poplar trees are grown in Peshawar and Mardan valleys whereas poplar wood is used mostly in Sialkot and other industrial towns of Punjab and Sindh. Fire wood produced in the irrigated plantations of Punjab and Sindh, is used for tobacco curing in NWFP. Babul plantations are raised in D. I. Khan in NWFP and Hyderabad in Sindh, but the wood is utilized for props in the coal mines of Balochistan.

On an average, more than 200 trucks carry wood daily from one part of the country to the others which, besides creating congestion on roads and adding to cost of raw-material, results in many other difficulties. I shall only mention three of them:

- i. Direct contact between growers and users is difficult, if not all together impossible;
- ii. Contact between growers and users is maintained through a strong group of middlemen who exploit both to the maximum extent; and
- iii. Consequently, growers do not get fair prices and the users do not get adequate and sustained supplies.

In view of this objective analysis, the following issues are suggested as themes for this Seminar:

- i. Increasing forest growth on state lands and tree cover on farm lands in the country to the maximum extent possible;
- ii. Identifying present imbalances between supply and demand, and suggesting ways and means to rectify the situation as early as possible;
- ii. Assessing present and future demand of wood based industries in terms of species, quality, and quantity of wood required, and initiating programs of Conventional, Social and Industrial Forestry to cater to these needs;
- iv. Ensuring fair prices to growers and sustained supplies of raw materials to the industry;
- v. Integrating industrial expansion with increase of tree growth on farmlands to avoid future imbalances in supply and demand.

These arrangements can only be made if we convince our policy makers, industrialists and farming community that:

- i. Meeting fuel, fodder and other requirements of daily life, for the ever-growing human and cattle populations, are worthy of assigning higher priorities;
- ii. If Pakistan has to meet its future timber and fuelwood needs, without irreversible damage to the environment and existing forest resources, farm forestry will have to play a key role. This calls for vastly expanded and greatly improved social forestry programs in all the four provinces plus Azad Kashmir and northern areas;
- iii. Industrialists must not entirely depend on Forest Department for raw material. They must be encouraged to raise industrial plantations to meet their own demands;
- iv. In addition to increasing wood production from all sources, the efficient utilization of the installed capacity and expansion in wood based industries on cottage pattern are some of the viable approaches to solve our current problems of jobs and income for the rural poor.

If we succeed in improving the current situation during three days deliberations, all the efforts, time and cost gone into holding of the seminar would be well spent and adequately rewarding.

At the end, let me express my gratitude to the chief guest and all of you once again, for your participation and support.

PLENARY SESSION PRESENTATIONS

11/10

REMARKS

By

Dr. Mahboob-ur-Rehman
Chief Guest
Minister of State for
Food, Agriculture & Cooperatives

Wood is one of the most useful and versatile materials available to mankind. It is no wonder and, as our standard of living rises and our population grows, we find our demand for wood exceeding the available supply. As a result, the forest resources of Pakistan are under great pressure and their sustainability is seriously threatened.

The tree planting program launched by Government to take forestry to the people is the most practicable way to get us out of this precarious balance of supply and demand. With technical assistance from government foresters, farmers are proving their capability and willingness to grow trees as an additional farm crop. The success of the few farmers which first took up the tree planting challenge has now led to the genuine motivation of thousands more to join in the effort.

Since the desire of every human being is to lead a happy and contented life, new economic opportunity is always a major attraction. Tree farming is a perfect example of how farmers can improve the overall production from their lands. Wastelands, waterlogged, and saline soils can once again become economically productive through growing tree crops.

Likewise, our wood-based industries should find reason to anticipate better times ahead. Problems of raw materials supply can best be addressed in straight forward discussions between producers and consumers. Just as the industry's future is best assured by knowing where to find the right quantity and quality of raw material, the farmer's future is best assured by producing the crop which the market demands. This seminar brings together all of the key elements necessary for mutual support and mutual success in this economic development activity.

I wish you a productive and meaningful seminar.

THE AMERICAN TREE FARM SYSTEM

By

Lester A. DeCoster, Vice President
American Tree Farm System
American Forest Council
1250 Connecticut Avenue, NW
Washington, D.C. 20036

I don't know your country or your culture well. It would be presumptuous of me to present that I did. I do know people and I know trees. I have made a study of both and I suspect that they have similar workings wherever they are.

- Trees need energy, food, water and time to grow. They get what they need from sun, water, and air.
- People need energy, food, water and time to grow. We get what we need from sun, soil, water and air but only by using the capabilities of green, growing plants like trees.

Trees don't have a problem without us--We have a problem without them. That doesn't mean that we shouldn't use trees--We must if we want to prosper in today's world--It means that we have to learn to maintain and renew what we use.

I'm going to dismiss forestry knowledge now with a wave of my hand. Not because it isn't important--It is--But forestry knowledge accomplishes nothing if people don't use it. Forestry is still one of the least used sciences in the world today. At the end of this speech I'll summarize a few things that we have learned about why that may be so.

Basically it boils down to two problems:

1. Trees take a long time to grow.
2. People want benefits now.

There's a slogan being shouted in Washington, D.C. these days: "Trees are the answer"! -- To which I reply: "People are the question"!

PEOPLE ARE THE QUESTION -- AND THE PROBLEM -- AND THE ANSWER.

It seems to be the nature of people that we look for answers under the nearest, small circle of light because we can see clearly there. The problem is, while we are gathered under the light, we often miss the true nature of things out in the great-big, dark shadows.

Foresters are people. Our particular "circle of light" shines on trees because that's our specialty--and so we tend to not see that how people function is more important to forestry than what we know about trees.

Planting an idea in a human mind and getting it to grow is more difficult than planting a tree and making it grow.

Tree farming is an idea--A system of knowledge, beliefs and attitudes that must happen in human minds before it can happen on the land.

Using things from the forest for people's needs is not a new thought. We have always done that. The idea of tree farming -- people growing trees -- is new and like most new ideas it's getting promoted by some, fought by others and roundly ignored by most.

The trail to tree farming wanders over 100,000 years of human history. Much of that early history happened here in your part of the world. I doubt if you have reserved this room long enough for a detailed description, so I'll artificially condense the time by mentally squeezing the years together to give a flavor of the newness of tree farming.

A CONDENSED-TIME, HUMAN HISTORY

- Imagine that humans have only been on this earth for 50 years and that we in this group are the only people who have lived through all 50 years.
- Imagine that we live in a big, green place that produces what we need through some mysterious process.
- For the first 46 years of our 50 we will have lived by hunting and gathering whatever food and materials we could find around the mysterious, green place. It was pretty risky and most of us died at a young age. The record is vague because written language hasn't yet been developed.
- About 4 years ago, we discovered that we could grow food when and where we needed it instead of searching for it around the mysterious green place. A discovery made, again, in your part of the world. We settled down, some of us on farms, some in cities fed by the surplus from farms. We started living longer and there were more of us. Farming gave us excess time and energy to develop written languages, arts, and sciences.
- In our condensed history, it was only 2 months ago that humans started growing significant forests of trees -- that's how recent tree farming is on the scale of human history.

ACTUAL TIME

Let's allow the years to snap back to their normal space, now, so we can look at the idea of agriculture -- farming anything.

Agriculture is the "mother-idea" that led to most of today's human society. It's an idea that your ancestors created.

Humans growing food instead of hunting and gathering it from nature's surplus is a taken-for-granted idea now. It was an outrageous idea 12,000 years ago when some humans decided not to forage down the valley with the rest of the group as hundreds of generations had done before. They probably set up camp near meadows of wild grains, to pull weeds and scratch the earth with sticks to encourage seeding of more grain.

It was more than 11,000 years before we applied agricultural ideas to forests.

The first foresters in Europe and other nations, several hundred years ago, managed land for kings and feudal lords. What they did was sort of like tree farming but it was not for common folks.

The tree farming light dawned in America around 1900 with a few European foresters and a smattering of forestry courses. American foresters found work first, for the government or for rich people, then, for industry and eventually for all sorts of land-owners. But, for the next forty years most forests in America were cut without benefit of any forest science.

Cut-and-move-on was the approach--A lot of the forest was cleared for agriculture and development--a lot burned--a lot was simply cut without regard to whether or not trees grew back.

Declining forest land in America was a problem created by people and it had to be solved by people--58% of America's forest land belongs to individuals, 28% is owned by government, only 14% belongs to forest industries.

The problem wasn't that no one knew how to grow trees. It was what most Americans didn't believe about forests.

- They didn't believe that forests were a crop that could be grown by people.
- They didn't believe that forests were important for protection of soil, air, water and wildlife.
- They didn't believe that we could run out of forests or that it would be important if we did.
- They didn't believe that they as individuals could see benefits from growing trees in their lifetime.
- They didn't believe that their government saw any importance in forests.

- They didn't believe that forest industries were in business for the long-term.
- They didn't believe that they as individuals had any part in forest problems or solutions.

Forestry knowledge was dormant because of what Americans didn't believe.

In 1941, a few forward-thinking people decided that just talking and writing was not going to convince anyone--that "seeing was believing"--that they had to teach by example.

The Weyerhaeuser Company dedicated its first Tree Farm then. The company pledged to keep its land for growing trees and offered to teach others how to grow trees on their land. Other companies and other landowners followed the example. An organization was funded to promote tree as a crop--tree farming. A group rallied around the name and the concept of tree farming to encourage other landowners (average citizens) to become tree farmers. The US Government was asked to establish better fire protection and stable tax policies to encourage tree farming on private land.

Today, 49 years later we work with 70,000 properties and 93 million acres, (almost 38 million hectares), of well-cared for privately owned Tree Farms in 50 states--Our Tree Farms cover an area almost half the size of Pakistan. In addition, America has: 35.6 million hectares of federal wilderness, 55 million hectares of other public forests and 111 million hectares of private forests not yet under management.

Common folks are growing trees and benefitting. Tree farming is not something only for big companies or big government--it's for any landowner.

The American Tree Farm System today is a public/private partnership. Initial funding comes from forest industries because they need productive forests over the long term. The non-profit American Forest Foundation raises additional funds from land endowments, landowner donations and other interested parties.

State, country and federal forest experts work with private organizations, industry and consulting foresters to share the Tree Farm work: 9,000 foresters from all segments of the profession volunteer time to the System each year. The organization I work for, the American Forest Council is the national Tree Farm sponsor.

While we have grown and changed, our country has grown and changed:

- In 1941, there were 132 million Americans...
Now, there are 250 million.

-
- In 1941, America's rural-urban population was almost balanced--out of 100 people, 56 would be urban; 44 would be rural..
Now, out of 100 people, 75 will be urban, 25 rural.

Rural population has stayed almost level (from 58 million in 1941 to 62 million now..... urban population has increased 2.5 times--from 74 million to 188 million.

Tree farmers include the spectrum of American landowners, ranging from billionaires to bird watchers; loggers to lawyers. Landowners who are certified as tree farmers agree to meet Tree Farms' good forestry standards. Certified Tree Farmers commit themselves to protecting and improving their forests for wild-life, recreation, soil and water protection and renewable crops of trees.

Tree farmers do a lot more than just grow wood.

- We have tree farmers who are reforesting the burned and blasted slopes of the Mount Saint Helens volcano.
- In the wide-open spaces of the American plains, tree farmers are establishing bands of trees to slow the wind and keep the rich soil from blowing away.
- Other tree farmers are growing trees on water supply companies' land where the water protection abilities of forests are balanced with careful cutting to release needed water.
- Wild turkeys and other wildlife species have been returned to parts of the country where they had disappeared because some of our tree farmers worked with biologists to establish the needed trees, shrubs and grasses.
- Millions of acres of eroded, worn-out farmlands are in Tree Farms now.
- Kick through the moss and accumulated leaves in some of our Tree Farms and you'll see chunks of coal from reclaimed strip mines.
- Other Tree Farms are providing varied recreational opportunities.
- Many are preserving the option of forested land for future generations with long-term easements.
- Oxygen generation and carbon dioxide fixing is an important by-product of the tree-growing process or Tree Farms.

- Volunteers on our State Tree Farm Committees organize more than 350 local events annually reaching 300,000 people directly and ranging from forestry demonstrations in the woods, to tax seminars in the cities, to sessions on how to manage forests for wildlife.
- Tree Farmers are proud of their work. We estimate that at a minimum, 200,000 people annually see and hear information about Tree Farms directly from the tree farmers themselves through tours, speeches and other contacts. One tree farmer has driven 100,000 miles in the last 5 years appearing at schools and fairs with presentations about his Tree Farm.
- Press Tours, Special Events, Awards and Outstanding Tree Farmer contests place forestry information with news media: more than 43 million circulation in print media annually. Extending tree farming information to others is a prime function because publicity on the finest examples of applied forestry encourages others to follow the good examples of Tree Farmers.

In 1989, the Tree Farm idea was exposed to key American publics more than 107 million times. The cost of this program was about \$1 million (U.S.), making our cost per-thousand-exposures (CPM) \$9.35, about one penny per exposure.

The Tree Farm communications "buy" is excellent. It carries a message to nonlandowners at reasonable cost and reaches land-owners with work on the ground as well.

Today, U.S. forest industries that support this program and in turn are supported by it, sell about (partly) 190 billion dollars (U.S.) worth of wood and paper products in an average year--mostly to Americans.

I calculate that every year, each American uses the equivalent of a tree 100 feet tall and about 18 inches at the base -- that's about 2,000 pounds of wood apiece, each year. We have supplied this need and increased the forests in the process.

What does it take to sustainably grow 2,000 pounds of wood?

Half an acre of land can grow 2,000 pounds of wood per year quite easily. To make land produce wood useable for people, we have to:

- keep the land available for tree growing long-term.
- control the kinds of trees grown.
- protect the land and trees from things that could remove the value of the land or tree growth:

- things like: erosion -- excess populations of tree-eating animals, insects, and diseases -- fires -- hungry tax systems -- expanding urban population demands.

As I said near the beginning of this speech, basically it boils down to two problems:

1. Trees take a long time to grow.
2. People want benefits now.

Let's look at those problems and what we found in 49 years of trying to get Americans to grow trees:

1. Trees take a long time to grow.

We found that people were unwilling to invest much of their time and energy in tree growing until forest industries and government offered stable-long-term markets and policies.

Like trees, trust between government, business and individuals takes a long time to grow -- Like trees, trust can be killed in an instant -- then take years to grow again.

There is no quick-fix for this. We can learn to grow trees faster but it will still take years, not days. It will still require that people believe in a future that yields a benefit to them from working in the forest today.

2. People want benefits now.

MUST-HAVES

There are some things people must have: like -- food to eat and water to drink. People will care for the forest only after the "must-haves" are taken care of or to the extent that the forest can provide the "must-haves". American tree farmers had to be shown that forestry added to their income before interest spread.

We had to convince government that taxes that took all the yearly income left no incentive for people to keep land for tree growing. We have to do that year after year because government always wants more taxes and looks to land as a place to get them.

WANTS

There are some things people want: like -- beauty, pleasure, the respect of other people, freedom to make their own decisions and the chance to pass a legacy on to future generations.

- The desire for beauty is double-edged. It causes people to want trees--but it causes them to not want to see them harvested. The rise of a majority of urban, affluent Americans who see trees primarily as a beautiful landscape for their pleasure creates conflict in our country. There is escalating tension as urban-affluents attempt to take more and more land out of productive tree crops.

We made a serious strategic error when we concentrated on the trees and convincing landowners to grow and harvest them like a crop but spent little effort convincing urban-affluent, non-landowning Americans that tree farming benefitted them. Now we are finding that there is a large population of people who use products from Tree Farms every day but don't want to see trees harvested. We are engaged in an expensive, frustrating campaign to resolve perceived conflicts between growing and using trees and simply looking at them.

The lesson: people who will never plant a tree, cut a tree, own land or even go to the forest are an important audience to communicate with about growing trees. The problem isn't getting them to like trees -- It's getting them to understand that harvesting is part of the forest renewal process that ultimately benefits them.

- People seek pleasure and avoid pain. We try to make tree farming gatherings and materials pleasurable. People tell us that it's fun to read our material, come to our meetings and then fun to apply what they've learned.
- The desire for respect is a motivator. One tenet of the Tree Farm System is that tree farmers are presented with awards, frequently and publicly. We present signs and certificates to tree farmers before gatherings of their friends and neighbors. We publicize the awards. We involve political leaders at all levels.

Each year we choose the best examples of tree farming in the U.S. ultimately bringing the national winner to our White House to be congratulated by the President. We ask tree farmers to talk about tree farming and demonstrate what they do for other people like them: farmers talk to other farmers--lawyers to lawyers--teachers to teachers. People take advice best from other people they know and respect.

- People want freedom to make their own decisions. We train our volunteer foresters to ask about personal priorities, present possible choices and then let the tree farmer choose. Some tree farmers, for example, do their forestry work because of an interest in wildlife--some are interested in income--some want recreation.

We have had little success in trying to impose expert-authority. People resist it, reject it and subvert it because it doesn't allow them to say yes or no.

- There's a strong desire to pass a legacy on to future generations. Our tree farmers mention it over and over as a goal. We spend a lot of time helping to ensure that their good work on the land will continue into the future even after they are gone. They tell us that's important to them. That means legal devices that allow people to design enforceable, long-term decisions and a tax system that doesn't remove all present and future benefits.

It's important to learn as much as possible about growing trees but at the same time learn as much as possible about motivating people, then apply the two fields of knowledge together, patiently, over the years.

GROWING TREES HAS TO BECOME SOMETHING DONE BY PEOPLE -- NOT JUST BY BUSINESS -- NOT JUST BY GOVERNMENT -- BECAUSE ULTIMATELY, PEOPLE ARE THE QUESTION -- AND THE PROGRAM -- AND THE ANSWER.

TREE PLANTATION SOCIAL FORESTRY ACTIVITIES IDEAS AND EXPERIENCE

By

Ijaz Ahmed Siddiqui
Farmer from Attock

Distinguished Chief Guest, Inspector General of Forests, Officers of Forest Department, Industrialists, Public Representatives and my fellow tree farmers: Assalamo Alaikum:

I am thankful to the Inspector General of Forests and Farm energy Forestry Project for offering me the opportunity to address this distinguished gathering today which has been organized to exchange ideas and experience between the different sections of society; particularly tree farmers and Industrialists. In this regard, I would like to give my personal impressions about the social Forestry activities in my District.

in our district previously there had been plantation of trees in non-organized manner and no motivation was there for this purpose, but organized social forestry with motivation commenced from 1985-86. Due to this fact Farmers community have started taking keen interest in tree plantation.

At present in Attock District approximately 6.6 million trees had been planted, under the aegis of Farm Energy Forestry Project by the farmers. Average survival of which is about 60 to 70%. Attock District, to which I belong, is a barani tract in which most of the land is moor and deserted and agriculture on the remaining land depends upon the rainfall.

According to survey by Agriculture Department the 50% land for agriculture is not economically productive and even the cultivators do not get back their inputs. Now it is observed that Farmers who had been disappointed from their poor yield of land had started taking interest in afforestation particularly plantation of Eucalyptus trees.

Here I quote the example of the Chail area at Chachh, which was water logged and non-cultivable. It has now changed into beautiful green Eucalyptus Forest, which has affected the ecology of the area. Now it shows a colorful panorama of Eucalyptus, Poplar and other trees which (emits) fragrance and fresh air, which has soothing effect on the inhabitants of the area along with the economic benefits, which the farmers of the area are enjoying.

It is observed that the land which is worth agriculture, the farmers have grown trees on the field boundaries and water channels on the persuasion by Farm Energy Forestry Department.

In Attock district, there are Zamindars who have big land holdings of non-productive lands. If Government or Industrialists give them financial aid for afforestation, the Agro-forestry Revolution can be brought in our area just as in the Philippine, where industrialists invest in afforestation by taking land on lease and like in Korea the government helps in raising plantations.

There should be close contact between the farmers and industrialists, and industrialists should inform the farmer what species, size and quality of wood will be required by them as well as the rates at which they will be purchasing the raw materials for their Industry. Industrialists should visit the forestry sites of farmers on their invitation for giving suggestions pertaining to their requirements.

This contact should be direct between farmers and users for avoiding middle man, "Middle Man" is always a problem for producers in our marketing system.

In approximation about 96,000 acres land in our district is moor and deserted and same quantity is not economical for agriculture.

Due to above mentioned reasons, there is a tremendous scope for tree plantation. But to bring this area under plantation, there are two main constraints:

1. Lack of financial resources.
2. Lack of Education and know how about the benefits of afforestation.

Our zamindars are poor due to their non-productive lands. If they get easy loans and subsidies for planting trees on their lands then green revolution can be brought about the area. Majority of our zamindars are illiterate and they lack knowledge. If they are properly educated and motivated, the best results in this field can be attained.

It is found from the land record of this district that big zamindars are meeting their requirements by sale of their lands for last 30 years.

This process can be halted if government provide the farmers with necessary facilities to bring their non-productive land under trees which will be source of additional income to them, and thus ameliorate their economic conditions.

Thank you.

PRODUCTION OF WOOD IN NWFP WITH SPECIAL EMPHASIS ON POPLAR

By

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Forestry Pre-Investment Center
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I. Forest Resources of NWFP¹

Total area of NWFP is 25.12 million acres, out of which forest area according to the record maintained by the Forest Department is 3.55 million acres. On this basis, forest area in the Province works out to be 14%.

II. Forest Categories¹

The forests of NWFP can be classed into two major categories; namely Forests in hilly region, and Forests in plains.

The hill forests are further distinguishable into coniferous, and broad-leaved. Among the coniferous forests, the main tree species are chir, blue pine, deodar, fir and spruce.

The important broad-leaved associates of the coniferous stands are: Walnut, horse chestnut, maple, oaks.

In plains, linear plantations on government lands along roads and canals are also an important source of wood supply. The main tree species are: Shisham, babul, eucalyptus, poplars.

Legal Classification¹: On the basis of legal classification, the forests of NWFP can be divided into three major categories:

Reserved	238,982	acres
Protected	1,265,013	"
Guzara	1,357,922	"
Others (afforestation etc.)	<u>693,000</u>	"
Total:	3,554,917	"

III. Forest Production¹

Out of the total forest area shown above, about 2.000 million acres is stocked/productive and has therefore been brought under management plans.

Growing stock¹: Stand and stock (Hazara and Malakand) for commercial forests:

	No. of trees (in million)	Volume (million cu.ft.)	Per cent
Deodar	8	397	20
Blue pine	6	364	19
Fir/spruce	12	1,019	55
Chir	3	110	6
Total:	29	1,890	100

Timber Yield¹: The coniferous forests of NWFP are capable of producing mean annual increment at the rate of two percent. But unregulated age gradations and tremendous population pressure affect the realization of yield.

Apart from this, about 30% of the yield is set aside to meet the domestic requirements of the local population. Therefore, the annual commercial yield is estimated at one percent of the growing stock which works out to 13 million cubic feet.

As against this, the Forest Department is presently harvesting, annually, about 6.5 million cubic feet.

IV. Timber Harvesting Agencies

Major agencies for harvesting of timber are:

NWFP Forest Development Corporation
 Multipurpose Forest Cooperative Societies in Mansehra District
 Harvesting Forest Cooperative Societies in Kohistan District
 NWFP Forest Department
 Private individuals for trees growing in cultivated fields

Timber Production by various Agencies: It is estimated that during the year 1989-89, the following quantities of timber were produced in NWFP by various agencies:

Agency	Timber produced (in million cu.ft.)
NWFP FDC	4.3
Multipurpose Coops	1.2
Harvesting Coops	0.8
NWFP Forest Department	0.2
Total:	6.5

V. Timber Prices

Current prices, estimated on average basis for all grades of timber, prevailing in main Timber Markets of Forest Development Corporation (FDC) namely Dargai, Khairabad and Havelian, are listed below:

Species	Price per cu.ft. in Rupees	
	Logs (BAV)	Scants
Chirpine	60.00	72.00
Blue pine	104.00	138.00
Deodar	160.00	204.00
<u>Fir/Spruce</u>	<u>60.00</u>	<u>93.00</u>

VI. Duties and Taxes on Timber

The following duties and taxes are levied on timber in NWFP

Forest duty	= @ Rs. 3.50 per cu.ft.
Dist.Council export tax	= @ Rs. 2.50 " "
Octroi	= @ Rs. 0.50 " "
Sale tax	= @ Rs.12.50 of sale value

POPLARS PRODUCTION IN NWFP

Introduction of exotic poplars in Pakistan was started in late fifties. Over a period of time scientific production of nursery stock and field planting techniques have been streamlined. Several management studies and clonal trials were conducted to find out the best spacing and adaptable clones of poplar suitable for different ecological zones. The tree was also introduced in agro-forestry system to grow alongwith several agricultural crops such as sugarcane, wheat, maize etc. Farmers in the country especially in the NWFP have adopted this tree as a major species on their farmlands. According to market price, a 6 year old poplar tree fetches a price between Rs. 150 - 200 at the site. This is a handsome return to the farmer.

Poplar is an important raw material for match industry, sports goods, veneer and paper pulp. On account of its intrinsic qualities such as white color, lack of smell, softness, light weight and resistance to splintering, there is a lot of demand from the wood based industries including manufactures of chipboard, crates, packing cases, doors and windows. The new found uses are scaffolding, furniture making and housing for Afghan Refugees.

Cultivation of Poplars

Note: Data has only been compiled for Peshawar and Mardan districts.

Native poplars⁴: Three species of poplars grow in nature in Pakistan:

Populus ciliata
Populus euphratica
Populus able

Populus ciliata grows at altitudes of 2000-3000 m. in the Murree Hills, Hazara, Swat, Dir, Chitral, Gilgit, Azad Kashmir etc. Large sized crops are absolutely nonexistent as are the large sized trees. The tree certainly has great prospects of reintroduction.

Populus euphratica occupies the riverain tract right from sea level to 4000 m. in the mountains. It has been reported to grow in Karachi, Quetta, South Waziristan, Multan, Peshawar etc. For tropical plains, this is the poplar which can also be improved through selection.

Populus abla grows at altitudes on 1300-3000 m. in the Murree Hills, Hazara, Swat, Chitral, Gilgit etc. It now usually occurs as single trees. It can attain big sizes. It has certainly great scope for reintroduction.

Early Poplar Introduction⁴: Populus nigra var. italica is an early introduction. However, no record of the period of introduction is available. Because of its beautiful form, reasonably good timber and easy method of growing, it has ultimately spread throughout the country. It is mostly grown along water channels, as an avenue tree or as dependable windbreaks in the plains as well as in the mountains upto an altitude of 4,000 m in NWFP.

Subsequent introductions⁴: The tree species indigenous to Pakistan are rather slow growing and take a long time to attain exploitable size. Introduction of exotic poplars in Pakistan was started in late fifties. The first introductions were from Italy followed by clones from USA, Yugoslavia, Turkey, Netherlands and Australia. Presently, in Peshawar and Mardan districts, Populus euramericana CV-1-214 is very popular and is commonly grown along water courses. Populus deltoids 63/51, 18/62, 90/60 has also been recommended for large scale planting.

Culture⁴: Presently, the Forest Department raises poplar plants in its nurseries from cuttings obtained from the branches of mature hybrid trees. Entire plants, after growing one year in nursery, are distributed to farmers @ Rs.0.01, in the first week of February who immediately plant these up at the desired sites.

The standard practice⁴ should be raising of plants through First Stage and Second Stage Nurseries. Research has shown⁴ that root shoot cuttings gave the best results and February was the best season for planting in the nursery as well as in the field.

Management:

i. Rotation: The farmers are not following any definite rotation. The tendency, however, is towards shorter rotation, from 5 to 10 years.

ii. Spacing⁴: Normally, 3 feet distance in common from tree to tree, in one row, along the water courses and on the boundaries in the field.

Research has indicated⁴ that if the poplar plantations are desired to be worked on a 5-year rotation, 8x8 feet spacing would give the highest yield per acre and could be prescribed to the field foresters and farmers for raising compact plantations.

iii. Pruning⁵: Farmers are not doing any methodical pruning of trees. Research⁵ has indicated that repeated light pruning is better than heavy pruning.

Tenure status of Poplar growers³: Studies³ have shown that the tenure status of poplar growers in Peshawar and Mardan Districts was as given below:

Owner cultivators	81%
Tenants	17%
Owner-cum-tenant	<u>2%</u>
Total:	<u>100%</u>

Land holdings vs. number of poplar plants³: The same study³ reported on land holdings versus number of poplar plants planted by the growers, as follows:

<u>Land holding size</u> <u>(ha.)</u>	<u>Number of</u> <u>Plants</u>
Under 2	496
2 - 5	1,070
5 - 10	1,097
<u>10 & above</u>	<u>10,220</u>

The data reveals that as the size of land holding increases the number of plants also increases.

Type and pattern of plantations³: The same study as quoted above, indicates the pattern of plantations:

Type of plantation	Percentage (by number)
Linear	98
Compact	2
Total:	100

Note: Poplars were not found planted in conjunction with agricultural crops in the sampled area.

Utilization of Poplar³: The same authors³ have shown that poplar wood produced during 1985 was used for:

Fuelwood	1.75%
Housing consumption	3.75%
Fuelwood/housing	4.50%
Industrial use	90.00%
Total:	100.00%

Production trends of Poplar:

Nursery stock²: The trend of planting stock production in departmental nurseries and distribution for poplar in Peshawar and Mardan remained as follows:

Year	Plants distributed from		Total
	Pesh. Distt.	Mardan Distt.	
1980	112,200	108,100	220,300
1981	125,253	109,140	234,393
1982	118,921	111,200	230,125
1983	140,286	76,883	217,169
1984	103,444	74,220	177,664
1985	40,521	60,342	100,863
1986	50,352	76,769	127,121
1987	213,931	94,033	307,964
1988	152,568	72,318	224,886
1989	109,666	138,647	248,313

The data on production of private nurseries is not available, yet it is estimated to be 5 times of departmental nurseries.

Timber Production²: The trend of timber production through last 10 years remained as follows:

Year	Despatched to stations		Total
	by no. of trucks		
	Within NWFP	Outside NWFP	
1980	1,430	2,386	3,816
1981	1,981	3,394	5,375
1982	3,081	4,054	7,063
1983	3,688	5,114	8,802
1984	5,029	6,396	11,425
1985	4,825	6,097	10,922
1986	2,571	3,770	6,341
1987	2,980	3,769	6,749
1988	2,084	4,952	7,036
1989	2,610	6,295	8,905

Price Trends

Price Trends for standing trees²: The approximate trend of price for standing poplar trees during the last 10 years was as follows:

Years	Trees of dbh in cm.	
	10-17 cm.	18-24 cm.
1980	60.00	120.00
1981	55.00	110.00
1982	50.00	100.00
1983	45.00	90.00
1984	40.00	80.00
1985	35.00	70.00
1986	30.00	60.00
1987	35.00	70.00
1988	40.00	80.00
1989	45.00	90.00

Marketing of Poplar Timber³

Mode of disposal: Study³ reported mode of disposal as given below:

Selling to	Percentage (by no. of farmers)
Village retailer	15
Outside traders	78
Others	7
Total:	100

Major portion of the poplar was sold to traders coming from outside.

Time of settlement of sale³: The rates of poplar wood, as per study mentioned above, are settled between the growers and buyers at different times given below:

Time	Percentage (by no. of growers)
In advance	47
During harvest	43
At the time of actual sale	5
No response	5
Total: 100	

VII. Conclusions:

The following conclusions can be drawn from the discussion in the preceding paragraphs:

1. In hill forests, utilization is on gradual and steady increase;
2. Prices of constructional timber are extremely high. Besides higher demand, increasing harvesting expenses and taxes are contributing to this trend;
3. In case of poplar, the popularity touched its high in 1981 and 82, its cultivation, prices and production, have shown steady upwards trend.

VIII. Recommendations^{2,3,4 & 5}

Following recommendations are hereby put forward:

1. In hilly region, afforestation effort has to be intensified, forest management rationalized and protection solemnized.
2. For poplar:
 - a. Poplar popularization programmes may be initiated through press and electronic media, demonstration plots, provision of incentives like subsidies and soft loans, fair marketing, training and education, etc.
 - b. Factory owners can sign long-lease agreements with growers, (farmers and departments) for continuous cultivation and supply. This will ensure long term supply of timber to factories and sustained increasing returns to growers.
 - c. Research, especially on breeding, may be intensified and the results disseminated.

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REQUIREMENTS OF THE WOOD-BASED INDUSTRY WITH SPECIAL EMPHASIS ON THE MATCH INDUSTRY

By

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Orient Match Co. (Pvt.) Ltd.
Lahore

Match Industry is one of the oldest Industries operating in Pakistan, first factory established in 1927 at Shahdara near Lahore, this factory is currently known as Orient Match Company (private) Limited (OMCO). Till 1971 this used to be the only Match manufacturing unit with the organized sector in West Pakistan. Total country's requirements were met by OMCO and units operating in East Pakistan. With the fall of East Pakistan, creation of Bangladesh the supply of Matches from this part of the country to West Pakistan stopped resulting in heavy imports of matches from Europe. Till 1971, all sorts of wood species; i.e., Chir Pine, Semal were being used for Match making. Almost all of these species were not match wood species, and wood had to undergo elaborate treatment necessary for conversion to match wood. Due to non-availability of appropriate wood species for match making and increased pressure on OMCO to meet demand of matches in the country, the production of Wax matches were started. During 1973, second match manufacturing unit within the organized sector, National Match, Peshawar, commenced production. National Match, however, used Poplar for Match making, which was available in remote parts of NWFP. This in fact was beginning of use of Poplar wood for Industrial consumption result was import and plantation of various clones of Poplar in the NWFP. Most of such plantations on private lands. With the passage of time more and more Match Manufacturing Units were set up till the time that country not only became self sufficient in match production but also ended up with substantial spare capacity and currently moving into export to off load its spare capacity. Almost all the matches produced in Pakistan are of good quality and are competitive around the World particularly in Middle East, who do not have much of match industry, and Europe where match factories are closing down in great numbers.

One of the essential raw materials required for match making is wood, in this context Poplar wood to be precise because distinguishing characteristics like white color, lack of smell, workability, softness, light weight and relatively high strength in proportion to its weight and resistance to splintering.

SOURCES OF POPLAR WOOD

North West Frontier Province (NWFP)

<u>Private Growers</u>	100%
- Peshawar	
- Mardan	
- Charsada	
- Malakand	
- Bunair	

PUNJAB

<u>Government Plantations</u>	85%
- Changa Manga	
- Daffar	
- Bhagat	
<u>Private Growers</u>	15%
- Okara	
- Sargodha	
- Mandi Bahauddin	
- Gujrat	
- Gujranwala	
- Sialkot	
- Kasur	

USERS AND THEIR ESTIMATED DEMAND OF POPLAR WOOD (m³)

Match Industry by far the largest single consumer of Poplar wood had no serious difficulty in wood procurement prior to 1986. In August that year shortage occurred and wood supplies dried out. This was at the time attributed to severe weather conditions in the wood growing areas. During March/April 1987 similar situation developed again and since then the Industry has experienced problems in obtaining Poplar wood of acceptable sizes and quantity from NWFP from time to time. There has also been a steady rise in the price of wood.

SUPPLY AND DEMAND GAP OF POPLAR WOOD (m³)

<u>YEAR</u>	<u>DEMAND</u>	<u>SUPPLY</u>	<u>DEMAND/SUPPLY GAP</u>
1987	121,447	106,636	(14,811)
1988	116,560	101,866	(14,694)
1989	126,385	106,772	(19,613)
1990	138,968	94,750	(44,218)
1991	150,515	94,122	(56,393)

The future supply of Poplar wood shows a consistent declining trend because of regeneration activities lagging behind the felling operations. For example in Government of Punjab's Poplar Wood Plantations the volume of falling available for March Industry during 1986-87 was 11,161 m³ as against 6,469 m³ estimated for the year 1990-91. The picture for NWFP stock of Poplar is equally dismal.

POPLAR WOOD PRICES 1985 - APRIL 1990

<u>YEAR</u>	<u>Rs. per 40 Kg.</u>	<u>±% CHARGE OVER PREVIOUS PERIOD</u>	<u>±% CHARGE FROM 1985</u>
1985 (Average)	29.66		
1986 (Average)	31.20	+ 5.36	+ 5.36
1987 (End)	42.40	+35.9	+42.9
1988 (End)	49.27	+16.2	+66.1
1989 (End)	53.20	+ 7.9	+79.4
1990 (April)	55.30	+ 3.9	+86.4

Analysis of the situation in 1987 indicated that shortage was due to the extensive use of Poplar since 1980 by Afghan Refugees and increased pressure from other users of wood based Industries; i.e. sports goods, domestic furniture, chipboard, plywood. The Afghan refugees purchase large quantities of 3 to 4 years old trees giving farmers an early return from their crop and in the process causing extreme shortage of feasible stock for other industrial users particularly match manufacturers.

MATCH INDUSTRY'S REQUIREMENT OF POPLAR WOOD V/S OTHER USERS

As mentioned before match Industry is the single largest consumer of Poplar wood, consuming approximately 40% of total Poplar wood available. In order for it to attain higher yield (currently around 27%) it requires average diameter of 8"+, straight, knotfree, untwisted, natural color and fresh logs. Due to short supply of wood, match manufacturers are down to using 5" dia class logs which provide no more than 21% yield, plus the fact that substandard wood in other respects is being used.

Supports goods industry, overwhelmingly export based, can afford to pay premium prices, approximately 20% more than the match manufacturers, and get prime wood of the available lot. Sports good industry currently using 8% of total Poplar wood is anticipated to increase its percentage to 10 by year 1991.

Chipboard Industry the second largest in Poplar wood consumption uses predominantly small dia/Fire wood. Plywood Industry's requirement is large diameter wood, 14"+, this Industry which uses approximately 2% of total Poplar wood also pays handsome prices for its purchase. Crate manufacturers, mostly fruits and vegetable crates, though almost entirely in unorganized sector use approximately 10% of total Poplar wood. They use Poplar of varying sizes which determines the prices paid for their purchase of wood. The Poplar forest resources of NWFP have been adversely effected by the presence of Afghan refugees, who slaughtered young Poplar trees to use them as construction materials for their mud houses. Afghan refugees consumption of Poplar stands at staggering 7% of total wood available. In response to this damage the Government has floated various afforestation schemes financed by International Agencies. It is hoped that a part of the future requirements of the refugees would be met through these schemes.

With the exception of match Industry, all other industry is comparatively fresh user of Poplar wood, coupled with this the refugees factor increased pressure on Poplar wood supply. As if this was not enough, during 1983-84 and 1985-86 significant increase in annual cutting by farmers took place in Mardan District because of Salinity Control and reclamation Project (SCARP). The adverse effect of this excessive and abnormal feeling is being felt now.

WHAT IS TO BE DONE FOR THE FUTURE

Poplar is fast growing plant of Immense Industrial use.

In order to get maximum results in shortest possible time, the plantation and upbringing of Poplars should be treated as horticultural activity a fact of which the private growers should be trained in. The limited resources available to Forest Department whereby it is facing acute difficulties in maintaining its existing holdings, result of which is transformation of hundreds and thousands of acres of Forest land into wild bushes and Muskets. This portrays an alarming picture considering that Pakistan, as it is, is perhaps the poorest country in the world as far as its forest resources are concerned. In this context practical collaboration in between Forest Department, Industry and donor agencies can go a fair way in solving this extremely serious problem. In the past at various times, excellent ideas based on these lines have been put forward and talked about. Though regrettably nothing has come out of these ideas due entirely to red tape which seems to hinder all beneficial aspects in this nation's economy.

The problem we are facing is of such a magnitude that no one alone would appear to be capable of solving it. Orient Match is perhaps the only Industry which went ahead and started its own Poplar raising Forestry Project. This is a difficult and upheaval task and we realize that our efforts are going to solve only fraction of the problem.

HOW ABOUT FOR THE PRESENT

Poplars which will be planted today would only be harvested six to eight years hence in order for the Industry to function with ease certain help from forest department would be required, who have Poplar trees at their Dhapher and Changa Manga plantations. Instead of open auction, which events are always monopolized by the professional contractors, stocks of Poplar wood should be sold direct to the Industry at pre determined rates. We are certain that this way Forest Department stands to gain more revenue and Industry could get some proportion of its wood raw material at reasonable rates plus assured supplies of certain proportion of its raw material, vis-a-vis, contractor and sub-contractors margins will be divided in between Forestry Department and Industry.

PRODUCTION OF WOOD IN PUNJAB WITH SPECIAL EMPHASIS ON THE SPORTS GOODS INDUSTRY

By

ANWAR MASRUR
CHIEF CONSERVATOR OF FORESTS
LAHORE

Introduction:

Forests and forest produce play a vital role in the Pakistan's economy. This role is supplemented by wood produced from private lands. Many primary industries such as logging, saw milling and secondary industries like sports goods, furniture, particle and hard-boards, pencils, carpentry, packaging, charcoal, etc., contribute approximately 3,000 million rupees in direct incomes. The GDP contribution of forest industries/business in Pakistan during 1979-80 amounted to Rs.92,279 million⁹. Thus, percentage share of forest industry in GDP under manufacturing sector amounted to 16%. Forest industry in Pakistan employes approximately 300,000 persons of professional, subprofessional, skilled and unskilled types. The labour force employed in forestry and forest related industry/business constitutes 2% of the total labour force and 15% of the labour engaged in manufacturing sector.

The average consumption of timber by various end-uses is approximately 2.4 million m³. Table 1 gives the exact quantity of timber used in Pakistan in various years²:

TABLE 1: CONSUMPTION OF TIMBER BY END-USE
(x 1000 m³)

End use	1978-79	1983-84	1986-87
Residential Const.	426	493	539
Non-Residential Cons.	80	93	101
Rural uses	249	240	230
Transport and communications	78	90	98
Packaging	464	464	470
Mining	67	78	85
Furniture	164	190	207
Sports goods	18	21	23
Others	111	128	140
Paper and pulp	366	590	785
Total:	2023	2387	2678*

Table 2 shows the bulk of this timber comes from private sources⁹. Wood-based pulp and paper are imported.

(*) in round-wood equivalent.

TABLE 2: SUPPLY OF TIMBER IN PAKISTAN (X 1000 m³)

Source of supply	Volume		
	1972-73	1983-84	1986-87
Government forests	620	443	380
Private lands	500	1125	1201
Timber imports	350	228	114
Wood based pulp/paper	180	591	983
Total:	1160	2387	2678

The ratio of timber supplied by the private sector and state forest lands in Punjab is generally similar to the statistics of the entire country. Table 3 shows the timber produced by the Punjab Forest Department from areas under its control in various years since independence:

TABLE 3: OUT-TURN OF TIMBER FROM THE FORESTS UNDER THE CONTROL OF FOREST DEPARTMENT PUNJAB (x 1000 m³)

Year	Punjab
1947-48	7.1
1950-51	66.1
1955-56	27.3
1960-61	29.0
1965-66	99.0
1970-71	34.0
1975-76	42.0
1980-81	42.0
1985-86	50.0
1986-87	94.0

Consumption of timber by end-uses in Pakistan has been showing a steady increase, except in rural-uses where a gradual decline has taken place. A recent survey conducted by the World Bank has shown that timber supply from Government forests has shown a drastic decline whereas a corresponding increase in supply has taken place from private farmlands. The import of timber in raw and sawn form has also shown a considerable decrease. But at the same time, the import of wood-based pulp and paper has shown a tremendous rise. These statistics indicate that while the production from state-owned forests has declined steadily, the supply of wood from private lands has shown a marked increase which also facilitated a decrease in timber imports. On the contrary, the import of wood-based pulp and paper has shown a considerable rise which could be attributed to non-development of local pulp and paper industry and to rising standard of living of the people. Table-2 may be seen in this regard.

Since the topic given to me mainly relates to sports goods industry, therefore I shall not divulge more on matters relating to timber production and consumption in general. Let us take up matters concerning sports goods industry.

Economic role of sports goods industry:

Of all the small scale industries in Pakistan, the economic role of sports goods industry has become quite significant due to its increasing export-oriented production. Despite its importance, however, it basically is a cottage industry as hardly 3 or 4 units in Sialkot are operating on factory scale.

Pakistan primarily is an importer of wood and wood products. A few wood-based products, however, are exported which mainly are furniture and sports goods. Table 4 highlights the contribution of wood-based sports goods in foreign exchange earning as compared with total exports⁹:

TABLE 4: EXPORT EARNING FROM WOOD-BASED INDUSTRY

Year	(Rs. in million)		
	Wood-based sports goods	Furniture	Total
1975-76	105	4.2	109.2
1980-81	136	7.4	143.4
1983-84	358	15.7	373.7
1984-85	346	17.5	363.5
1985-86	274.6	15.4	290.0
1986-87	323.6	9.3	332.9

Wood-based sports goods industry, consisting of 290 units of which 75 are located in Sialkot, employs about 3000 workers. It consumes approximately 18000 m³ of mulberry, willow, bakain, mango, poplar, mesquite, chinar and ash timber annually. 80% of the products are exported, earning approximately Rs. 350 million in foreign exchange⁹. All the sports goods manufacturing units belong to the private sector. The role of the state is limited to supplying substantial quantity of timber required by this industry. The main products include hockey sticks, cricket bats, tennis and squash rackets and other miscellaneous items. The annual growth rate of this industry is about 9%. If the raw material constraint is removed, the future of this industry would certainly be brighter.

Timber consumption:

The main species used by this industry are mulberry (Morus alba) and ash (Fraxinus excelsior) for hockey sticks, willow (Salix spp.) for cricket bats, chinar (Platanus orientalis), mango (Mangifera indica), poplar (Populous spp.), tun (Cedrela toona), etc., for tennis and badminton rackets. Bakain (Melia azedarach) is used in substantial quantities for some of these products. Ash and English bat willow are also used in small quantities. The total quantity of timber consumed by this industry varies from year to year depending upon the market for products and availability of raw material. Table 5 indicates the quantity of timber consumed by this industry in various years¹:

TABLE 5: TIMBER CONSUMPTION

Species	Volume in m ³				
	1957	1963	1967	1970	1980
Mulberry	5660	3540	5660	7450	7080
Willow	2548	3540	4250	7305	5100
Bakain	425	700	1400	820	1415
Mango	----	1400	2800	650	1415
Others	700	560	2800	3075	3420
Total:	9333	9740	16910	19300	18430

Among the indigenous timbers, mulberry is the only wood used in the manufacturing of hockey sticks and willow is specific for cricket bats. These have not so far been substituted by any other wood. The timber used in the manufacture of tennis rackets has a high degree of substitutability and their consumption depends upon the prevailing prices of various species. The main sources of supply of mulberry timber to the sports goods industry are Changa Manga and Dapher Irrigated Plantations. These plantations meet about 50% of the total requirement^{5,6}. The rest is obtained from private farms of Punjab and NWFP⁸. Table 6 gives the production of mulberry timber from Changa Manga and Dapher Plantations for the last few years^{1,4}:

TABLE 6: PRODUCTION OF MULBERRY TIMBER FROM CHANGA MANGA AND DAPHER PLANTATIONS

Year	(Volume, m ³)		Total
	Dapher	Changa Manga	
1950-51	17	2074	2091
1960-61	1028	1344	2462
1970-71	3197	2101	5298
1980-81	1482	3401	4883
1987-88	871	2529	3400
1988-89	971	991	1962

The average annual production of mulberry timber during the past decade has been approximately 3300 m³. Of this, about 40% is of quality I whereas the demand for quality I is about 4250 m³.⁸ As a consequence, the manufactures are obliged to search for good quality timber either from private sources or from the NWFP.

Almost the entire supply of 5100 m³ of willow timber comes from private farm lands of the NWFP. Of this quantity, about 20% logs are of proper sizes and good quality.

Constraints:

i) The sports goods industry as a whole is facing many difficulties especially with regard to the supply of raw material. Previously most of the demand for mulberry timber

was met by the Punjab Forest Department. However, the quality and quantity of mulberry produced from forest plantations has decreased due to various factors. This has created a serious crisis for the industry. Some of the plantations such as Khanewal, Chichawatni, Kamalia, etc., have stopped producing mulberry timber due to chronic shortage of water supply. In other plantations such as Changa Manga and Dapher, there has been a qualitative and quantitative decrease in this species. So far as other species such as bakain, willow, poplar, mango, chinar etc., are concerned the Forest Department is not making much contribution to meet the requirements of the industry. It is mainly the private sector in the NWFP and Punjab which to a large extent is meeting the industry's requirements. This source of supply, however, is not only undependable from qualitative point of view but also the quantity of wood that would be available in future is not certain.

ii) There has been tough competition for the industry from Japan, India and other countries. With their superior technology, Japan, Taiwan and some other countries have been able to grab a larger part of the international market for wood-based sports goods.

iii) Since most the manufacturing units are of cottage scale, quality control techniques cannot be practiced. In fact, many of the factory owners are not in favour of quality control on their products. No research and design centre exists close to the main centres of production, i.e., Sialkot, as a result of which the sports goods manufacture in Pakistan are far below in quality as compared with the products of other countries.

iv) Good quality paints required for the hockey stick industry are not manufactured in Pakistan. Therefore, the industry depends either on the expensive imported paints or low quality local produce. Similarly other imported items required by this industry are quite expensive and beyond the reach of the small units.

v) Forest Departments of Punjab and other provinces have done little to improve the material supply environments of this industry and there is hardly any standing relationship between the users and the Forest Departments.

Recommendations:

The sports goods industry has a great potential for expansion in this country. If the constraints faced by it are removed, a paradigmatic increase can take place in the quality and quantity of various export quality products. The following recommendations are made to overcome these constraints:

- i) Credit facilities should be made available to the small manufacturers on easy terms;
- ii) Export bonus and import licences should be liberalized to encourage export of sports goods;
- iii) A research and design centre should be set up on Sialkot to assist the manufacturers in improving the quality of their products. Mechanized methods should also be introduced in the manufacturing processes;
- iv) A vocational training institute should be attached with the research and design centre. Wage rates and other amenities for the labourers should be increased;
- v) Production of indigenous mulberry should be increased from irrigated plantations and private lands. Separate areas may be earmarked in the irrigated plantations for raising of hybrid mulberry so that load on the indigenous mulberry for sericulture is reduced. Similarly cultivation of hybrid variety of mulberry in private lands should be encouraged through social forestry and other programmes in order to release the pressure on irrigated plantations for plucking mulberry leaves. Cultivation of poplar, willow, ash, chinar, bakain and other species should also be encouraged both in private and state lands;
- vi) A standing committee comprising representatives of the sports goods manufacturers and forest officers be constituted to remove the material supply problems.

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SIALKOT SPORTS GOODS INDUSTRY

By

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Sialkot

Sialkot of Pakistan is known throughout the world for handcrafted sports articles - as a cottage industry - exporter of quality at most reasonable prices for over a century. Sialkot produces the finest field hockey sticks, well designed all-wood tennis and squash rackets, and cricket bats for beginners, which are popular in the world for attractive prices and thus made available to parents of moderate income for their children, who start to play these games and get them interested to learn these sports seriously, which would not have been possible as foreign similar articles are very expensive. Sialkot has therefore performing an unique service in supplying these articles of good quality at unbeatable prices, and creating interest amongst youngsters and training them in these sports at a reasonable cost and then to take up seriously a particular as they grow up and start using costly locally made sports articles.

The bulk share of the export of Sialkot sports goods is made up of (1) tennis and squash rackets, (2) Hockey Sticks and (3) cricket bats and stumps, and which are all manufactured from mulberry, poplar, willow, chareik, Chinar etc., of Pakistan woods. Forest Division of the Government had set up plantation at Changa Manga near Lahore, and Pakhowal near Gujrat to meet the needs of sports industry of Sialkot which exported these articles to all parts of the wold during the twentieth century, when only few countries, such as England, Germany, France and USA produced expensive professional sports goods.

As the demand for the above sports goods increased after the World War-II, Sialkot began to meet their requirements from NWFP, as the supplies from Changa Manga and Pakhowal were insufficient. Below is the chart showing the annual needs of the Sialkot industry in the recent years:

1. Mulberry wood from Changa Manga, Pakhowal	65,000 to 80,000 sq.ft.
2. Mulberry from NWFP about	1,50,000 " "
3. Poplar from NWFP	70,000 " "
4. Willow from NWFP	30,000 " "
5. Dhareik	25,000 " "
6. Chinar, Tun, Brimichi	20,000 " "
7. Eucalyptus	10,000 " "

The area from where the Willow and Poplar woods have been coming are private growers in the NWFP, and the land is now being put to other cultivation and cash crops, and new plantation of Willow and Poplar has not been done. Further supplies are coming from upper billy districts, by camel and trucks by road, at ever increasing transport and terminal taxes. There is always a shortage against increasing needs of the industry in Sialkot. To get an idea of the present cost to the factories in Sialkot, the rate of average grade of Mulberry from Changa Manga was around Rs.2.50 per sw.ft before 1947, and which has now gone up to Rs.140.00 per sq.ft. at the open auction at Changa Manga Depot, plus income tax and trucking charges and Octroi to Sialkot, while the grading is going down and supplies are diminishing against ever increasing requirements of the industry.

Sialkot is the only place in the world to meet the needs of the hockey sticks, as this sport has become most popular throughout the world. Sialkot produces the finest grades of hockey sticks in the world for National Olympic Teams of the world besides very small quantity of hockey sticks made in India.

We will face serious situation in the near future, as our efforts and representations to the Forest Division at the highest level of the Government in recent years have produced no positive action, and in fact the supplies of mulberry have diminished because more area has been allotted to the plantation of Poplar in Changa Manga to meet the increasing demand of the plywood industries, at the cost of Sialkot urgent needs.

We would have been in serious trouble if the supplies of mulberry and Poplar did not come from NWFP, and industry would have been drastically curtailed, and an employment of highly skilled labor would have resulted in economic, social law and order situation in this sensitive border District. Above all the earning of vital foreign exchange would have resulted to the national exchequer, as Sialkot is the second city earning foreign exchange in Pakistan after Karachi.

Along with some industrialists of Sialkot, we surveyed during 1978 onwards the Government Agricultural lands in this District adjacent to River Chenab near Head Marala, Bela, Pir Subs and Bajwat, which is being wasted in growing grass and feed for wild boars. These areas are ideal to grow willow and poplar as the soils is goods and water supply is abundant. Sialkot was prepared to invest in a cooperative or limited Company if the Government would lease such lands, which are being wasted. The technical know-how and labor was available at reasonable cost and give employment to local people. This venture would have produced woods for the increasing requirements of Sialkot Sports Industry and could remove the bottle neck facing this import export, foreign exchange earning industry.

Nothing came out of this exercise and survey labor because of the rivalries of various Government Departments involved or rather interested in the scheme.

A photocopy of Map of Sialkot Range (Scale 1" = 1 Mile) is enclosed, which indicates Government agricultural/grazing areas, which were surveyed and are not put to any useful activity, except growing grass, and these areas are quite suitable for plantations of Poplar and Willow trees, and from five years onward can be source of supply these essential woods to the Sialkot industry and to augment the supplies from NWFP. Areas such as:- Pir Subz, Head Marala, Bela and even in Bajwat can be leased to the Sialkot Industrialists who will register a Public Company or a Cooperative with their resources for this most feasible project to meet the increasing demands of the wood for the manufacture of sports goods, which are entirely exported and to provide employment to the skilled craftsmen of the District and above to bring in vital foreign exchange as the world demand for these sports articles is increasing every year, and Pakistan is the main source of meeting world needs.

This matter calls for urgent survey and an early implementation by the Forestry Planning and Development Project, with the assured US AID.

**FORESTRY DEVELOPMENT
THE ROLE OF NON-GOVERNMENT ORGANIZATIONS (NGOs)
AND CREDIT POLICY IMPERATIVES
AND AN AGENDA FOR ACTION FOR PAKISTAN**

By

Sultan Ali Barq
President
Friends of Earth and Trees (FEATS)

On behalf of Friends of Earth and Trees and on my own behalf want to thank the organizers of the seminar for arranging this important seminar and for inviting me to speak on the occasion.

This earth we live in is not what we have inherited from our forefathers, but instead we have borrowed it from our children and future generations. Let us resolve to return the same to our children in good, usable and livable condition. In this world particularly during the last few decade of the twentieth century the people have learned a few lessons. These lessons are:

1. A country and its people are rich or poor only due to a single factor i.e. how big and economical are their energy resources. For example oil rich countries.
2. The countries and its people have to conserve their scarce and limited natural resources in order to ensure a future. Most of the developed world is following an aggressive system of resource optimization and conservation.
3. Most of the countries are rich or poor because of the good or bad utilization of their resources. Japan, Korea and other recently industrialized nations have followed this philosophy in order to bring prosperity to their people.
4. Political leadership and commitment can free the nations from the shackles of poverty and can bring in prosperity for the people.
5. A country with more trees has more chances of becoming rich than the one with lesser trees.
6. Most of the Third World countries are poor because of poor planning and utilization of resources and poor environmental management.
7. Prosperity is not the monopolistic right of a particular nation or continent, it can be acquired through intelligent planning and hard work guided by a committed leadership.

During 20th century, in Pakistan and many Third World countries, we can see the poor people living in stone age. During the present age of fossil fuels about 80 to 90 percent people in the poor countries where most of the world's population is concentrated use on fossil fuel at all. For the most part they burn wood. They are now faced with an ever increasing scarcity of wood. About 80 percent of the wood in the Third World is used for cooking fuel. Wood is thus an indispensable component of the food system and it is in very short supply. According to a World Bank estimate if the present (1980) planting rate of trees continues; there will be 10 percent of the wood needed by year 2000.

Mr. Chairman, permit me to say that today's seminar on producers and users of wood does not have a fair representation of the producers, i.e., farmers and users, i.e., the poor of Pakistan.

The reason I emphasize the presence of the poor users other than the industrial and commercial users is that most of the wood burnt in poor countries does not pass through a commercial market. It is foraged and scavenged. Although poor countries are heavily dependent on wood, most of the world's commercial forests are grown and consumed in rich countries. The United States and Soviet Union are exporters of wood and wood products. According to a report, "the average American consumers about as much wood in the form of paper as the average resident in many Third World countries burns as cooking fuel." People in the developed world are using wood to remove the darkness of ignorance and illiteracy and those in poor countries, inefficiently burn the wood for cooking and removing the darkness of nights. This alone explains the ever widening gap between the rich and the poor countries. The system of burning wood in typical fire place in Pakistan only utilizes less than 10 percent thermal value of the wood.

The world is becoming rapidly denuded of trees. According to an aerial survey, in 1950, one-fourth of the earth's surface was covered by dense forests. Twenty five years later, in 1975, the area was reduced to one-fifth only. Because of the world-wide wood shortage the costs of the wood have skyrocketed, particularly in the poor countries. The price of wood in Pakistan today is about 4 to 5 times more expensive than in the United States. Whereas the average income of a US citizen is over 50 times more than that of a Pakistani. The economic price of the wood may still be higher in poor countries. In most of the developing countries an urban laborer spends 20 to 30 percent of his income on wood and in the rural areas over 50 percent of the time of women and children is spent in the collection or scavenging of woods and twigs. Because of the increasing shortage of firewood, hundreds of millions of cow dung is burnt, although the same is disparately needed for fertilizer. The use of cow dung as source of fuel is virtually a crime.

Shortage and fast depletion of trees is causing very serious and at times irreversible damages to the resource and ecological system of the world. Erosion of watersheds and valuable agricultural lands removes the fertile top soil from the earth and makes it infertile or desert. The sediment thus removed from the soils passes through the rivers. The sediment on one hand pollutes the fresh water and endangers its use for human and aquatic life, while on other hand reduces the useful life of the dams built across them. The siltation of dams reduces the net water availability to the nation as well as reduces the power generation capacity of the same where the facility exists. All above changes add to the poverty of people and nations. Through the above mentioned process many species of wildlife and plants suffer the risks of extinction. A phenomenon that triggers another chain reaction adding to the miseries of the people on the earth.

Trees clean the environment and make oxygen from Carbon Dioxide which is being produced as a result of human activities and industrialization on the earth. Trees are therefore called the lungs of the earth. Lesser trees means lesser oxygen, more Carbon Dioxide, more global warming, depletion of Ozone layer, Eruption of many diseases and ailments, more and speedy melting of snow in the mountains and more floods. All these add to the human sufferings and cause poverty. The sum total of my submissions, ladies and gentlemen, is that God did not intend to make humans live on the planet earth alone. They only coexist with other bio-culture and species for an environmental and ecologically equilibrium. It is the duty of us all to ensure plantation of enough number of trees as soon as possible.

Pakistan is one of the poorest countries in terms of area under trees. The present coverage ranges between 4 to 5% according to various estimates. Even the present area under trees is progressively reducing at a fast speed. Historically it has been considered the duty of God or the Governments to grow trees. The Colonial Government in the later part of nineteenth century raised man made forests for supplying the fuel to locomotive engines in the Sub-continent. It is for this reason that major plantations in Pakistan are along the railway line and some of the most important to mention are Changa Manga, Chichawatni, Jhelum etc. After the invention of Diesel Technology the purpose and emphasize on tree growing by the governments reduced and the Forests Departments took the responsibility of protecting the plantation areas that had already been planted and their was no incentive for them to increase the area under trees. On the contrary one of the yard stick for measuring the efficiency of a good forest officer till recently has been as to how much the wood area he can harvest.

Pakistan has suffered irreparable losses in terms of deforestation during the first three quarters of the twentieth century. Many vast natural plantations have been cut away by

rapidly increasing population, many mountains have been denuded. Large areas were consequently converted from lush green fields to deadly deserts full of dunes. The rivers changed their courses and migrated to areas where they found more stable banks. The shifting of Beas that once ran between Ravi and Sutlej changed its course into Indian Territory and the Ghagra river that once irrigated the Cholistan gradually disappeared. The governments in the meantime, I regret to say, just sat and watched the drama of decertification.

Probably it is mistake to except the governments to increase the area under trees. Probably private sector/farmers can grow trees more efficiently. These were the ideas that motivated me to undertake raising of trees and introduced the concept, that take the tree as a crop. I raised compact forest on private lands. I documented the experiences in an article named, "Forestry Development in Pakistan-Some Policy Recommendations Based on Self Experience." I am happy to report here that private sector can very efficiently grow trees. If some genuine difficulties of the farming communities are removed, it can grow trees with positive contribution to the economy and through the process alleviate poverty by creating large scale employment opportunities and resource optimization. Friends of Earth and Trees a pioneer Nationwide Non Governmental Organization (NGO) established in 1989 under the Societies Act 1860. Its operations are Nationwide and operates in all Provinces and Regions of Pakistan. The activity plan of FEATS is given in Figure - 1 on the following page.

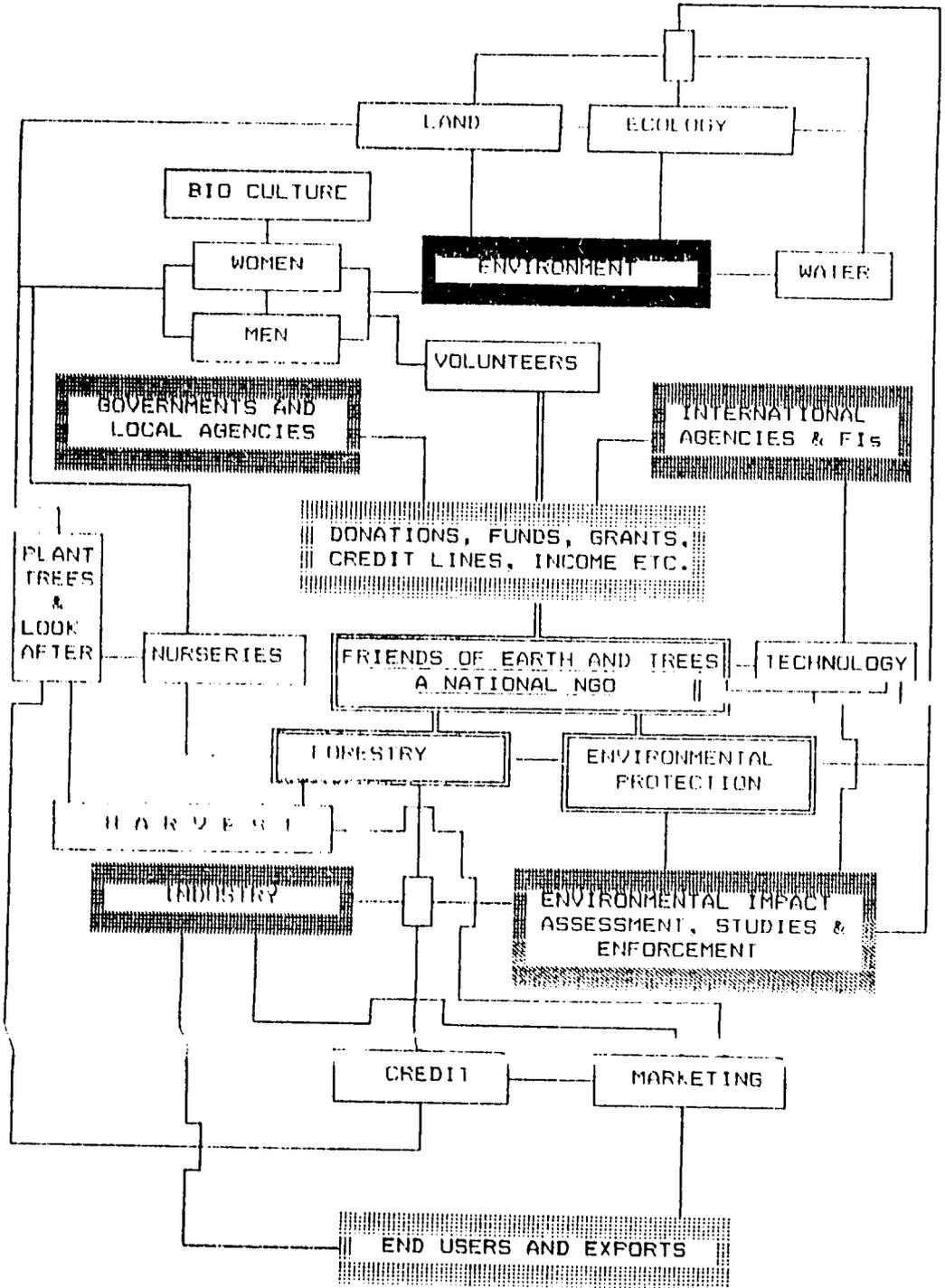
FEATS has set for itself a difficult task of growing 6.5 Billion Trees by the year 2000. A project has been prepared to achieving the following planned objectives:

1. To create a brain trust at the Headquarters of FEATS, comprising of professional (mostly volunteers but entitled to receive honorarium) in the following disciplines:
 - a. Environmental Sciences
 - b. Forestry
 - c. Agriculture
 - d. Sociology
 - e. Credits/financing/banking
 - f. Mass Media Experts
 - g. Industrial Engineering
 - h. Marketing
 - i. Technologists
 - j. Legal Experts etc.

These professionals shall provide planning, implementation, monitoring, marketing and financing support to the FEATS its subsidiary organizations and members.

2. To stimulate public opinion through media and lectures about environmental issues and suggest draft legislation where necessary.

FIGURE 1
THE WORLD OF FRIENDS OF EARTH AND TREES - (FEATS)



3. To promote purposeful forestry in the rural areas for ultimately increasing the net area under trees from the present level of approximately 4 to 5 percent to about 15 percent by year 2000.
4. To help in marketing of the trees and in setting up/development of the appropriate industry/market so that forestry becomes a viable economic activity for the farming community.
5. To generate over 25,000 jobs particularly for rural educated youth through the process.

FEATS plans to increase the net area under trees to 15 percent of the geographic area of Pakistan. Of 87 million hectares of total area it is planned to grow trees on about 13 million hectares. On an average of about 400 to 500 trees per hectare we need to plant over 6.5 billion trees during next decade, i.e., about 650 million trees per year.

PROJECT APPROACH AND MODEL

The project approach is based on the following beliefs and assumptions:

- i. That sufficient numbers of trees are necessary for ensuring stable environmental conditions and protection of the same.
- ii. That trees are necessary for the economic prosperity of Nations.
- iii. That private sector participation is necessary for meeting the forestry and environmental plans and private sector has already demonstrated its capacity to be an efficient tree grower.
- iv. That if a farmer is relieved of the cash liability of growing trees he willingly looks after the same.
- v. That no existing credit or financing scheme in agriculture sector meets the specific requirements of forestry sector.
- vi. That farmer's serious and effective participation can be secured by offering him assured marketing support and the price incentives of the tree crops.
- vii. That the industrial investor for wood based industries shall only invest if he is assured of consistent supply of the raw materials.
- viii. That Pakistan can substantially increase its area under trees by modifying its policies in this

respect and can even turn most of the deserts into green plantations.

- ix. That forests do have positive impact in environmental moisture conservation and through the process can help in increasing the net water availability to the area.
- x. That through NGOs the national targets of forestry development and environmental protection can be feasibly achieved.
- xi. That under particular situation the returns from forestry are more than any known cropping system/pattern of agriculture.

I believe, if the Government and present leadership is serious in expanding social forestry and farm energy programs, it should come forward with a package consisting of aggressive extension services, technical assistance, credit with low interest rates of about 3 to 6 percent, and marketing systems or end use systems through Non Government Organizations (NGOs) and private sector. This way there is no doubt in my mind that the targets set fourth in 7th 5-year Plans cannot be exceeded.

The policy framework of our development plans are not translated into effective and realistic operational measures. In view of my personal experience, the private sector and NGOs are held back from taking initiative in afforestation due to one or combination of the following reasons:

1. **Credit and Financing of Farming Community for Forestry Department.**

Presently there is no credit scheme from the Development Financial Institutions like Agriculture Development Bank, Cooperative Banks etc., that can adequately meet the specific requirements of Forestry sector. Due to long gestation period; the farmers do not have surplus cash resources to investment to incur over a period of time till first tree is cut and sold in the market. This long term investment is beyond the capacity of many of small and medium sized farmers. There is a felt need for financing the forestry sector with promotional spirit as it was done in case of incentives for industrial development. In the case of later funds are available at 3 to 6 percent interest rates for local manufactured machinery.

There is certainly a credit market in the private sector forestry and efforts are required for tailoring the credit supply to suit the sector. FEATS is planning to create, "Forestry Development and Financing Cooperative", and register with Government of Pakistan and International Development Banks and Agencies like World Bank,

Asian Development Bank, Islamic Development Bank, USAID, CIDA, etc., which shall provide necessary funds for meeting the needs of the project. There is also a need for devising an insurance cover for the plantation.

The methodology developed by FEATS is based on the principle of: "RELIEVING THE FARMERS OF THEIR CURRENT CASH LIABILITY OF GROWING THE TREES BY SUPPLYING SAPLINGS AND EXTENSION SERVICES THROUGH BRAIN TRUST AND OUTREACH SYSTEM. FEATS SHALL RECOVER THE COST OF SERVICE AT THE TIME OF MARKETING AND SHALL ELIMINATE MANY TIERS OF MIDDLEMEN IN THE TRADE WHO TAKE BIGGER PART OF THE PIE".

2. Lack of Communication between Forest Departments and Farmers, particularly Small and Medium Farmers:

It is imperative that there is a system of two-way free flow of useful information, research findings and policies to the farming community and feed back to the concerned agencies. NGOs provide one of the most effective methods besides the use of standard mass media practices. The NGOs should have a capacity to interact with the Department of Forest as well as the farmers and should frequently arrange the meetings between the two groups in the field or model forests/plantations. This shall give a demonstration effect of on-farm development and motivate other farmers to follow successful examples.

FEATS has a provision of employing local educated youth with education upto intermediate level as a means of providing an outreach system. This individual shall be trained in forestry to be able to give day-to-day advice to the farmers and shall report to the Local Council of FEATS as well as the project office on a monthly basis. This shall provide the linkage between the farmers and NGO as well as buy the confidence of the farmers in the project. This model has a capacity to create 25,000 to 30,000 jobs without net burden on the national exchequer.

3. Lack of Information about Species Suitable for Particular Socio-ecological Conditions and Lack of Information about Marketing and End Use of the Produce

There is a need for extensive research for location specific planning and development of species suitable and economically viable for particular ecological conditions. Therefore, a regional plan be prepared and publicized, giving the type of plants, their use, markets, requirements, demand as well as economics. FEATS has constituted a panel of experts "BRAIN TRUST", comprising of expert in forestry, environment, marketing, finance, sociology, medical sciences, engineering etc. The Brain Trust is now preparing ecological classification of various species that have commercial viability for the private sector.

The present marketing system of private plantation is disorganized and there are a number of middlemen between the producer and the consumer. FEATS plans to provide a bridge between the farmers and the industry. Presently, the industrialization based on forestry products is suffering from a chicken and egg problem. The large industrialist is not willing to make heavy investments because he is not sure of the consistent supply of raw materials. On the other hand farmers do not feel motivated because they do not find a ready market for the forestry products. The government policies and industry have certainly lagged in case of bamboo production in Pakistan. People replaced their orchards by bamboo for the price incentives and today there is no market for bamboo in Pakistan and the farmers are ploughing hundreds of thousands of bamboo field to replace by other crops.

NGOs shall assist in providing two-way communication between the farmers and industrialists. This shall help in bringing the producers and consumers together for mutual benefits. Department of Forest should also support research or carry out studies for finding the present stocks of plantation in the country.

4. Shortage of Plantation Stock at the Right Time and Right Location

FEATS plans to raise nurseries through members and buy the plantation stock for supplying to the farmers on credit. The nursery plantation of 2.5 million saplings for the Pilot Project is already in Progress. In this connection forestry research organizations have an effective role to play.

5. Lack of Motivation on the Part of Government Officials as well as Farming Community

It has been observed that there is lack of motivation on the part of officials. In order to resolve this issue it is suggested that a system of rewards and accountability be developed and the officials be rewarded for fulfilling their obligations and punished for any slackness. An effective system of monitoring and evaluation is necessary for this purpose.

6. Shortage of Land and Water Resources

For the farmers of plains of Sindh and Punjab, shortage of land and water resources are serious factors for the slow pace of development/plantation of forests. For this purpose government should formulate means to convert the huge land resources under their control into forests by working out a mechanism of allotment to educated unemployed rural youth through FEATS and/or joint venture operation of NGOs and public sectors. One of the feasible

modes of this cooperation is that the land may be leased out to the farmers for periods of 30 to 40 years and targets of developments should form a part of lease agreement. Vigilant coordination, liaison and monitoring system be developed so that non-serious elements can be screened at the earliest. It is further suggested that in order to introduce new technologies, the size of land and investment should be adequate to justify the inputs and help in substantial increase in National Wealth.

Presently, the area under the control of Forest Departments is 6.9 million hectares, out of which 3.1 million ha. is wooded and 3.8 million hectares is lying as range land. It is suggested that about 20,000 hectares be leased out annually to the educated youth, NGOs, interested farmers, entrepreneurs for the purpose of block plantation. This option on one hand, does not need funds from the government, and on the other shall open extensive employment opportunities in the rural areas. This shall also help in bringing water-land to economic use.

The vast tracts of Cholistan, Thal and Thar deserts can also be converted into lush green forests and range lands, if the government commits herself to the objectives of massive forestry sector development. FEATS has a Model through which the man can encroach into the deserts and bring back the original productivity to the area and help in positive contribution to the economy.

WOOD REQUIREMENTS OF THE FURNITURE INDUSTRY

By

Mohammad Jehangir - President
All Pakistan Furnitures Manufacturers' Association
New Era Furnishers
Lahore

Mr. Chairman:

On behalf of the Pakistan Furniture Manufacturers Association, I extend my thanks to you for providing me an opportunity to speak at this seminar regarding wood requirements of the furniture industry

The only wood used in quality Furniture in our country is Shesham, this is slowly becoming scarce.

The one or two forests that were producing good Shesham wood, have steadily been cut down by us and used, resulting in the marketing of sub-standard wood at present.

While we have been cutting wood, unfortunately we have not made arrangement for reforestation. I will request the forest department to pay attention to this aspect, and try to introduce species other than Shesham, that can be an equally valuable specie for furniture manufacturing.

Veneer board is an alternate material for wood, but unfortunately its quality is not good, and only 30% or so of it can be used in the manufacture of furniture. I will request the manufacturers to improve the quality of their product.

About 10 years ago, a meeting was held between the industry people from all over the Punjab and the Forest Department to discuss this problem, but so far no result have come out, the performance of the forest department in the past has been very heart breaking.

I hope that the decisions arrived at this seminar will be acted upon with honest intentions and like before not consigned to files. I would like to recommend the following measures to combat the shortage of wood in Pakistan:

1. Government land, which is lying unutilized should be used for tree plantation.
2. Investment in trees should be done in partnership with farmers.
3. Tree should be grown on land taken on lease.
4. Dissemination of new research/information available with the department should be done so that it reaches the concerned persons.

I end with a prayer for the success of this seminar, and once again thank you all for listening to me. Thank you.

PRODUCTION OF MINING TIMBER IN SINDH

By

Bahauddin Sirhindi
Chief Conservator of Forests
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Hyderabad

The term mining timber is a collective designation denoting a variety of forms of wooden supports used in construction of tunnels, shafts and other mine openings, and chambers.

In the first place, it is necessary to understand the purpose of mining timber. When an underground excavation is made, whether it be horizontal, vertical, or a large chamber, the removal of ground (the rock formations in which a mining operation is being conducted) deprives the surrounding sides and top of the opening of its former support. After an excavation has been made, the exposed surface, if composed of crushed or loose material, starts to slough away, or, if it is hard rock, breaks away from the back along the fracture planes. This will eventually arch and support itself in most instances, but if the back is not supported immediately, this process of caving becomes cumulative until a large chamber has been formed. In solid, unfractured rocks, no caving may take place, and the roofs of even large chambers may stand indefinitely without the use of internal support.

Obviously the amount of mining timber that can be placed in a mine opening, many hundreds of feet below the surface of earth would be totally inadequate to support the tremendous pressure of over lying strata. The primary purpose of mine timbers is, therefore, to prevent loose material, blocks, and slabs from falling down, damaging equipment, injuring workmen, and plugging passage ways. Mine timbers also provide a firm foundation for machinery in soft ground, a base for carrails, linings for elevator shafts and numerous other uses.

Mining industry is as old as human civilization. Various tools and methods have been in use since the origin of this industry. Indeed, the whole history of mining and particularly of 'coal-mining' is bound up with support problems. For hundreds of years prior to early eighteenth century, mining was largely confined to the quarrying of out-crops, and even when at last mines were driven, and shafts were sunk, few attempts were made to support the strata with timber. Only the improvement of steam engines more than 200 years ago, solving as it did, difficulties of pumping, winding, and haulage, brought the question to providing supports to head shafts, which could now be deeper, and underground working more extensive, some system of strata control became essential, and the large scale use of mining timber began.

In Pakistan mining of coal was started in British era. With the passage of time due to scarce energy resources more attention was given to coal mines, as the coal was the principal source of energy in the Indo-Pakistan sub-continent till recent years. In all coal mines, which are mainly situated in Sindh and Balochistan, wood has been used as the only supporting material. In some European countries like England and West Germany, substitute materials such as steel and concrete are used, but only upto 4-5%. The advantages of wood over substitute materials are enormous and they presage the use of wood at rather permanent levels of structure per ton of coal mined. These substitute materials, i.e., steel and concrete have found logical uses in only specialized installations. The advantages of wood over substitute materials are:

1. Relatively low initial cost
2. Availability
3. Favorable strength - weight ratio
4. Gradualness of failure
5. Adaptability and
6. Sufficient durability

In Indo-Pakistan sub-continent common species used are Shorea robusta, Termenalia tomentosa, Diospyrous meloxylon, Acacia arabica, Grevia latifolia, Terminalia arjuna, and Xylia xylocarpa.

After independence, in Pakistan Acacia arabica timber was found suitable in coal mines due to its strength properties durability and availability. Large quantities of mining timber of babul (Acacia arabica) are used for support of roofs and sides in underground working of coal mines in Sindh and Balochistan. The subject of mining timber is one of considerable importance in the forest economy of Sindh province. The consumption of wood for this purpose being exceeded only by timber and fuel wood. The requirements of mines of Balochistan are also mostly met from Babul wood grown on farm lands and riverain forests in Sindh. There are large number of Block Plantations of Babul (Hurries) in the civil division of Hyderabad and Sukkur. The farmers of Sindh have been raising such plantations on their agricultural lands since 1858. This practice was the result of a Land Grant Policy, adopted by Sir Bartly Frere, the then Commissioner of Sindh, under which farmers were given agricultural land upto 4 hectares free of charge for raising trees on it. Considerable quantities of mining timber are readily available in markets, at Hyderabad, Hala, Saheedabad and Sukkur.

Mining is done both in public as well as private sector in the country. Pakistan mineral Development Corporation is the sole agency working in the public sector.

It is estimated that 1,818,000 metric tons of coal is produced annually from coal mines of Balochistan and Sindh (25% being produced in Sindh).

Due to recent energy crises and with the increase in population the energy needs of the country have almost doubled. There are 651,000,000 metric tons of coal reserves in the country, which are economically recoverable with available technology. More efforts are being made therefore to explore new sources of coal and increase the coal production. This situation has generated an overall increase in the demand of mining timber, resulting in proportionate increase in its prices. Having more infrastructure facilities and attractive prices of mining timber, the agriculturists raise 'Hurries', i.e., block plantations of Babul on their private lands. Shortage of irrigation water, and low initial expenditure in comparison to agricultural crops, have provided additional incentive to raise tree crops on their farm lands.

Mining timber is supplied from both Government forests and private farms. The state forests of Sindh provide only about 3-5% of total mining timber and rest, i.e. 95-97%, is obtained from farm lands. During 1985, a total of 2,700 cubic meters of mining timber was supplied from state forests and 85,000 cu.m. from private farm lands against a total demand of 101,800 cu.m. (i.e. 86%), while in the year 1989, approximately 4,000 cu.m. of mining timber was supplied from Government managed forests of Sindh while 90,000 cu.m. of mining timber was produced on the farm lands against a demand of 140,000 cu.m. (64%) which is expected to increase to 225,000 cu.m. by the year 1995. Thus the gap between supply and demand is widening.

Marketing of Mining Timber:- The method of sale of mining timber differs in Government managed forests and farm lands. From the state owned riverain forests, the mining timber is sold along with other timber and firewood. Special operations are not carried out for extraction of mining timber from these forests. The wood is felled and transported to the sale depot departmentally, where sorting of timber into various classes and into firewood is undertaken which are stacked separately. However, a sale-lot contains all tree, i.e. timber, fuel wood and pit props, which is then sold in open auction. The contractor then sells the material in the market or to mine owners directly. The contractors are required to supply the timber at mining site.

This method of procurement of mining timber by the coal mines from the contractors leads to a very weak control on quality of mining timber supplied. Besides the prices are high and contractors start indulging in malpractices by forming 'rings' and dictating their own terms.

In order to establish an alternate source of supply, the Sindh Forest Department and Pakistan Mineral Development Corporation entered into an agreement in 1981 for supply of mining timber on previously negotiated rates. As such Pakistan Mineral Development Corporation started purchasing part of its requirements directly from Sindh Forest Department, thus eliminating the middleman.

The demand and supply position of mining timber from Sindh Forest Department to Pakistan Mineral Development Corporation is given in the following table:

Year	Quality in m ³			
	Demand of P.M.D.C.		Supplied by Sindh F.D.	
	<u>Pit props</u>	<u>Planks</u>	<u>Pit props</u>	<u>Planks</u>
1981-82	3,520	-	1,054	-
1982-83	4,450	1,755	785	131

Perusal of the table, will reveal that Sindh Forest Department could only supply 30% of indented material in the first year and 27% pit props and 11.5% of planks in the second year. After June, 1982, the Sindh Forest Department declined to supply mining timber to the Pakistan Mineral Development Corporation due to the reason that the inspectors employed by Pakistan Mineral Development Corporation rejected the material on one pretext or the other, and their staff were not technically sound to control the quality of the material.

Tree crop raised on farm lands is sold as standing crop by the agriculturist to the petty contractors. All the felling, conversion and transportation operations are carried out by the contractors. The material from the farm land is either brought to the markets at Hala, Saeedabad, Hyderabad and Sukkur and then supplied to mines owners or it is directly supplied to mines from the farm lands. The prices of various grades of mining timber in various markets is given in Appendix II.

Prices of mining timber are almost stable as there are only few contractors responsible to supply mining timber to the mines in Sindh and Balochistan. The contractors purchase mining timber from Forest Department in converted form and from farm lands as standing trees. They as such control the market and determine the rates of sale by themselves.

The demand of mining timber is also dependent on season. It is maximum in winter months, i.e. from September to March and minimum in summer, because mining is done in cold season, and it becomes difficult for mine workers to work in underground mines several hundred feet below ground level in hot summer months.

Production of babul timber in state riverain forests is decreasing, due to their gradual degradation on account of several factors, the chief among them being less inundation during 'Abkalani' and consequent less regeneration areas under Babul.

Grading of Mining Timber:- Mining timber falls into two general groups, round and sawn, the former constituting more than 70% of the total amount of mining timber used. Cost is the principal factor governing the selection of round timbers.

Round timbers are used almost exclusively, where the duration of workings does not exceed the service expectancy of wood or where it is impossible to salvage the timber as the mine advances. Sawn timbers, on the other hand, are used for more or less permanent installations. Appendix I, indicates grades of mining timber.

A systematic survey of Hurries, deterring their total area, their per acre yield of small timber at different ages and spacings, with or without fertilization, number of practicing as well as prospective farmers, and a detailed study of different silvicultural practices and market mechanisms etc. etc. are needed.

However, in order to cope with increasing demand of mining timber the following general strategy is suggested:

1. Area of Block Plantations of Babul (Hurries) on private lands which are the main source of supply small mining timber (pit-props) be increased 2-3 times than at present by providing incentives.
2. Riverain forest areas receiving regular irrigation supplies naturally or otherwise, be clearly demarcated and reserved for raising of mining timber.
3. In irrigated forest plantations in Kotri, Sukkur and Guddu Barrage Zones, areas to raise Babul plantations on "hurrie" pattern be demarcated and managed on short rotations of six to eight years to produce small timber (pit props). A 'small timber' working circle be provided in their working plans.
4. To find out through research, the ways and means to increase the per hectare yield of mining timber by intensive management practices.
5. To find out the suitability of those species which can be used in mine supports along with Babul timber like Eucalyptii etc.
6. To increase the life of mining timber by treating it with suitable preservatives so as the same timber can be used for longer period than presently is the case.
7. To find out suitability of substitute materials such as steel and concrete, which could also be used along with Babul timber to supplement the latter's existing supply.

WOOD REQUIREMENTS OF THE MINING INDUSTRY

By

Mian Rafiq Ahmad
Chairman PMOA

and

Engr. Mohammad Khalid Parvaiz
General Secretary IMEP

Forests or Minerals both have origin from earth and share the common objective of service to the mankind. Both act as stabilizers for the state of the earth, and when removed, destabilize the land or rocks, where these exist. The de-stabilization in mining is controlled through artificial supports, where again timber is used and thus mining and timber are complementary to each other. No mining can be conceived without timber support.

Ever since the creation of Pakistan timber for use in mining has been a matter of concern for the mine operators. The major source of supply for Punjab and NWFP have been the unorganized privately owned plantations and that for Sindh and Balochistan. Seventy percent of timber comes from "Hurries" (private plantations) and rest from the Forests in Sindh.

The private sources of timber supply, except that of Sindh are now gradually dwindling. Firstly, because the farmer's income from cash crops has increased manifold, the supplementary income from trees because of long gestation period, is no longer attractive. Secondly, because of the increased mining activity, the demand of timber has increased and private plantations are not capable of meeting the demand. As a result of the above, timber for mines is becoming scarce, and whatever timber is available, is not of the required standard, both in sizes and strength.

How should this gap be filled. The cue was given in the International seminar on Pakistan Forestry Policy in March 1989. The seminar adopted an important recommendation under Inter-sectoral linkages, which read as below:

"In order to meet current demands and to plan to meet future demands, close linkages should be forged and maintained between the forest departments and all wood based industries".

It appears that the present Seminar on "wood producers and wood using industries", is a step towards implementation of this recommendation and future planning and development project by the provincial forest departments, will henceforth

take guidance from the conclusions of this Seminar. The Mining industry welcomes this initiative, which is probably the first visible effort by the Forest Department for this sector.

Before we revert to the actual subject of this paper, which aims at an assessment of the requirements of timber for mining, it seems appropriate to have an idea of the advantages, which wood supports have over other means of support. It is universally accepted that as an instrument of safety for the workers, as well as conservation of minerals, areas where from excavation has taken place should be artificially supported. Timber is the oldest means of support. In our geological conditions, because of the flexibility, convenience in handling and above all the cost factor, it is the obvious choice over man made supports. Timber has an additional advantage. It given warning before collapse, which other sophisticated supports do not provide. It is therefore, for our working conditions the most suitable underground means of support of roof and sides.

In the absence of reliable statistics, it is very difficult to estimate the wood requirements for local mining. The document "An estimate of timber trends in Pakistan", published by the Pakistan Forest Institute, Peshawar, shows the requirements of timber for mining at 68 thousands cu.m. in 1965 and the Projected demand in the year 2000 has been shown as 70 thousand cu.m. These figures do not appear to be realistic in view of the fact that the document's caption classifies it as estimated "trends".

Because of this uncertainty and for lack of interaction between Forests and Mineral sectors in the past, no exercise has been done which could act as a data base for current and future requirements of timber. The authors, therefore, have attempted to adopt indirect ways to arrive at reasonably correct requirements of timber. The total expenditure incurred by a number of companies on mine timber has been taken into account, then based on the prevalent market rates, the timber consumed in cubic feet has been calculated. The product mix classifications below, however are the results or experience in practical mining. In Punjab the quantity of timber consumed in different sizes are:-

<u>Size</u>	<u>Timber in m.sft.</u>
4 ft	.30
5 ft	.20
6 ft	.30
7-8 ft	.12
wood planks & others	<u>.08</u>
	<u>Total: 1.00</u>

The underground mining in Punjab is almost entirely for

coal, hence the use of timber in Punjab can be regarded totally for coal mining both for the prospecting and exploitation stage. The reported production of coal in Punjab is about 0.5 million tons, therefore, one tone of coal raised is consumed 2 cu.ft. of timber. This formula though not very scientific will hold good in similar geological and underground conditions and frequency of repair in the mine roadways. Based on this correlation and assuming similar geological and underground conditions in other provinces, the present consumption of timber can be put at 5.6 million feet for 2.8 million tons of coal now raised annually. The percentage of product mix being:

4 ft	15%
5 ft	25%
6 ft	30%
7-8 ft	15%
Wood Planks	15%

As a result of thumb, the diameter of the mining timber required for props should be the same in inches as its length in feet. This product mix is based on the practical use of timber in Punjab but the above percentage cannot be rigidly true where mining conditions are different from Punjab coal-field, where the seams are thicker, frequency of repair is different and the sizes of props used is longer than those used in Punjab. In Sindh and Balochistan props upto 11 ft. are used.

The seventh five years plan envisages increase in production upto 5.4 million tons which will correspond to 10.8 million cu.ft. of timber for use in the mines. This sharp rise in the demand of timber call for integrated inter-sectoral efforts so as to assure continued supply of mining timber to the mineral sector. Here, again, we have to take guidance from the deliberations of the Seminar on Forestry Policy in 1989 and we take the liberty of quoting recommendations on "future objectives and directions" with regard to economical/industrial forestry, and we quote.

"Irrigated plantations, which cover nearly 75,000 ha. of land, are perhaps the most important forest resources in the Punjab and Sindh. They are in direct competition with agriculture, as they occupy some of the most fertile land in the plains and use substantial amounts of irrigation water which is becoming increasingly scarce. At present, they have not only stagnated in productivity, but their management has also become obsolete".

"The working group believes that they should be managed on the basis of relative economic efficiency. As a matter of policy, they should no longer be treated as fuelwood plantation. Instead of growing traditional fuelwood species, they should be switched over to produce industrial

raw material. To achieve this objective, it might be necessary to mechanize some of the operations, such as land preparation, harvesting, water lifting, etc., which would make the enterprise a little capital intensive".

"The working group thinks that it might be possible to involve private sector in raising industrial wood plantation on a partnership basis in which the land and the expertise may come from the Government and the capital from the private enterprises. In areas where private sector is shy to come forward, industrial woods should be raised departmentally by improving the internal irrigation system".

We are hopeful that if an attractive package is developed, through dialogue, at least some big mine operators will come forward to take advantage of this scheme. It would relieve them from a great pressure connected with the procurement of good quality mine timber so vitally essential for the mining operations.

This should not be the end all of every thing. Although the farmers are losing interest in growing trees, for various reasons. In a country like Pakistan which is endowed with very little Forest resources, we should not allow this source to go unproductive by default.

To develop this potential alternate resource, an organized campaign should be launched to motivate the farmer not to discontinue plantation in fallow or marginal land. The Forest Department should on the other hand provide facilities, like extension services, planting stock and where necessary credit facilities to provide motivation to farmers to plant the required species multipurpose fast growing trees. The institutional hurdles, if any, should be unmounted either through legislation or otherwise.

The future plan of action in our opinion should be a mix of the above two options. The sooner it is taken up for implementation the better. A word of caution. If we fail to grow timber at the rate at which we want our coal production to increase for generation of electricity we shall be held responsible for betrayal of national objective viz. increased energy for survival.

PRODUCTION OF WOOD FOR HOUSING CONSTRUCTION IN AZAD KASHMIR

By

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I. INTRODUCTION

Location

The territory of Azad Jammu and Kashmir is situated between 73° - 75° East longitude and 33° - 36° North latitude. It lies at the base of the Himalayas in the North-eastern part of Pakistan.

Administrative set-up

Azad Kashmir territory is divided in to five administrative districts:

Muzaffarabad, Bagh, Poonch, Kotli and Mirpur

Area

The total land mass of Azad Jammu and Kashmir is 13,297 sq.km. The area of east district constitutes the following percentage of the total area.

Muzaffarabad	46%
Bagh	10%
Poonch	11%
Kotli	10%
Mirpur	23%

Geographical features

More than 50% of the area of this territory is hilly characterized by rugged terrain, heavily eroded and with undulating topography. The districts of Muzaffarabad, Poonch and Bagh are mostly mountainous where as districts of Kotli and Mirpur can closely be called as plains in the foot hills. The state can, therefore, topographically be classified into mountainous regions and foot hills. The territory of AJK contains altitude ranging from 275 meters in the south to 6325 meters in the north. Bulk of the territory constitutes the catchment area of rivers Neelum Jhelum and Poonch all flowing into Mangla Reservoir; while a part of the area of district Mirpur (Bhimber sub-division) is situated in the catchment area of river Chinab. The climate of the territory is sub-tropical highland type with an annual precipitation of about 1500 mm. In the southwest part the precipitation is in the form of rainfall whereas in the north and eastern part it consists mainly of snowfall. The snow line in winter is about 1200 meters and in summer about 3300 meters.

Population

Human Population

The population of AJK was 0.8 million in 1947 at the time of partition. It has now increased to 2.388 million (1988), with an overall population density of 180 persons per sq.km. The annual growth rate is 2.7%. The rural population is 92% and the remaining 8% is urban. The district wise constitution of the population is as follows:

Muzaffarabad	0.562	million
Bagh	0.380	"
Poonch	0.490	"
Kotli	0.440	"
Mirpur	<u>0.516</u>	"
<u>Total:</u>	<u>2.388</u>	

Animal Population

The total animal population is estimated as 2.180 million heads (1986). This is besides the nomadic population which is estimated to be 0.136 million heads visiting AJK territory every year. The nomadic graziers adversely affect the regeneration of the coniferous forests. The forests are heavily grazed and the regeneration is not keeping pace with the cutting rate. As a result the forest area has not only become open, but also has shrunk physically. The animal population in each district is shown as follows:

<u>Type</u>	<u>Total Animals</u> <u>(million heads)</u>
Cattle	0.583
Buffaloes	0.464
Sheep	0.261
Goats	0.818
Others	<u>0.054</u>
<u>TOTAL:</u>	<u>2.180</u>

Land Use

About 42% of the total land mass in AJK is under forests where as about 13% area is under cultivation. The agricultural holdings particularly in the district of Muzaffarabad is highly fragmented into parcels. Cultivated area per family averages 1.39⁴ acres. The unculturable waste constitutes about 42% of the total land mass and mainly consists of depleted range lands. The land utilization situation in AJK is tabulated as under:

<u>Land</u> <u>Utilization</u>	<u>Area</u> <u>(in Acres)</u>	<u>% of total</u> <u>land area</u>
Forests	14,00,415	42.62
Under cultivation	4,23,662	12.88
Culturable wastes	83,001	2.53
Un-culturable wastes	<u>13,78,982</u>	<u>41.97</u>
<u>TOTAL:</u>	<u>32,86,060</u>	<u>100.00</u>

II. FOREST AREA AND GROWING STOCK

Azad Kashmir territory is the main commercial species mixed with evergreen hardwood shrubs, whereas in the temperate zone forests, Deodar, Blue pine, Fir and Spruce are the principal species interspersed with some associated broad-leaved species such as Ash, Walnut, Maple and others. According to the recent management plans the total growing stock of commercial forests is as under:

<u>Species</u>	<u>Growing stock (cft.)</u>	<u>Percentage of Total</u>
Deodar	176.717	15
Kail	327.356	27
Fir/spruce	482.229	40
Chir	<u>216.433</u>	<u>18</u>
TOTAL:	<u>1202.735</u>	<u>100</u>

Fir/Spruce constitute the bulk of the growing stock which is 40% followed by Blue pine.

III. SUPPLY AND DEMAND FOR WOOD

Physiographic and climatic conditions are very conducive for tree raising. with high rate of population growth fuel wood usage in AJK represents by far the largest need to be met from the forests. The prime cause for large scale deforestation is the local shortage of fuel wood. In addition, the general shortage of timber for construction and general use in Pakistan is also exerting a strong pressure. Population pressure has accelerated the deforestation process considerably. Adverse effect on forest resources is also due to grazing which is generally exercised without adequate control and extends to nomadic population which enter from the Punjab and NWFP provinces to herd their livestock in AJK alpine range lands during the summer season.

People have an easy access to the Government forests as under the customary right they are entitled to remove dead wood, branches and non commercial timber without payment and the abuse of this right is very common. The abuse of customary rights and of the concessionaire agreements granted for timber limit the role of forest department as the agency of Government in the exercise of management of the forest. Resultantly the department is in open conflict with a high proportion of the population. There are about 1,23,870 cases of forest offenses currently under trial.

The customary right is an important factor contributing to the lack of motivation on the part of farmers to grow trees at their farm lands for house hold consumption. This leads to misuse of the state owned forests by the local population.

Annual prescribed yield

The annual yield from the state forests based on the recent management plans is 7.812 million cft. (standing volume) as shown in the following table.

<u>Species</u>	<u>For commercial sale</u>	<u>For concessionists</u>
	(in million cft).	
Deodar	1.125	0.030
Kail	1.732	0.538
Fir/Spruce	3.099	0.378
Chir	<u>0.633</u>	<u>0.279</u>
Total:	6.589	1.223
<u>Percentage:</u>	<u>84</u>	<u>18</u>

The annual prescribed yield from the state forests constitute about 0.6% of the total growing stock. The peculiar topographical and socio-economic conditions prevailing in Azad Kashmir do not warrant adoption of an intensive system of management and on this account the annual cut has been kept low. Chir pine and Kail forest at easy terrain with dense stocking are generally managed mixed forest of Deodar, Kail and Fir/Spruce which occur mostly in steep to precipitous areas are worked the under selection system.

Forest exploitation

The forests of the state are being exploited mainly through AKLASC (Azad Kashmir Logging and Sawmill Corporation), a semi-autonomous body. This project was conceived in the late sixties with the object of optimum utilization of the vast forest resources of AJK, particularly Neelum Valley, by:

- i) Improving the efficiency of forest exploitation, carriage and conversion operations;
- ii) Adding value to the timber which in conventional form was being marketed either in round or in big sawn form;
- iii) Reducing wastage which in forest ranged between 15% (for round) and over 45% (for scantlings); and
- iv) Utilization of forest and mill waste.

Entire timber out-turn from Neelum Valley was suggested to be floated down the Jhelum river and collected in the Mangla lake. On this basis, the location of sawing complex was located at Mirpur. The corporation started forest operations and saw-milling during 1971. In order to avoid abnormal river losses, the timber is being transported by road since long.

Notwithstanding some improvements with regard to installation of skyline cranes and construction of forest roads, AKLASC

could not achieve all of its objectives due to obvious reasons. Also little attention has been paid towards the introduction of mechanized felling, conversion and extraction with the result that the wastage of timber still remains the same as it was when the forests were leased-out to contractors.

Forest department takes out timber mostly from petty felling like, dry, fallen and up-rooted trees etc.

Provision of timber at subsidized rates

Sale of timber at concession rates: 1.223 million cft. standing volume of Kail, Fir/Spruce and Chil is issued annually at T.D (Timber Distribution) quota at concessional (free of cost, concession and zamindari) rates to the concessionists residing within concession zone (with 5 miles from demarcated forests boundary). This volume is issued for building their houses for residential purposes and is only for the bonafied personal use of the concessionists.

The current sanctioned rates for standing trees are:

Species	Lease rates	Standard rates	Zamindari rates	Concession rates
Deodar	40.08	20.00	10.00	0.62*
Kail	25.65	4.25	2.10	0.13
Fir/ Spruce	14.49	4.60	2.30	0.14
Chil	<u>17.25</u>	<u>2.00</u>	<u>1.00</u>	<u>0.18</u>
Av. rates	19.13	3.62	1.80	0.11
<u>(excluding deodar)</u>				

*Deodar is not issued at concessional rate.

Sale of timber at local depot rates: For meeting the timber demand for construction of residential buildings in towns and at places beyond concessional zones about 0.410 million cft. timber of deodar, kail, fir/spruce and chil is issued every year at subsidized local depot rates from timber sale depots established through the territory.

The current local depot rates are:

Species	I-class timber	II-class timber	III-class timber	Average rates
	(Rs. per cft.)			
Deodar				
- Logs	65	55	49	56.33
- Scantlings	96	83	66	81.66
Kail				
- Logs	50	41	36	42.33
- Scantlings	66	56	49	57.00
Fir/Spruce				
- Logs	41	45	48	44.66
- Scantlings	55	41	35	43.66
Chil				
- Logs	49	39	28	38.66
- Scantlings	63	49	35	49.00

Annual sales: Average annual sales of timber (during the last two years) at local depot rates are:

Deodar	=	1,11,700 cft.
Kail	=	2,03,400 cft.
Spruce/Fir	=	52,200 cft.
Chil	=	<u>42,700 cft.</u>
TOTAL	=	<u>4,10,000 cft.</u>

Current market rates of timber: Against the above mentioned local depot rates, the current market (average auction) rates are as under:

<u>Species</u>	<u>Average rate</u> <u>(Rs./cft.)</u>
Deodar	
- Logs	137.33
- Scantlings	167.66
Kail	
- Logs	89.33
- Scantlings	125.66
Fir/Spruce	
- Logs	57.33
- Scantlings	93.66
Chil	
- Logs	52.00
- Scantlings	65.66

Demands

The average quantity of fuel wood consumed per household in AJK is estimated to be 392 cft. (one metric ton per person) per year. At high altitudes greater quantities of wood are consumed for heating purposes in the winter season. Similarly the average quantity of timber consumed is estimated 8.57 cft. per person per year in rural areas and 4.29 cft. per person per year in urban area. With the population growing at about 3% per annum and the increasing oil and gas prices the fuel wood and timber requirements are bound to increase every year.

The Annual quantity of timber and fuel wood requirement is indicated in the following tables:

A. FUEL WOOD (Million cft.)

<u>Source</u>	<u>Urban</u>	<u>Rural</u>	<u>Total</u>
Total	10.70	123.34	134.04
	(100%)	(100%)	
Alternate sources	6.20	2.50	8.70
	(58%)	(2%)	
Outside AJK	1.60	-	1.60
	(15%)		

Farmlands	0.21 (2%)	30.80 (25%)	31.01
Sub-Total	8.01 (75%)	33.30 (27%)	41.31
Farm state forest	2.69 (25%)	90.04 (73%)	92.73

B. TIMBER (million cft.)

Total	0.93 (100%)	18.88 (100%)	19.81
Alternate sources	0.23 (25%)	0.94 (5%)	1.17
Outside AJK	0.14 (15%)	-	0.14
Farmlands	0.02 (2%)	2.83 (15%)	2.85
Sub-Total	0.39 (42%)	3.78 (20%)	15.17
Farm state forest	0.54 (58%)	15.10 (80%)	15.64

Thus the total drain on the state owned forests both for timber and fuel wood is 108.37 million cft. per annum as given in the above mentioned tables.

Export of timber

According to a report published in the State of Forestry in Pakistan (1987) by PFI, Peshawar the out turn of timber from state controlled forests in Pakistan averaged 10.346 million cft. per annum during the period 1976-77 to 1986-87. The AJK was the second largest contributor to timber production after NWFP as follows:

NWFP	39.0%
Azad Kashmir	22.0%
Sindh	12.0%
Punjab	14.0%
Northern Areas	8.0%

In the above quantity of timber the ratio of coniferous to hard wood has been 72 and 28%, respectively. There is a growing market for AJK wood and wood products in Pakistan. The total commercial export of timber to Pakistan and local sales during the last five years is shown in the following tables:

S. No.	Year	<u>TIMBER EXTRACTED</u> (million cft.)		Total
		<u>Extraction by AKLASC</u>	<u>Extraction by Forest Dept.</u>	
1.	1984-85	2.413	1.009	3.422
2.	1985-86	2.183	0.642	2.825
3.	1986-87	2.299	0.630	2.929
4.	1987-88	2.652	0.743	3.395
5.	1988-89	2.171	0.765	2.936

TIMBER EXPORTED
(million cft.)

S. No.	Year	Exported by AKLASC	Exported by Forest Dept.	Total
1.	1984-85	2.368	0.648	33.016
2.	1985-86	2.196	0.464	2.660
3.	1986-87	1.969	0.302	2.271
4.	1987-88	2.362	0.597	2.959
5.	1988-89	2.247	0.646	2.893

LOCAL SALE OF TIMBER
(million cft.)

S. No.	Year	Sold by AKLASC	Sold by Forest Dept.	Total
1.	1984-85	0.490	0.173	0.663
2.	1985-86	0.370	0.130	0.500
3.	1986-87	0.469	0.202	0.671
4.	1987-88	0.483	0.328	0.811
5.	1988-89	0.364	0.199	0.563

Forests play a vital role in the economy of AJK. It is because of the sale of the timber as indicated above forest contribute about 60% to the Government. The income through forest is mainly from the sale of timber which is 80%, followed by resin at 15%, and 5% is from other sources like medicinal herbs and miscellaneous. The revenue target for 1989-90 is proposed as Rs.200 million. In case the above quantities of timber shown as exported are utilized within state, there will be no revenue to the Government. Further the timber issued for the local bonafied requirement of the people at concession rate and that at local depot rates is about 200 times and 4 times, respectively, less than that of commercial rates/sales.

Annual subsidy on timber

The annual subsidy on timber issued as Timber Distribution (T.D.) quota and from timber sale depots at local depot rates is estimated approximately as follows:

Sale at subsidy rates (2% at free of cost, 88% at concession rate & 10% at zamindari rate).	=	Rs.28.78 million
Subsidy on sale of timber	=	<u>Rs. 4.38 million</u>
Total Annual Subsidy	=	<u>Rs.33.16 million</u>

This subsidy is borne by the department in the form of equivalent shortage in revenue earnings every year. With the increase in population and the construction boom in the territory, there is persistent pressure to increase the quota of concession as well as increase in the allocation of timber supplied at local depot rates.

IV. SHORTFALLS IN SUPPLY AND DEMAND

From the above comparisons it will be seen that there is a tremendous short fall of 100.668 million cft. (standing volume) per year which is about 13 times more than that of the total annual prescribed yield. This situation is very alarming and needs immediate consideration at Government level. Obviously, the difference is met out as unauthorized removal from the state forests. Suppose the Government plans to remove this gap and wants to establish wood plantations, it would require a very heavy financial outlay of about Rs.600 million per annum which is not possible as it is far beyond the Government's fiscal capacity.

V. DEVELOPMENT OUTLAYS FOR FORESTRY SECTOR

Although AJK Government has all along been aware of the importance of forest and forestry resources, but due to the financial limitations and priorities of other sectors of communication, health and education adequate funds could not be allocated to this sector as is evident from the following table:

DEVELOPMENT OUT LAY
(million Rs.)

<u>S. No.</u>	<u>Plan Period</u>	<u>Total Allocation for AJK.</u>	<u>Allocation for forestry Sector Total</u>	<u>% of total</u>
1.	1st Plan 1955-60	10.00	0.20	2
2.	2nd Plan 1960-65	39.42	3.075	8
3.	3rd Plan 1965-70	88.05	10.51	12
4.	4th Plan 1970-65	234.13	11.68	5
5.	Extra Plan 1975-78	370.00	15.72	4
6.	5th Plan 1978-83	1444.00	57.01	4
7.	6th Plan 1983-88	4112.00	154.18	4
8.	*7th Plan 1988-93	5219.80	241.00	5
TOTAL		11517.34	493.36	4

*Proposed allocation for 7th Five Year Plan.

VI. REFORESTATION/AFFORESTATION PROGRAM

With the meager funds available as indicated above the following reforestation/afforestation targets were achieved.

PLANTATION TARGETS AND ACHIEVEMENTS (Acres)

<u>S. No.</u>	<u>Plan Period</u>	<u>Plantation Targets</u>	<u>Plantation Achievements</u>	<u>Raising of Nurseries Targets</u>	<u>Raising of Nurseries Achievements</u>
1.	1st Plan 1955-60	-	-	-	-
2.	2nd Plan 1960-65	14,000	14,174	-	-
3.	3rd Plan 1965-70	55,000	57,520	124	124
4.	4th Plan 1970-65	58,850	61,865	124	124
5.	Extra Plan 1975-78	34,000	34,583	124	124
6.	5th Plan 1978-83	39,960	39,402	155	155
7.	6th Plan 1983-88	62,335	66,066	152	152
8.	*7th Plan <u>1988-93</u>	1,11,240	1,11,240	260	160

*Proposed

VII. SUGGESTIONS

1. In view of the existing short fall in timber and fuel wood and accelerated demand due to ever increasing population emphasis should be placed on planting fast growing tree species in and around villages and the state forests. Moreover use of fuel wood substitutes such as gas, kerosene oil and hydro-electric power should be increased.
2. The management system should be intensified to increase the productivity provided the plantation establishment is guaranteed which is possible if the socio-economic factors do not interfere with the program.
3. To combat the problem of socio-economic inferences, orientation of the rural masses and political leaders will be necessary. This should also include visits of such political leaders to the developed countries where natural resources are valued at the top priority.
4. Massive plantation should be raised on private lands under

the social forestry projects using and strengthening the institutional structures at the village level.

5. A change in the farmers land use strategy should be effected.
6. In the hilly snow bound areas CGI sheets should be provided to the people at subsidized rates to reduce the use of timber.
7. Adequate funds should be provided for publicity and mass media.
8. A heavy incidence of encroachment should be stopped.
9. Enormous damage to the regeneration areas due to in and out flow of nomadic graziers should be completely stopped.
10. Sufficient funds should be placed for rehabilitation of the depleted watersheds.
11. The inadequacy of the funds for forestry projects has been an important limiting factor for the development of the forestry resource in Azad Kashmir which need to be enhanced considerably.

FARM FORESTRY RESEARCH IN PAKISTAN

BY

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Introduction

The scientific discipline of the farm forestry has recently been recognized and developed. However, in practice, the farmers have been growing trees on their farm-lands for many centuries all over the world for a variety of benefits; e.g. shade, shelter, food, animal fodder, fuelwood, construction timber, soil improvement, etc. In addition some countries, such as Pakistan, because of deficiency of natural forests, depend heavily on tree grown on the farmlands for meeting the fuelwood and timber needs of the general population. Further, tree and crop culture are highly interlinked activities. It is commonly observed that the extent and pattern of tree planting on the farmlands varies with the size of land holding, availability of irrigation water and with intensity of agriculture. The agriculture is fairly intensely practiced on reasonable size holdings in irrigated plains of Pakistan. Here trees are generally planted in large number in the form of rows along water courses and boundaries of the farm. Some times other forms of planting such as inter-cropping are also practiced. Only forest growing trees of semul, poplar, shisham, bakain, mulberry and kikar are planted in this tract. On the other hand, in the barani (rain-fed) areas, which depend upon timely rainfalls, agriculture is not practiced intensely, land holdings are small and few trees are allowed to grow naturally in scattered form on the farmlands. These are generally slow growing hardy species and include ber, kikar, bakain, mulberry, eucalypts, jhand, ghaz and mesquite.

Though it was known for quite sometime that trees growing on farmlands are contributing substantially towards meeting fuelwood and timber requirements in many countries, still, farm forestry as developmental activity started receiving attention of planners only during last two decades. This was a clear shift of emphasis on their part from development of multiple-use management of natural and man-made forests on public land. This was done on the basis of realization that social and economic benefits of many developmental measures were not reaching small farmers in the developing countries and consequently their economic conditions were not improved. Therefore trees growing, being essential and integral part of farmers' activities, must be given special recognition. In this regards, the term farm forestry is used interchangeably with agroforestry, social forestry and community forestry in the literature. The role of multiple purpose trees is also being increasingly mentioned in it.

Earlier, farm forestry research consisted of study of size, placement and composition of shelterbelts and wind breaks to protect agriculture crops from mitigating effects of cold and hot winds in Europe and America and determining their influence on agriculture crop production. Presently, it has become part of forestry research and teaching program in many universities and institutions all over the world, especially in the countries of Asia and Africa. In Pakistan, the importance of farm forestry including shelterbelts/wind-breaks was felt soon after it independence because 60-70 percent of the area of country has arid and semi-arid climate and is susceptible to wind erosion (Khan, 1949). For this reason, a suggestion was made in 1955 about reserving at least 10 percent of land and irrigation water for growing trees in all newly colonized areas. Although this was not strictly followed in subsequent years, still, a start was made in this regards in Thal in early fifties and later on in Guddu and G. M. Barrage irrigated areas in Sindh in sixties. In the meantime tree growth increased manifolds on the farms throughout the country as a result of intensification of agriculture and tree plantation motivational campaign launched by the provincial forest departments every year. At present, about 90% of fuel-wood and 50.3% of timber requirements in the country are met by trees growing on the farmlands, as natural and man-made forests are totally insufficient for this purpose. The farm forestry research was started at the Pakistan Forest Institute Peshawar, about twenty years ago. Later on, other institutions (Pakistan Agricultural Research Council, Punjab Agriculture University and Punjab Forestry Research Institute) joined this effort. Presently, research program in farm forestry covers the following fields:

- Species selection and seed supplies
- Tree-crop interface studies
- Wood technology and utilization
- Wood supply and demand

In addition to above, some studies have been started recently in fields of ecology and hydrology as far as these affect farm forestry practices in Pakistan. Their results would be available after some years. However, the progress of research in above fields is briefly presented below:

Species selection and seed supplies

It was realized in the beginning that only fast growing tree species and varieties would be acceptable to the farmer to enable them to receive early returns and thus motivate them to grow trees extensively on their farmlands. Therefore, research studies were initiated with eucalypts and poplars in the sixties (Qadir, 1965; Siddiqui and Hussain, 1966). As a result of these studies, a number of clones of poplar and species of eucalypts, notably, Populus euramericana and Eucalyptus camaldulensis, were introduced successfully. Presently,

the farmers of NWFP are growing poplar trees extensively on their farms in Hazara, Peshawar and Swat regions. Eucalyptus camaldulensis is also extensively planted by them almost all over the country. Both have shown a high rate of growth and benefited the farmers in a number of ways. The Institute is supplying seed and planting stock of improved varieties of these species to the farmers. The research is continued on poplar and eucalyptus to bring about further improvement in them. In addition, studies are also underway to select suitable species of Paulownia Acacia, Prosopis and Leucaena for high growth rate and to compare their performance with local species such as shisham, semul, kikar, willows, etc. under farmland conditions (Siddiqui and Hussain, 1984; Siddiqui and Khan, 1990).

Table 1. Crop yields with different combination of crops and trees in Peshawar and Charsadda Districts

Crop	Associa- ted trees	Age years	Tree row orienta- tion	Crop yield (tonnes/ha)			Percentage Differences
				With Trees	Without Trees	Difference in yield	
Sugar- cane	Shisham	14	NS	61.659	67.703	6.044	- 9.8
	Shisham	11	EW	63.305	67.703	4.398	- 6.9
	Poplar	4	NS	57.395	67.703	10.307	-17.9
	Poplar	6	EW	59.883	67.703	7.82	-13.0
	Willow	8	NS	61.562	67.703	6.141	-10.0
	Willow	11	EW	62.92	67.703	4.783	- 7.6
Wheat	Shisham	7	NS	4.096	4.134	0.038	- 0.9
	Shisham	10	EW	4.123	4.134	0.011	- 0.3
	Poplar	6	NS	4.07	4.134	0.064	- 1.6
	Poplar	6	EW	4.087	4.134	0.047	- 1.1
	Willow	10	NS	4.112	4.134	0.022	- 0.5
	Willow	11	EW	4.139	4.134	0.005	0.1
S.beet	Shisham	11	NS	33.011	33.183	0.172	- 0.5
	Shisham	12	EW	34.159	33.183	0.976	3.0
	Poplar	6	NS	32.599	33.183	0.584	- 1.8
	Poplar	3	EW	33.028	33.183	0.155	- 0.5
Barseem	Shisham	14	NS	17.112	17.215	0.103	- 0.6
	Poplar	4	NS	16.901	17.215	0.315	- 1.8

Tree-crop interface

Though trees are grown in both rows and scattered form, still, studies to-date are confined to the investigation of effects of trees on agriculture crop production when grown in the form of rows in shelterbelts and intercropping. This is due to the fact that a number of parameters can be conveniently defined and studied in formal investigations only when trees are grown in this manner. Voluminous data of local and foreign origin, on this subject are available in the literature (Sheikh and Haq, 1986; Siddiqui, et. al., 1990).

Table 2. Effect of shelterbelts on the yield of agricultural crops at different localities.

Locality	Species	Age (Years)	Crop	% increase/decrease in yield	Positive effective distance from belt
1. Mirpur Khas (Sindh)	Eucalyptus camaldulensis (3 rows)	6	Wheat	3.1	15-180 (m)
			Cotton	36.3	15-165
2. Thal (Punjab)	i) Dalbergia sissoo (3 rows)	4	Wheat	0.1	5-50
	ii) Dalbergia sissoo (1 row)	20	Wheat	0.1	5-50
	iii) Dalbergia sissoo (1 row)	20	Wheat	0.2	5-22
	iv) Dalbergia sissoo (1 row)	18	Wheat	0.5	5-55
	v) Dalbergia sissoo (1 row)	25	Wheat	13.3	5-70
	vi) Tamarix aphylla (1 row)	17	Wheat	0.2	20-90
	vii) Populus alamosa cv. I-214	12	Wheat	19.3	10-65
3. Mattani (NWFP)	Poplar (2 rows)	3	Sugar-cane	- 5.8	10-40
4. Charsadda (NWFP)	Poplar (4 rows)	4	Sugar-cane	-17.6	10-40
			Wheat	-45.7	-

Table 3. Financial analysis of intercropping of sugar cane and tree in Peshawar and Charsadda districts by discounting at 12%.

Tree Species	Age Years	Row orientation	Ann discounted net revenue		% increase/decrease
			intercropping	Control	
Poplar	6	E.W	5029	3858	(+) 30.35
Poplar	4	N.S	4734	4275	(+) 10.74
Shisham	11	E.W	2977	3040	(-) 2.07
Shisham	14	N.S	2448	2666	(-) 3.17
Willow	11	E.W	2748	3040	(-) 9.67
Willow	8	N.S	3166	3497	(-) 9.47

It is generally believed that trees have favorable influence on the crop yields. However, the trees compete with the crops for soil nutrients and moisture and adversely affect the crop growing adjacent to trees. Tree shade also affects crop production in a similar manner. A properly designed planting on the farmland may take up more than 5% of the land under cultivation with or without causing any reduction in crop yield. This is due to the fact that the organic matter

produced by the trees not only enhances the fertility of soil but also helps in improving its physical characters (Dunne and Leopold, 1978). The moisture holding and infiltration capacities as well as porosity of soil are increased while its bulk density is decreased with growing of trees (Lee, 1980). These conditions are favorable for all plant growth. The trees when grown in the form of shelterbelts protect the agronomic crops and fruit orchards from the hot and cold winds. The shelterbelts also decrease evapotranspiration rate of soil moisture and conserve it for the crops.

As far as productivity of the farmlands is concerned, crop yield may be reduced upto 15 meter distance from the tree rows but over all production of crops may become higher when compared to the productivity of the farm without shelterbelts (Sheikh and Haq, 1986). However, the net gains from growing of trees on the farm-lands depend upon the nature of agriculture crop, tree species and orientation of tree rows. The research and documentation in the field of economic benefit of agroforestry are limited in scope and are piecemeal in nature and generally based on tenuous assumptions. Few systematic studies carried out so far indicate an increase in net income on account of growth of trees on the farm (Jickling, 1989). The results of a study conducted by the Institute are presented in Table 1 and 2 (Siddiqui, *et. al.*, 1990).

Wood technology and utilization

A number of studies have also been carried out on wood technological properties and utilization of tree species which are commonly grown by the farmers. The wood physical and mechanical properties of poplar and eucalypts species are compared with shisham in Table 3. The data show that both poplar and eucalypts species produce wood which can be used for manufacture of a variety of products. These include particle board, wood cement board and bricks laminated wood, plywood, veneer and pulp (Siddiqui, *et. al.*, 1984). It may be mentioned here that poplar wood grown on the farmlands in NWFP is already used in large quantities in household construction, shuttering and packing cases and for manufacture of matches, sports goods and plywood. Eucalypt wood is expected to find many uses, once large supplies are available in suitable sizes from its plantations on state and farmlands.

A number of studies have also been carried out for manufacture of pulp and paper, plywood, cement-bonded board and bricks, particle-board, etc. Raw material requirements have also been determined for commercial production of these products (Tables 5 and 6).

Table 4. Physical and mechanical properties of P. euramericana, P. deltoides, Eucalyptus camaldulensis and Dalbergia sissoo in air dry condition.

Property	Species			
	Populus euramericana	Populus deltoides	Eucalyptus camaldulensis	Dalbergia sissoo
Basic density = O.D. wt./Green vol. (Kg/m ³)	330 (41)	390 (49)	705 (88)	801
Modulus of rupture (Kg/m ²)	641 (58)	818 (74)	1,009 (91)	1,107
Modulus of elasticity (Kg/m ²)	52,273 (44)	87,267 (74)	97,788 (83)	117,767
Impact bending (m-Kg/4 cm ²)	2.01	3.06	2.50	-
Max. Compressive strength parallel to grain (Kg/m ²)	230 (38)	385 (63)	497 (82)	609
Compressive strength parallel to grain at E.L. (Kg/m ²)	172 (49)	298 (84)	270 (77)	351
Compressive strength - to grain at E.L. (Kg/m ²)	25	38	-	-
Max. Shearing strength (Kg/m ²)	75 (60)	110 (89)	151 (122)	124
Max. Tensile strength - to grain (Kg/cm ²)	20 (35)	23 (40)	33 (57)	58
Cleavage (Kg/cm)	21	23	32	-
Hardness: Side: (Kg)	209 (24)	314 (36)	599 (68)	883
End: (Kg)	307 (33)	336 (36)	688 (74)	926

The values in the parenthesis represent the strength of different species as percentage of that of shisham (Dalbergia sissoo).

Wood supply and demand

A number of surveys have been carried out by the Pakistan Forest Institute over the years regarding wood supply and demand situation in the country. The results of some surveys are briefly described below:

1. Household energy survey

The above survey was conducted in Kohat district of NWFP and in Rawalpindi, Sialkot and Khushab districts in the Punjab province in 1988-89. The data showed that 64.4% of the house-

hold energy was obtained from fuelwood, 0.6% from liquified petroleum gas, 0.4% from kerosene and 34.0% from dung. Only 53% of the total fuelwood demand was met from trees growing on farm lands while the designated forest areas provided remaining 47% of the requirement of the supply area. It was also found that about 12% of the income was spent on fuel consumption. Per capita consumption of fuelwood was found to be 0.4 m³ in this survey. It also showed the following fuel consumption pattern on household basis:

Fuelwood	40.3%
Fuelwood and dung	35.3%
Dung only	8.0%
Kerosene	1.9%
L P G	1.9%
Mixed fuels	12.6%

The results clearly indicate that considerable planting of trees will have to be carried out on the farmlands in the coming years to meet the fuelwood needs of growing population, replace dung fuel with wood fuel and reduce pressure of tree cutting for fuelwood in the state forests.

2. Wood Industry Survey

A survey was also carried out to determine current and future raw material requirements of wood-based industries in the country, such as, tobacco curing, brick kilns, match, plywood particleboard and sports goods industries. The data are reproduced below:

Industry	No. of units	Wood industries survey	
		Wood requirement (m ³)	
		Current	Year 2000
Sports goods	250	67,870	103,460
Tobacco curing	1,500	22,680	23,360
Brick kilns	458	74,650	76,890
Plywood	10	107,000	180,000
Particleboard	2	18,460	36,920
Matches	9	18,070	24,200
TOTAL:	2,229	308,730	414,830

Unless tree plantation is carried out on a large scale, it would not be possible to meet raw material requirement of the wood based industry in the country in the coming years.

Table 5. Forest area requirement for a 100 tons/day pulp plant based on Eucalyptus camaldulensis wood

Pulping Process: Kraft Pulping; Unbleached Pulp Yield - 45%

Daily wood requirement for 100 tons Pulp Production

Age of Tree (yrs.)	4	6	8
O.D. Wood (tonnes)	222.22	222.22	222.22
Green Wood (tonnes)	377.78	377.78	377.78
Basic density (Kg/m ³)	466.00	539.00	582.00
Green volume (m ³)	476.87	412.28	381.82
Green volume (m ³) with 15% bark	548.40	474.12	439.09
Green volume (m ³) with 20% waste	<u>658.08</u>	<u>568.94</u>	<u>526.91</u>

Total Forest Area (Hectares) required

Age of Tree (Yrs.)	Tree Spacing Meters	Growth rate m ³ /ha/annum	Forest Area required(ha.)	
			For one day Production	For 300 days Production
4	1.5 x 1.5	35.637	18.47	5541
	3.0 x 1.8	28.532	23.06	6918
	3.0 x 3.0	21.368	30.80	9240
6	1.5 x 1.5	30.352	18.47	5622
	3.0 x 1.8	24.440	23.28	6984
	3.0 x 3.0	17.670	32.20	9660
8	1.5 x 1.5	25.298	20.83	6249
	3.0 x 1.8	16.522	31.89	9567
	3.0 x 3.0	17.532	30.05	9015

3. Farm land tree growth survey

An inventory of tree growth on farmlands of Pakistan is being carried out under a special project. It consists of determination of number of trees growing on the farm land and their species and size classification as well as total wood growing stock and its annual removals. The survey work is nearing completion in the NWFP. Some work has also been done in the Punjab province. The data would provide reliable estimates of wood supply and demand situation in different regions of Pakistan upon the completion of the survey in 3 years time. However, for the present, the data for Peshawar region and Sialkot and D. I. Khan districts are presented in Table 7 for comparison of wood supply and demand situation in them.

Table 6. Forest area requirement for a 100 tons/day pulp plant based on Eucalyptus camaldulensis wood

Pulping Process: Alkaline Peroxide Mechanical Pulping (APMP)
(Pulp Yield - 85%)

Daily wood requirement for 100 tons Pulp Production

Age of Tree (yrs.)	4	6	8
O.D. Wood (tonnes)	117.64	117.64	117.64
Green Wood (tonnes)	200.00	200.00	200.00
Basic density (Kg/m ³)	466.00	539.00	582.00
Green volume (m ³)	252.45	218.25	202.13
Green volume (m ³) with 15% bark	290.31	250.89	232.44
Green volume (m ³) with 20% waste	<u>348.37</u>	<u>301.17</u>	<u>279.00</u>

Total Forest Area (Hectares) required

Age of Tree (Yrs.)	Tree Spacing Meters	Growth rate m ³ /ha/annum	Forest Area required(ha.)	
			For one day Production	For 300 days Production
4	1.5 x 1.5	35.637	9.77	2831
	3.0 x 1.8	28.532	12.21	3663
	3.0 x 3.0	21.368	16.30	4890
6	1.5 x 1.5	30.352	9.92	2976
	3.0 x 1.8	24.440	12.32	3696
	3.0 x 3.0	17.670	17.04	5112
8	1.5 x 1.5	25.298	11.02	3306
	3.0 x 1.8	16.522	16.88	5064
	3.0 x 3.0	17.532	15.91	4773

Peshawar valley consists of Peshawar and Mardan civil divisions and has a very high population density as compared to Sialkot and D.I. Khan districts. Though the cultivated area in Peshawar valley is lower than that in Sialkot, still, it has a large number of trees growing on the farmlands. However, all tree areas exhibit large wood deficits; D.I.Khan district showing least deficit because of its low population density, and large cultivated area, which is mostly barani with small number of trees on unit area basis of the farmlands. It can safely be assumed that Peshawar, Sialkot and D. I. Khan are representative of whole of Pakistan whether it is irrigated tract or barani area. The wood supply situation is very critical all over the country. The supply is not sufficient to meet the needs of growing population. In a region like Peshawar, if some wood is exported to other regions for the manufacture of industrial products e.g. sports goods, matches

and plywood, then a large quantity of fuelwood has also to be brought into this region to meet fuelwood requirement of the local people as shown in the following table. Further, the outflow of wood is decreasing due to removal of trees for installation of drainage system in the region for the control of water-logging and salinity and increase in local demand of wood for fuel and construction because of influx of Afghan refugees in the area in large number.

<u>YEAR</u>	<u>OUTFLOW m³</u>	<u>INFLOW m³</u>
1981	30,919	-
1982	34,475	-
1983	31,630	-
1984	27,142	-
1985	23,752	64,998
1986	21,107	121,365
1987*	24,844	85,140
1988*	20,335	128,304
1989*	19,340	95,976

*Outflow figures include Willows, Mulberry and Shisham wood, besides poplar wood.

Table 7. Yearly wood balance for selected districts areas

	<u>Peshawar valley</u>	<u>Sialkot</u>	<u>D. I. Khan</u>
<u>DEMAND</u>			
Projected population 1990 (000)	4948	3537	829
Per capita fuelwood consumption (000 m ³)	0.337	0.217	0.296
Total fuelwood consumption (000 m ³)	1667	768	245
Timber consumption @0.025m ³ /capita (000 m ³)	124	88	21
Total timber & fuel-wood consumption (000 m ³)	1791	856	266
<u>SUPPLY</u>			
Estimated growing stock/ha (m ³)	6.6	2.9	4.4
Cultivated area(000 ha)	398	442	301
Total growing stock (000 m ³)	2627	1282	1324
Number of trees/ha	66	18	18
No.of trees felled/ha	15	N.A.	1
Estimated volume felled/ha	3.0	N.A.	0.41
Total Volume removed (000 m ³)	1194	128*	123
<u>BALANCE (000 m³)</u>	-597	(-)728	(-)143

*ESTIMATED AT 10% OF THE GROWING STOCK

Future Course of Action

The above account indicates that the people in Pakistan entirely depend upon farmlands for their fuelwood and timber requirements as contribution made by natural and man-made forests in this regards is insignificant. Consequently, more effort is needed to promote farm forestry in the country on a massive scale to meet the need of population increasing at the rate of more than 3% every year. The demand for wood could increase at higher than 3% rate, if establishment of substantial wood industries is planned in near future. In spite of execution of some special projects of farm forestry in different provinces, only about one fifth to one fourth of total planting stock of 155 million plants raised annually by the provincial forest departments are currently distributed to general public and farmers for planting. This number will have to be increased within a short period. Further, future tree planting efforts will have to be directed towards areas other than irrigated agricultural tracts, which already have a large number of trees on the farmlands. Additional planting on such areas may adversely affect crop production. Under the circumstances, scope of increase wood production in barani areas and on waste lands should be explored with the help of considerable resource inputs. Special attention will have to be paid to selection of suitable tree species which could be grown in such areas with minimum water requirement. Further, rain water harvesting techniques for raising trees in dry areas needed to evolved through research.

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WORKING GROUP RECOMMENDATIONS

SUMMARY OF WORKING GROUP RECOMMENDATIONS

Ninety participants were divided almost equally into five working groups to discuss assigned topics and put forward recommendations. Each group included farmers, industrialists, foresters, and international consultants. They deliberated for about 2-1/2 hours on the afternoon of the second day, after hearing the papers presented in plenary sessions, and presented their reports in general assembly on the final morning of the Seminar.

A. CREDIT/LOAN NEEDS:

All five groups made recommendations regarding the establishment of credit or loan arrangements tailored to the needs of tree farmers and, in some cases, to the support of industries as well.

B. APPLIED RESEARCH:

4 of the groups recommended improved research to support private sector forestry, especially in terms of on-farm and on-site studies.

C. RECOGNITION/INCENTIVES:

4 of the groups recommended development of special awards, recognitions, and other non-financial incentives to tree farmers and/or social foresters.

D. EXTENSION/TECHNICAL TRANSFER:

3 of the groups pointed specially to the need to improve forest department capability for extension and technical transfer of information; also the need for this work to be linked back to research.

E. FOREST DEPARTMENT REORGANIZATION:

3 of the groups pointed specifically to the need to reorganize forest departments to effectively deliver social forestry programs.

F. TREE FARMER/WOOD INDUSTRIES ASSOCIATIONS:

3 groups recommended formulation of associations such as tree farmers, wood industries and joint associations to carry on the work which has started at this seminar.

G. IMPROVED MANAGEMENT, HARVESTING AND UTILIZATION:

3 groups made general recommendations in this category as being necessary to help improve the supply of wood.

H. OTHERS:

2 groups- Need for new surveys of forests, industrial production, and markets;

2 groups- Address problems of middle-man (these two groups made conflicting recommendations - see discussion of Group I and Group III);

2 groups- Improve efforts in seedling nurseries and plantation establishment;

2 groups- Look into private leasing of public lands;

2 groups- Conduct a follow-up seminar;

1 group - Pricing Commission involvement in wood markets;

1 group - Investigate alternative sources of raw material;

1 group - Look for special sources of new funds for forestry (Zakat);

1 group - Find ways to involve women in social forestry;

1 group - Public seller's guides and marketing newsletter;

1 group - Improve forestry education for youth in school systems;

1 group - Develop model plantations on government lands;

Altogether, the recommendations are quite numerous and generally broad enough to allow for examination and development. Because there was no overall group consensus as to priorities for action, the frequency with which some issues surfaced should serve as a policy guide for future action. Especially, those issues raised by 3 or more of the 5 groups can be taken as representatives of the priorities in the minds of the Seminar participants.

WORKING GROUP - I

Wood Production - Wood Consumption: Constraints on Production

Chairman: Mr. Hameed Ahmad
Co-Chairman: Mr. M. Asghar Qureshi
Rapporteur: Mr. Usman Hamid, Pulp Mill Manager - Packages Ltd.

Preamble

The gap between the supply and demand of wood is vast. 4.6 million hectare of depleted forests are forced to meet the requirements of 112 million people in Pakistan. This is the main reason that forest based industries have been lacking miserably to come up and smoothly function in private sector.

Out of three sources of wood viz. state forests, imports and farmlands, the last named option can be most effective to ameliorate the situation.

RECOMMENDATIONS

1. A nation-wide survey should be undertaken to determine the area under forestation both in the public and private sectors and to determine consumption figures in wood based industries.
2. Forest production and management on private lands should be declared as an industry, and funds and loans should be advanced on a priority basis.
3. Social Forestry Programs are fast catching up with the farmers and other tree growing organizations. However, the problem is so large that it is not possible to handle by enlisting forest department in view of pre-occupation with state forests.

It is strongly recommended that a separate organization headed by a Director General or Chief Conservator with supporting staff be set up in every province.

4. Although a lot of research has been done on tree-crop interface, and growing and management of trees, and indicative data are available, the relevant information has not trickled down to end user in the form of a package.

It is recommended that immediate ways and means be adopted for transfer of available knowledge to wood growers and users in acceptable form.

5. The group strongly felt that applied research may be accorded priority and should be disseminated through a special extension agency, which should also be responsible for training/education of farmers.
6. Pricing and marketing structures are highly inadequate. The taxes and levies on wood are already unbearable and marketing strategy is almost non-existent.

The group feels that taxes and levies on wood should be rationalized and a suitable marketing strategy be evolved to the satisfaction of both wood producers and consumers. *Effects should also be undertaken to eliminate the middleman and his function to be taken over by the extension staff by establishing links between the producers and consumers.

7. The group felt that a pricing commission on the pattern of Agricultural Commission should prepare cost of production estimates for different species of wood on private farmers' fields.
8. The group felt that pre-assessed and diversified planting stock in forest nurseries may be made available to the farmers and other agencies interested in growing plantations.

***NOTE:** This statement is in disagreement with conclusions stated by Group III.

WORKING GROUP - II

Wood Production - Wood Consumption Imbalances: Solution to Production Constraints

Chairman - Mr. T. A. Ansari
Co-Chairman - Dr. Sayeed Mughees Asghar
Rapporteur - A representative of wood based industry

Preamble

The members of the Group II considered the various constraints and factors for the existing wood production/wood consumption imbalances; mainly, the existing wood supply by species or product need, the existing state of investment in forest production and management, competing resources uses, increasing product demand, prices and marketing structure, transfer of technology, and availability of production.

In view of rapidly growing demand for wood products, the production of trees needs to be increased manifold to meet the future demand. Tree planting activities require heavy initial investment and thus financial assistance from donor agencies is quite obvious. Their generous contribution in the past is highly appreciated and is welcomed in future in the form of grants so as to further facilitate financially poor farmers.

RECOMMENDATIONS

1. The demand and supply of wood for the various industries should be identified and reforestation and afforestation programs be drawn on sustained yield basis. Further the programs should be so drawn as to maximize the production in the state forests and encourage plantations on farm/private lands.

The production of wood should thus be increased through creation of new resources and intensification of management of existing resources.

2. The planting of multi-purpose and fast growing species such as poplars, eucalypts, and others should be encouraged but it should be according to the requirements of the various industries. Furthermore the traditional species such as shisham and mulberry should be continued to be grown for meeting the demand of furniture and sports industry.
3. Improvement of nursery techniques, better pruning/cleaning and thinning practices are very necessary. The most important technique requiring modification in irrigated plantations is better water management; and in riverain

forests, finding out ways and means for irrigating the riverain lands by improved methods.

4. Improved methods of harvesting and conservation to minimize wood losses should be adopted and the use of wood residue should be encouraged.
5. There is strong need for improving wood utilization practices, specially seasoning and preservation.
6. To motivate the private sector for planting more trees on their lands it is necessary that, in addition to supply of planting stock and technology, the farmers should also be given incentives of credit facilities/advances and assurance of purchase of the wood grown by them.

The efforts made in forestry by the extension officers/workers and the farmers for farm plantations need to be recognized by way of civil awards.

7. Tree farm societies should be organized to find out and resolve their problems.

The NGOs should be encouraged to play active and increased roll in the forestry development.

8. Although a lot of research has been done, it seldom reaches the farmers who are the main beneficiaries, specially in the field of social forestry. The research, as a package technology, should be carried to the farmer expeditiously. Demonstration plots/centers on private lands are needed for showing different tree-crop combinations. Further, the farmers should be exposed to the development taking place in farm forestry in other countries.
9. In view of the shortage of wood raw material, there is a strong need to find out alternate raw material for the industries especially for veneer, pulp and paper.
10. For increased forestry development program there is need for more allocation of funds in forestry sector. The credit facilities for growing of trees by the farmers should be provided on soft loan basis.

It is also strongly recommended that the wood-based industries should be provided loans on easy terms and tax relief be given to them.

11. The revenue waste lands may be leased out to farmers and users for growing more wood raw-material. The mechanism for leasing out those lands should be developed.

Any land not being used for any other purpose, if found suitable for afforestation, should be utilized for

growing of trees. These lands, if big enough, may be converted into forestry plantation estates to be managed by the forest department, forestry-based industrialists, or the developmental financial institutions.

12. There is strong need to carry out a survey of all the existing organized as well as unorganized forestry based industries to find out the demand and supply position, the needs, and difficulties and how their problems can be solved.
13. Import of selected species of wood should be liberalized to support the existing industries. The import duties and tax structure should be rationalized to encourage wood production to meet the demand of users.
14. A permanent forum should be constituted representing the producers, users and government at the federal and provincial level for interaction and coordination.
15. Implementation of the recommendations of this seminar needs to be followed up. It is recommended that a follow-up committee be constituted at the conclusion of this seminar for follow-up and fine tuning of the recommendations of this seminar and other ones.

This committee may be as follows:

- | | |
|---|---|
| 1. Inspector General of Forests (President) | 1 |
| 2. Representatives of Farming Committees | 5 |
| Members of each province and A.J. Kashmir | |
| 3. Representatives of Industries or Associations | 5 |
| 4. Secretaries of Provincial Forest Departments | 5 |
| 5. Representative of NGOs and Environmental Groups | 3 |
| 6. Representatives of International Agencies
like World Bank, USAID, Asian Development Bank,
CIDA, etc. | 3 |

This committee may constitute number of sub-committees to carryout the actual follow-up in different sub-sectors of the plan.

16. Since there is always some difficulty in arranging funds for the development projects, specially tree planting programs, it is recommended that the possibility of using Zakat funds as "Sudqa-e-Jariah" to the deserving farmers should be considered.

Furthermore, funds may be provided for promotion of tree planting in farm lands from the Peoples Work Program.

17. The most important sector of our rural families, i.e., the women, as major consumers of wood and with diverse duties, need to be actively associated with tree planting program.

WORKING GROUP - III

Ensuring effective collaboration between Wood Producers and Wood Users

Chairman - Mr. W. A. Kermani
Co-Chairman - Mr. G. Ali Shabbir
Rapporteur - Mr. Abrar Rasul Khan Re. of wood based industry

Preamble

Activities which facilitate collaboration between wood producers and wood users are the focal points of this seminar. The working group chairman and working group members are asked to review and modify the following list of factors which might influence collaborative activities, and then identify the ones which would most significantly ensure effective collaboration between wood producers and wood users in Pakistan.

1. Streamlined sales and marketing channels.
2. Increased knowledge of markets and raw material uses by both sellers and producers.
3. Direct contacts and agreements between sellers and purchasers
4. Establishment of cooperatives.
5. Standardization of grades and measures for use in the sale and purchase of wood raw material.
6. Provision of incentives to increase wood production.
7. Promotion of Social Forestry Programs

RECOMMENDATIONS

1. Streamlined sales and marketing channels.
2. Increased knowledge of market and raw material users by both sellers and purchasers.
3. Direct contacts and agreements between sellers and purchasers.
4. Establishment of cooperatives
5. Standardization of grades and measures for use in the sale and purchase of wood raw materials.

The five objectives set forth above are all inter-linked, one hinges on the other. Isolated approaches are apt to fail. A coordinated effort in all these directions is the vital need.

A lively discussion developed over the question of whether to eliminate the middle-man from the marketing linkage. *While there are widespread belief that the middle-man takes up most of the profit in the wood market, there is no reliable and systematic data to support or refute this contention. Because of the services provided by the middle-man in getting wood to market, it was the concensus of the group that some form of brokerage will continue to be needed in the private sector. The basic necessity is Education of the sellers (producers), as well as the consumers. In other words, the awareness has to be increased. This can be done best by open communication between the producer and consumer which will mean that the respective Social Forestry channels monitor, collect information from producers/consumers and disseminate the same. PFI's Extension officer vacancy must therefore be filled and charged with these responsibilities at the National level in liaison with the Social Forestry staffs in the respective provinces. The latter too will disseminate the relevant information within their own jurisdictions. The media would be a newsletter every 3-4 months plus radio and press news releases.

An additional aid would be publication of a periodical buyers/ sellers GUIDE. Education of the sellers specially means awareness of the sellers of market prices and market needs. Social Forestry cells monitoring of price/demand information should be on a regular basis, as an extension of technical assistance to both sellers and buyers.

6. Provision of incentives to increase wood production:

The consensus was that TRUST between the producer and consumer is the greatest incentive. Open communication between the two is another form of real incentive. That a consumer is genuinely interested to purchase a certain quality of wood at premium price is still another form of real incentive. Security to assure sale of a product is an important incentive. Such then are the patterns of incentives to be the future realities, and everything possible is to be done by the Social Forestry sectors to achieve these ends.

Interest, leadership, and support from the industrial sector is an important element of building trust. IDBP Loan (low interest) can be one of the most important financial incentives to defray the costs of delayed harvests.

In order to make sure that the recommendations made above become tangible realities, it would be advisable for the Forestry Planning and Development Project personnel to keep monitoring, watching the progress that is made in the next

five months; then, have all those who have meaningfully or actively worked for the achievement of the objectives collect together again and take a complete stock to see the results and set a direction for further future progress to ensure a continued rewarding interaction between the producer/consumer of wood and wood products. This would involve a second conference in about six months time from now.

7. Promotion of Social Forestry Programs:

The overwhelming evidence that the gathering provided during the exchange of views left no one in doubt that private sector, the farmers and the consumers of wood, have vital stake in the development of social forestry. The present colonial pattern of Forestry services can no longer meet the aspirations of the people much less serve them meaningfully. A restructuring of the Forestry services on functional basis is an undisputable need of the hour as a national urgency.

***NOTE:** This statement is in disagreement with recommendation No.6 of Group 1.

WORKING GROUP - IV

Need for Standardization of Social Forestry Programs

Chairman - Mr. Ihsanur-Rehman Khan
Co-Chairman - Dr. G. M. Khattak
Rapporteur - Representative of wood based Farmers

RECOMMENDATIONS

1. Provision of incentives: Modest incentives including free supply of plants to development of land and establishment of nurseries may be provided in the beginning to prime the social forestry programs. These incentives should, however, be gradually reduced/withdrawn.
2. Social Forestry Cadre: Separate social forestry cadres in the Forest Department should be developed to provide leadership as "extension agents" in the social forestry program. There should also be coordination/cooperation among various social forestry projects in each province.
3. Education of farmers and school children with regard to social forestry. Forestry should be included in school curricula.
4. Industrialists should be encouraged to actively associate with social forestry programs. They should support suitable research to develop and encourage social forestry.
5. Sustainability of social forestry program should be ensured through target group oriented approach.
6. Effective and efficient mechanisms are needed for providing credit facilities to social forestry farmers. Soft loans or interest free credit should be arranged. Credit should be recoverable at the time of harvest of tree crops.
7. Land ceiling for social forestry should be increased to exclude afforested area to a maximum limit of 1½ time the existing land ceiling limits in Barani and irrigated areas.
8. Augmentation of water resources: Canal water at the usual rate of 12 cusecs/1000 acres, wherever available, should be provided for social forestry. 10% of tube well water for any tube well schemes should be reserved for social forestry.
9. Strengthening of research in social forestry to develop suitable social/agroforestry models by the PFI, Peshawar and PFRI, Gatwala.
10. Support and development of institutions of NGOs/PVOs for social forestry. The tree farmers should be organized by creating "Pakistan Tree Farmers Association" on the pattern of the USA.

WORKING GROUP - V

Need for Industrial Forestry

Chairman - Mian Salah-ud-Din
Co-Chairman - Dr. Mohammad Ashraf
Rapporteur - Mr. Ghulam Hanif

RECOMMENDATIONS

Industrial Forestry may be taken to mean raising forest crops to feed the industries all the needed raw material on sustained basis.

Some major industries identified by the Group are:

1. Paper and pulp industry
2. Packaging industry
3. Furniture industry
4. Mining industry
5. Veneer, plywood and board industry
6. Match industry

The consumption of wood in various wood based industries in 1986-87 was 2.7 million cu.m. The forecast for industrial wood requirement as per the 7th five year plan, at the present rate of growth, is 5.5 million cubic meters by the year 2000. The state forests produce just half a million cubic meters per year. The rest of the demand is met by the private sector.

We have reached a stage where we feel that growing demand can-not be met with by the traditional approach and sources of supply. We recognize that the government has the limitations of funds and the industry is reluctant to participate more actively to increase in industrial wood production. Working group recommends for action by the government and by the industry as follows:

A. Action by Government:

1. The government should arrange to boost the supply of industrial raw material from their existing forests by altering the management techniques, application of better technology, and practice of better silviculture.
2. The government should recognize the need to involve the private sector for producing industrial wood for their own use and should encourage them.
3. In order to encourage the private land owners to grow trees for industrial raw material, they should be provided with interest free loans refundable after 10-15 years.
4. The government may offer to the private industry such state lands as are not considered fit for agriculture and which are not being put to any use, for making them fit for growing and raising trees. The possibility of involving the

Peoples' Program and Zakat Funds in this purpose may also be explored.

5. The government should raise model industrial wood plantations of different species used in industry to demonstrate how the industrialists and farmers should go ahead with raising forest crops for the use of wood based industry.
6. There was a consensus that there would not be an attempt for joint venture between farmer/government or industrialist/government in leasing the waste land.

B. Action by Industrialists:

1. The committee feels that in case of short rotation forest crops raised by farmers for use by the industrialists, they should be given credit facilities and buy-back guarantees so that they are not hesitant to go ahead with their plantation programs for the benefit of which they have to wait for not less than 5 years or so.
2. The industry should make substantial contribution in research on wood products which can be done in collaboration with the international donor agencies.

C. General:

As a result of seminars, workshops etc., several recommendations are made to the government but usually these lie unattended. It is recommended that follow-up committees be constituted at provincial and federal levels to pursue the recommendations for suitable outcome (follow up action).

There are two conflicting recommendations:

1. Mr. Kirmani's group recommended support for loans from the existing lending institutions (at usual rates as for agriculture); and
2. M. R. Khan's group recommended soft and interest free loans. Interest free/soft loans proposal is not very practicable because:
 - a. The government is under pressure from international leaders (IMF) to go out of all kind of subsidies.
 - b. Small scale forestry does not need loan. Forestry is not capital intensive at all. Big farmers should either have their own resources or should pay the usual interest rate on borrowing.
 - c. No loan is interest free. Ultimately some one pays for it. If a loan is the need of a big land lord, let him pay for it, and do not require the whole society to pay for the gains of big land lords.

CLOSING

106a

**VOTE OF THANKS TO THE SEMINAR
PARTICIPANTS AND CHALLENGE FOR THE FUTURE**

By

**Abeedullah Jan
Inspector General of Forests**

In the Name of Allah, the most beneficent and merciful

My respected senior colleagues, Learned delegates, Ladies and gentlemen:

It is customary to express gratitude to the guests and say final good-bye to the delegates at the end of the ceremony, like the one we are concluding today; and it is my pleasant duty and proud privilege to perform that duty and function.

All functions have VIPs as chief guests and I was also very keen that we should have a VVIP for this function, but I could not succeed. Even then I have no regrets and I will give you definite reasons for it.

VIPs are of two types: (i) those who are formal leaders, invited to impart dignity and status to the ceremony and attract electronic media and news coverage; (ii) and the second type of VIPs are those who have insight, far-sight and deep understanding of the subject they are dealing with as well as the knowledge of the function that they have the honor to preside over.

I could not get the VIP of the first type because the Governor Punjab has gone to Faisalabad to receive the president of Pakistan and the Federal Minister for Food and Agriculture (FAM) is busy elsewhere. They both send their sincere regrets.

So far as the second type of VIP is concerned; I mean the technocrat with insight and far-sight. Who is a greater VIP than Sardar Habib Khan, Mian Salahuddin, Kirmani Sahib, Hassan Ali Qureshi, Ahsan-ur-Rehman, Dr. G. M. Khattak, Mr. Korejo and many others who are present here? And therefore, I thought that in view of more than a dozen VIP already present here I don't need any VIP from outside. You are, indeed, Very Important People, and we hold you in great esteem!

According to my assessment, this seminar has been a great success and the reasons for the success are:

- i. Keen interest of all the delegates;
- ii. Professional competence of the participants;

- iii. High standard of the papers presented;
- iv. The leadership provided by our senior colleagues whom I call VIPs;
- v. The manner in which the sessions and discussions were conducted;
- vi. Hard work and quality reports and recommendations produced by rapporteurs; and
- vii. Last but not the least, presentation of the group reports by the learned chairmen.

It is generally said that success is never by chance and quality is never by accident. It requires hard work, proper planning and meticulous execution.

These qualities were seen in requisite proportion at all levels, all along and all through, whether it was Dr. Afzal performing the functions of the Master of Ceremony; or Dr. Wani and Mr. Nasrullah engaged in administrative matters; or DG-PFI and his staff distributing money and reports, or officers of Punjab Forest Department burdened with logistic responsibilities; and score of other invisible persons working behind the scene. They all deserve our praise and appreciation.

Now I want to say something about the seminar and what was discussed in it, particular focussing on the three issues:

- i. Inter-action and dialogue;
- ii. silver lining among dark clouds; and
- iii. the concerns expressed, particularly by our senior colleagues

I feel that the seminar has been a thumping success. The inter-action amongst the farmers, foresters and industrialists has helped to analyse the problem in its greater depth and real perspective. That has helped us to see a silver lining in the dark clouds of the gap between the supply and demand of the forest resources.

Of special importance is the good omen of establishment of a paper mill near Gujrat which is expected to start production within next two years. The understanding that the wood (particularly that of eucalyptus) shall be purchased at a minimum rate of Rs. 25 for 40 kg, shall go a long way to convince the farmers of the utility of this species and the need to grow it on a large scale. This should boost up the overall forestry activity in the area. And it is noteworthy that the millionaires and multi-millionaires possess the determination and the capacity to enhance the size of the mill to the extent which is necessary for national needs. That should give assurance and reassurance to the farming community.

Three concerns have been shown in the seminar, which directly relate to my sphere of responsibility: (i) that adequate data is not available; (ii) dissemination of existing data and knowledge is weak; (iii) the recommendations of the previous seminars have not been implemented so far.

None of these concerns are valid because I am working in these areas with utmost priority. For example, in order to create reliable data base and then computerize it, eleven studies through local consultants and three studies through foreign consultants are being conducted, and the consultants who will be conducting these studies are attending this seminar. These studies are:

a. Local Consultancies

Under a general umbrella of Wood Use Industry Survey

- Sporting Equipment
- Chipboard
- Mining
- Pulp and Paper
- Tobacco
- Railways
- Furniture
- Saw-milling/crating
- Brick kilns
- Wood markets
- Trucks/buses/trolleys

b. U.S. Consultancies

- Pulp Mill Feasibility Study by Gerald Wire
- Farm Forestry Economics Study by Charles Mcketta
- Marketing of Farm Forestry Products Study by
Wendell Clark

Simultaneous by, a Monitoring and Evaluation Cell is being set up in the office of the Inspector General of Forests. The M&E cell will be manned by qualified economists and statisticians ranging from grade 17 to 19.

A remote sensing laboratory is being set up in Pakistan Forest Institute, which will utilize the sources of SUPARCO to obtain LANDSAT pictures of same areas at periodical intervals to monitor changes which are taking place in forests and the wastelands. Efforts are also being made to set up a Geographic Information System (GIS) which is a very advanced technology and which is used for resource assessment and utilization including forests. So much is being done to build up dependable data-base, and this is exactly in line with the recommendations of the seminar held in Karachi.

In Karachi, it was agreed that the farmers and industrialists should be brought together through a follow-up seminar. And therefore the present seminar is in fulfillment of that recommendation.

So far as the other recommendations are concerned, they were critically reviewed and it was assessed that their complete implementation would require at least one billion U.S. Dollars in the 7th and 8th five year plans. Neither this money is available through local resources, nor can it be provided due to greater emphasis on social sectors, like health and education. In order to involve donor organizations to commit finances for this purpose, it was decided to prepare the Forestry Sector Master Plan. And you will be glad to learn that the work on the Forestry Sector Master Plan has already been started at the cost of 2.7 million U.S. Dollars, which is being provided by Asian Development Bank, and UNDP and three other donors agencies as grants. Once this prospective plan is ready, efforts would be made to set up a consortium of aid-giving agencies for the purpose of Forestry Development of Pakistan. And the indications are that we will succeed in securing these resources as grants. This is my vision and I hope to give it a practical shape.

As Dr. G.M. Khattak stated, "Policy is what is implemented at site", we can implement the policy and the recommendations, provided that we have the finances for which efforts are being made through donor organizations.

In a nutshell, let me categorically state that all the recommendations of the previous seminar have been taken up; and those of the present seminar will be taken up in all seriousness.

Once again, I thank you for your contributions toward the success of this seminar. Good luck and good bye.

APPENDICES

**WOOD PRODUCERS - USERS' SEMINAR
LAHORE, PAKISTAN
MAY 12 - 15, 1990**

DATE	TIME	ACTIVITY
May 12	2000-2100	Registration of Participants, Distribution of Seminar Material, Welcome Reception.
May 13	0900-1100	OPENING SESSION
	0800-0900	Registration
	0930	Arrival of the Chief Guest
	0940	Recitation from the Holy Quran
	0945	Message of the President of the Islamic Republic of Pakistan.
	0950	Message of the Prime Minister of the Islamic Republic of Pakistan.
	0955	Remarks by Dr. C. M. Anwar Khan, Chairman, Pakistan Agriculture Research Council Secretary, Agriculture Research Division.
	1000	Remarks by Dr. Niels Martin FAO Representative
	1005	Remarks by Mr. Harry Dickherber USAID Representative Dy. Chief ARD, USAID, Islamabad
	1015	Remarks by Dr. Charles R. Hatch Winrock International Chief of Party, FP&D Project
	1020	Keynote Address by Mr. Abeedullah Jan Inspector General of Forests
	1035	Remarks by Dr. Mahboob-ur-Rahman Chief Guest Minister of State for Food, Agriculture Cooperatives
	1045	Tea

May 13 FIRST PLENARY SESSION

Chairman: Sardar M. Habib Khan
 Ex-Minister Forests NWFP

Rapporteur: Mr. Rashid M. Randhawa
 Project Director, FP&D Punjab

1145 Presentation by Mr. Lester A. DeCoster
 American Tree Farm Association
 Vice President, American Forest Council

1230 Presentation by Sheikh Ijaz Ahmed Siddiqui
 A Progressive Tree Farmer

1250 Close of First Session

1300-1430 Lunch and Prayer

SECOND PLENARY SESSION

Chairman: Mr. Farid ud din Ahmed
 Secretary Forests, Wildlife,
 Fisheries & Tourism, Punjab

Rapporteur: Dr. Zahoor-ul Haq
 Project Director, FP&D Balochistan

- 1430 Production of Wood in NWFP with special emphasis on Poplar
Mr. Ghazi Mirjan, CF, NWFP Forest Department
- 1500 Requirements of the Wood-Based Industry with special emphasis on the Match Industry
Mr. Javed Niaz
Chief Executive, Orient Match Company
- 1530 Discussion
- 1550 Tea
- 1630 Production of Wood in Punjab with special emphasis on the Sports Industry
Mr. Anwar Masrur
CCF Central Zone, Punjab
- 1700 Requirements of the Wood-Based Industry in Punjab with special emphasis on the Sports Industry
Mr. G. Ali Shabbir, President
Pakistan Sports Goods Manufacturers and Exporters Association
- 1730 Discussion
- 1800 Close of Second Session
- 2000-2230 SEMINAR BANQUET
- 2000 Reception and Banquet
Mr. W. A. Kermani, Master of Ceremonies
Talk on Policy perceptions by Dr. C. M. Anwar Khan
Chairman, PARC and Secretary, Agriculture Research Division

May 14

THIRD PLENARY SESSION

- Chairman: Mr. S.K. Khanzada, Secretary
Social Welfare & Zakat, Punjab
- Rapporteur: Mr. Konain Shah
Project Director, FP&D NWFP
- 0900 Forestry Credit and Role of NGO's
Mr. Sultan Ali Barq
- 0930 Wood Requirements of the Furniture Industry
Mr. Muhammad Jahangir, President,
All Pakistan Furniture Manufacturers Association
- 1000 Discussion
- 1020 Tea
- 1100 Production of Pit Props for the Mining Industry
Mr. Bahauddin Sirhindi
Chief Conservator of Forests, Sindh
- 1130 Wood Requirements of the Mining Industry
Mr. Mian Rafiq Ahmed, President
All Pakistan Mine Owners Association
- 1200 Discussion
- 1220 Farm Forestry Research
Dr. K.M. Siddiqui, Director General, PFI
- 1245 Close of Third Session
- 1245-1430 Lunch and Prayer

WORKING GROUP SESSIONS

1430 Guidelines for Working Group Discussions
Mr. M. I. Sheikh, Policy & Mgt. Specialist
Winrock International

1500 Working Group Sessions

Group 1 - Wood Production/Wood Consumption Imbalances

Chairman: Mr. Hameed Ahmed, Secretary Forests Sindh (Rtd.)

Co-Chairman: Mr. M. Asghar Quereshi, Director, Technical
Crescent Particel Board

Rapporteur: Representative of the Wood-Based Industry

Group 2 - How to remove Wood Production/Wood Consumption
Imbalances

Chairman: Mr. T. A. Ansari, Secretary Forests Sindh (Rtd.)

Co-Chairman: Syed Mughees Asghar, Incharge Research &
Development, Packages Ltd.

Rapporteur: Representative of the Wood-Based Industry

Group 3 - Effective Collaboration Between Wood Consumers and
Wood Producers

Chairman: Mr. W. A. Kermani, I.G.F. (Rtd.)

Co-Chairman: Mr. G. A. Shabbir, Chairman, Ali Trading Company

Rapporteur: Representative of the Wood-Based Industry

Group 4 - Need for Standardization of On-going Social
Forestry Programs

Chairman: Dr. G. M. Khattak

Co-Chairman: Mr. Hasan A. Qureshi, Secy. Forests Punjab(Rtd.)

Rapporteur: Representative of the Wood-Based Industry

1700 Close of Working Group Sessions

1800 Field trip to Packages Ltd.

May 15 0900-1045 CLOSING SESSION

Chairman: Dr. G. M. Khattak

Vice Chancellor (Rtd.)

Agriculture University of Peshawar

0900 Recitation from the Holy Quran

0910 Presentation of Working Group Recommendations

Working Group Chairmen

1045 Vote of Thanks to Participants

Mr. Abeed Ullah Jan

1055 Tea and Adjourn

LIST OF PARTICIPANTS

<u>Name</u>	<u>Designation</u>	<u>Name</u>	<u>Designation</u>
Abdul Salam Sattar	Industrialist	Gulsher Khan	J.S, M/O Industries
A. S. Bokhari	World Bank Consultant	H. Jamal Zubari	Asstt. VP, NDFC
Abbas Ali	DFO, I&P Department	Habib Ahmed	M/F&A
Abdul Wahid Khan	M/F&A	Haji Wali Mohammad Soomro	Farmer
Abdul Karim Sariwal	Farmer	Haji Feroze Khan Maken	Farmer
Abdul Aleem	Div. Forest Officer	Haneed Ahmed	Secretary (Rtd)
Abèedullah Jan	IGF/Additional Secy.	Harold L. Dickhorber	USAID
Abid Anwar	Industrialist	Hasan Ali Qureshi	Secretary Forests (Rtd)
Abrar Rasul Khan	Industrialist	Hidayat Ullah Jan	Farmer
Aftab Ahmed	D.F.O.	Ibrar Ahmed Khan	Exten. Circle Forests
Afzal Kahut	M/F&A	Iftikhar Ahmed	M/F&A
Afzal Hussain Shah	D.F.O, FEFP, Punjab	Imtiaz A. Sheikh	T. A. Team
Ahmed Sadik	M/F&A	Imtiaz Ahmed	M/F&A
Ahsan Tayyab	USAID, Islamabad	Ishtiaq Ahmed Qazi	C.C.F., R.pindi, Punjab
Akhlaq Ahmed Khan	CCF, Punjab	Izhar-ul-Haq	FP&D Project
Akhtar Saeed Khan	Conservator of Forest	Jamshad A Khan	Observer
Akram Qureshi	Industrialist	Jan Helsen	DHV, Malakand Project
Ali Raza	SO, M/F&A	Javaid Niaz	Orient Match Factory
Altaf Hussain Shah	D.F.O.	Javaid Hashmi	Social Welfare Officer
Amanullah Alizai	Farmer	Javaid Ahsan	CF(M&E)
Amir Nawaz Niazi	D.F.O.	K. M. Siddiqui	Director General, PFI
Amjad M. Cheema	D.F.O. Extension, Punjab	K. Hameed Ullah	Project Off., USAID
Anwar Masrur	C.C.F., Lahore, Punjab	K. M. Suliman	PFI
Ashraf Sabir	Social Welfare Officer	Khalid Latif	D.F.O., Jhelum
Ashraf Nasim	Extension Circle	Khalid Naseer	T. A. Team
Asim H. Qadri	Industrialist	Khawaja M. Farooq	Social Welfare Officer
Aziz Aslam Khan	CCF	Lee Medema	Economist, WINROCK
Bahauddin Sirhindi	C.C.F. Sindh	Lester A. Decoster	American Tree Farm
Barkat Ali Khan	Farmer	M. Muzzammal	Asstt. Admn. Officer
Bashir Ahmed Wani, Dr.	DIG, Forests.	M. Aslam Shad	M/F&A
Bashir A. Tahir	M/F&A	M. Ashfaq Kazi	Secy. Forest, Sindh
Bashir Ahmed	C.F. Extension, Punjab	M. Ihsanur Rehman	Secretary (Rtd)
Bilal Aziz Chaudhry	Farmer, Punjab	M. Zafar Mian	M/F&A
Bilal Rashid	Project Manager	M. Asghar Qureshi	Crescent Board Ltd.
C. M. Anwar Khan, Dr.	Chairman, PARC	M. Riaz-ul-Hassan	C.F.
Ch. Mukhtar Ahmad Khan	Farmer	M. Razman	M/F&A
Ch. Mohammad Amin	GM, Sampak Paper Board	M. Habib Khan	Rtd Forester
Ch. Faqir Mohammad	C.F.	M. A. Khan	P.F.I.
Charles W. McKetta	Consultant - Economist	M. Afzal, Dr.	D.F.O.(M&E) Punjab
Charles R. Hatch	T. A. Team	M. Ayaz, Dr.	PFI
Faiz-ul-Hassan Galani	Farmer	M. Hayat Malik	D.F.O.
Farah Deebea, Miss	Social Welfare Officer	M. Zafarullah	CF
Farid-ud-Din Ahmed	Secy. Forest, Punjab	M.S. Korejo	Ambassador (Rtd)
Farooq Ahmed Khan	Lahore	Mahmood Iqbal Sheikh	T.A. Team
Fida Abbass Siddiqui	M/F&A	Maqbool-ur-Rehman	MD, FDC, NWFP
G. Ali Shabbir	Industrialist	Masud Hassan Qureshi	Dy. Secretary
G. M. Khattak, Dr.	Coord. Agri.Unv. Pesh.	Mian Muhammad Sharif	D.F.O.
Garry Archer	Supervisor(World Bank)	Mian Mahmood Ahmed	CF, Punjab
Gary Naughton	T. A. Team	Mian Rafiq Ahmed	Chairman (Mines Asso.)
George M. Blake, Dr.	T. A. Team	Mir Jumma Khan Bughti	Farmer
Gerald Wire	Consultant Pulp & Paper	Mir Ghazi Khan Brohi	Farmer
Ghazi Marjan	CF, NWFP	Mir Rasool Bakhsh Khosa	Farmer

<u>Name</u>	<u>Designation</u>	<u>Name</u>	<u>Designation</u>
Ghulam Mustafa Sheikh	C.F., Sindh	Mir Fateh Ali Khan Jamali	Farmer
Ghulam Hanif	D.F.O. (Rtd)	Mirza Tariq Ahmed	Industrialist, Jhelum
Mohammad Umer Memon	PD/D.F.O., Sindh	Riaz Ahmed	M/F&A
Mohammad Amjad	PFI	Rifat Iqbal, Miss	Social Welfare Officer
Mohammad Yasin	PFI	Robin Blackburn	Commonwealth Rep.
Mohammad Jahangir	President Furniture Asso.	S. K. Khanzada	Secy. Social Welfare
Mohammad Akram	D.F.O.	S. M. Ishaq	Pakistan Tour.Dev.Corp
Mohammad Aslam	M/F&A	Sabir Hussain	Social Welfare Officer
Mohammad Moin Ahmed	DCF (Rtd)	Sadiq Qureshi	Journalist
Mohammad Rafiq	PD, Malakand Project	Salahuddin Ahmed	CCF (Rtd)
Mohammad Fazil Durrani	Secy.ForestsBalochistan	Salahuddin Solaiman, Dr.	Chief, Planning Divn.
Mohammad Naeem Bashir	KDC Board Jhelum	Saliheen Khan	PFI
Mohammad Iqbal Sial, Dr.	D.F.O., NWFP	Salim A. Faruki	Industrialist
Mohammad Tayab Samoon	Farmer	Sanaullah Bhatti	S.D.F.O., Lahore
Mohammad Hafiz	Director, PFRI	Sh. Ajaz Ahmed Siddiqui	Farmer
Mohammad Naeem Khan	Secy.Forest. NWFP	Sh. Khalid Mehmood	Farmer
Mohammad Tariq	FP&D Project	Shahid Rashid Awan	S.D.F.O.,Farm Forestry
Mola Dad Khan	Farmer	Shahid.	S.D.F.O., Lahore
Muhammad Insha Ullah	D.F.O.	Shahina, Mrs.	Social Welfare Officer
Muhammad Saleem	CF Range Management	Shamim Zaka, Mrs.	Social Welfare Officer
Muhammad Zarif	S.D.F.O., Lahore	Shamsul Haq Memon	CF
Muhammad Ashraf, Dr.	MD, Envo Forestry	Sultan Bukhsh Awan	ICI Pakistan Ltd.
Munir Ahmed	D.F.O. (Rtd)	Sultan Ali Burq	Farmer
Mushtaq Zafar	D.F.O., Lahore	Syed Wajid Ali	Packages Ltd.
Muzaffar Ahmed	M/F&A	Syed M. Maghfoor	Industrialist
Nasrullah Khan Aziz	DIG, Forests.	Syed Mughis Asghar	Packages Ltd
Niels L. Martin	CTA/Forestry Cord. FAO	T.A. Ansari	Secretary(Rtd)
Nighat, Miss	Reporter Pakistan Times	Tahir Saeed	D.F.O.
Noor Sahib Gul	Farmer	Tahir Wadood Malik	T. A. Team
Nooruddin F. Daud	Industrialist	Tahira Asif, Mrs.	Social Welfare Officer
Qazi M. Irfan	Turkpac Ltd, Lahore	Usman Hamid	Industrialist
Rafiq Ahmed	Dy. I.G.F.	W. A. Kermani	IGF (Rtd)
Raja Mohammad Zarif	PFI	Waqar Ahmed	Chief, APP Journalist
Raja Attaullah	D.F.O.	Wendell P. Clark	Consultant - Marketing
Rana Mohammad Masud	D.S. Forest, Punjab	William Bentley	WINROCK International
Rana Anwarul Haq	Farmer	Zafar Malik	M/F&A
Rashid Tariq	C. F.	Zafarullah Chatta	Farmer
Rashid M. Randhawa	PD/CF, Punjab	Zahoorul Haq, Dr.	CF/PD, Balochistan

WORKING GROUP CHAIRMEN, RAPORTEURS AND MEMBERS

WORKING GROUP - I

Wood Production - Wood Consumption: Constraints on Production

Chairman: Mr. Hameed Ahmad

Co-Chairman: Mr. M. Asghar Qureshi

Rapporteur: Mr. Usman Hamid, Pulp Mill Manager - Packages Ltd.

Participants

- | | |
|--------------------------|--------------------------|
| 1. A. Salam Sattar | 10. M. Ihsan-ur-Rehman |
| 2. Abbas Ali | 11. M. Riaz-ul-Hassan |
| 3. Aftab Ahmed | 12. Mehmood Iqbal Sheikh |
| 4. Ch. Mohammad Amin | 13. Muhammad Salim |
| 5. G. Ali Shabbir | 14. Rana Anwar-ul-Haq |
| 6. Gerald Wire | 15. Faliheer Khan |
| 7. Ghazi Marjan | 16. Sultan Baksh Awan |
| 8. Haji Feroz Khan Maken | 17. Wendell P. Clark |
| 9. Lee Medema | |

WORKING GROUP - II

Wood Production - Wood Consumption Imbalances: Solution to Production Constraints

Chairman - Mr. T. A. Ansari

Co-Chairman - Dr. Sayeed Mughees Asghar

Rapporteur - A representative of wood based industry

Participants

- | | |
|---------------------------|--|
| 1. Dr. K. M. Siddiqui | 8. Major Asir Ahmad Tariq,
Pakistan Chipboard, Jhelum |
| 2. Dr. Charles W. Mcketta | 9. Rashid Mahmood Randhawa |
| 3. Jamshed A. Khan | 10. Raja M. Zareef |
| 4. Mian Naeem Bashir | 11. Sh. Khalid Mahmood |
| 5. Mohammad Umer Memon | 12. Sultan Ali Burg |
| 6. Mohammad Yasin | 13. Syed Mohammad Maghfoor |
| 7. Mohammad Amjad | |

WORKING GROUP - III

Ensuring effective collaboration between Wood Producers and Wood Users

Chairman - Mr. W. A. Kermani

Co-Chairman - Mr. G. Ali Shabbir

Rapporteur - Mr. Abrar Rasul Khan Re. of wood based industry

Participants

- | | |
|-----------------------------|------------------------|
| 1. Abid Anwar | 10. Javed Niaz |
| 2. Afzal Hussain | 11. Kh. Hameedullah |
| 3. Bashir Ahmad | 12. Lester A. Decoster |
| 4. Dr. Zahool-ul-Haque | 13. M. S. Korejo |
| 5. Fazal-ul-Hasan Jilani | 14. Maqbool-ur-Rehman |
| 6. Fatah Ali Jamali | 15. Mir Fateh Ali Khan |
| 7. Gary G. Naughton | 16. Mohammad Rafiq |
| 8. Gary Archer - World Bank | 17. Shahid Rashid Awan |
| 9. Ishtiaq A. Qazi | 18. William R. Bentley |

WORKING GROUP - IV

Need for Standardization of Social Forestry Programs

Chairman - Mr. Ihsanur-Rehman Khan

Co-Chairman - Dr. G. M. Khattak

Rapporteur - Representative of wood based Farmers

Participants

- | | |
|--------------------------|----------------------------|
| 1. Anwar Masrur | 9. Mir Rasool Bakhsh Khosa |
| 2. Bahauddin Sirhindi | 10. Mir Ghazi Khan Brohi |
| 3. Dr. Mohammad Iqbal | 11. Muhammad Hafiz |
| 4. Farid-ud-Din Ahmed | 12. Noor Sahib Gul |
| 5. Ghulam Mustafa Sheikh | 13. Rafiq Ahmed |
| 6. Helsen Jan | 14. Rehman Khan |
| 7. Hidayat Ullah Jan | 15. Shamsul Haq Memon |
| 8. Khalid Latif | |

WORKING GROUP - V

Need for Industrial Forestry

Chairman - Mian Salah-ud-Din

Co-Chairman - Dr. Mohammad Ashraf

Rapporteur - Mr. Ghulam Hanif

Participants

- | | |
|----------------------------|----------------------------|
| 1. A. S. Bokhari | 7. Kanwar Mohammad Suleman |
| 2. Akhlaq Ahmed Khan | 8. Mian Mahmood Ahmed |
| 3. Akhtar Saeed Khan | 9. Mir Juma Khan Bugti |
| 4. Charles R. Hatch | 10. Mohammad Yaseen |
| 5. Dr. Salahuddin Solaiman | 11. Naeem Bashir |
| 6. Ghulam Hanif | 12. Noor-ud-Din F. Daud |