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# Forest Situation in Pakistan and Planning its Future

By Mrs. Farzana Panhwar, June 2005

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### General.

In Pakistan the actual forest area is 3.06 million hectares corresponding to only 3.8% of the total land area. In Sindh there are 32,000 hectares of riverine and inland (irrigation) forest plantations, apart from 835,000 hectares of mangrove forests and range land. About 52% of national domestic energy requirement comes from fuel wood. Pakistan is expected to have fuel wood supply deficit of 17.5 million cubic meter by the year 2000 A.D. The forest is under threat due to species destruction through human action, population, primarily habitat destruction and introduction of food and fiber crops in to residual natural environments. The regeneration of forests is limited by the fragility of the seeds of its trees. Those of most species germinate within a few days or weeks. They have little time to be carried by animals or water, currents across the stripped land into favourable sites for growth. Most sprout and die in the hot, dry and sterile soil of the cleared land. The monitoring of logged site indicates that regeneration of mature forest may take centuries. The greater damage is combined with low soil fertility, no active forest exists near by to provide seeds, restoration might never occur without human intervention. If the forests can be saved in a manner that improves local economics, the biodiversity crisis will be dramatically eased.

### Introduction.

Sindh covers an area of about 141,000 square kilometers and has an estimated population 24.2 millions. About 70% of rural population live in settlements of less than 500 inhabitant.

The forests of Pakistan are a good source of soft wood and hard wood timber and they protect the watersheds of the most of rivers. In Sindh 320,000 hectares come under riverine or non irrigated forests. The Sindh 'forests and inland plantation represent about 2.3% of total land area and 5.93% of irrigated area'.

- Acacia Tortilis.
- Acacia Maodesta.

### Failure of forestry projects.

- Less involvement of local people.
- Socio-economic conditions of local people, particularly the habits of the shifting cultivation and traditional land use.
- Supervision and project implementation by un-skilled staff.
- An inefficient management.
- Very weak planning and evaluation of research.
- Inefficient methods used for transfer of technology.

**The silvi-cultural operations on selected natural and man-made forests are:-**

- Improvement of utilisation technology.
- Water shed rehabilitation.
- Reforestation.
- Support of applied forest research.
- Community forestry and institution building.

**Sindh a case study**

During Molocene, warming started and the river Indus started discharging its water to the Arabian sea through Sindh. The delta head had started some where below Panjnad and above Kashmore. The slopes of land in Sindh were very low and therefore velocities of water started reducing. The Indus and its distributors were carrying large amount of silt from the Siwaliks and Potohar and it was below Panjnad that it started depositing silt. The river would remain in high spate from April-October and flood an area of 20,000 square miles called Indus Flood Plain and there grew natural forest of species suiting hot-sub-tropical climate consisting of acacia, prosopica, poplar and Tamarisk. These thick forest were responsible for producing food, feed and fodder for hunter food gathers and many animals and their predators. the river channels and depressions called lakes provided habitat for various kinds of fishes, hypopotamus, elephants, cattle, sheep, goat, pig, dog, deer, jackal, wolf, huylene, rhinoceros, lions, tigers, wild cat, water buffalo, migratory birds, fowl, nilgai, have percupine gazelle, Uria, Morcopolo sheep, and hog deer.

The forests kept environment un-polluted for many a millennia, until the man entered the Indus alluvial forest some 6,000 years ago and started clearing forests for agriculture. The method used was "slash and burn", i.e., particular area of forest was cut down in winter and wood was set to fire. As a land was flat the summer inundation flooded it and covered it with silt. On reseeding of floods, he planted winter crops of cereals, oil-seeds and vegetables. The soil having organic matter and nutrients accumulate over centuries produce bumper crops for 5-7 years, and then he had to select a new area for "slash and burn" and abandoned the land so exhausted. The river flooded it again producing forest trees, shrub and grasses by natural process in a few years, when he abandoned the land already exhausted and turned back to the land abandoned some years ago but now under forest again. The total land under annual cultivation could hardly exceed a few hundred thousand acres, until the historical times when irrigation canals were established and high spot land free from annual floods was cultivated year after year. Yet there was one redeeming factor. The river would change its course in a centuries or two, abandoning some half a million acres under canal irrigation and starting else where. Minor changes the course of river Indus have occurred almost year to year, abandoning a few hundred thousand acres every time. Man had to built new irrigation canals and abandoned area was re-forested by natural process. The system kept the population within about 2 million people and it was only under a few dynasties like those of Vahlikas, Rais, Habris, Soomras, and Khloras, that the population increase beyond one and half million people. The ratio of population of Sindh to that of area under irrigation was usually 1:0.66 throughout the history and land was not degraded to the extent as it is today.

With the British conquest of Sindh came construction of levees or embankments 5 miles away from either bank of the river and confing it within 10 mile width. The forest land out-side the riverain embankments had to be irrigated and water requirement of the trees in being almost 30 times that of field crops raised year around, it became difficult to maintain non-irrigated forests economically. Yet of the 1.8 million acres of land within the river embankments or levees depended upon annual floods. This land in general was divided in three categories of utilisation. Approximately one third of the area was under forest, the other one third was under winter crops on preserved moisture and the last one third was riverain cour6es active and abandoned and depressions. In addition to this about one million acres were under mangroves along the coast where river and sea water met.

The construction of barrages on the up-stream side of the river in the Punjab and Sindh have reduced the water going to the sea not only in terms of volume but also in term of days of flow. today it is only about 56 days a year, when water discharges in to the sea. This is has affected a riverain environments and bio-diversity. The forest area and the mangroves are being destroyed and in the irrigated area the ratio of population to land has increaset to 1:3 against 1:0.66 as was 150 years ago.

### **Present problems and the future of the Sindh.**

Post World War-II irrigation developments in India and Pakistan lead to construction of a large number of barrages and water storage dams on the Indus and its distributories. This resulted in reduction in water in the lower Indus entering Sindh, during summer and drying up in winter below Sukkur. No water flows below Kotri for 10th months of the year ant there is only re-generated (seepage) water from embankments between Sukkur and Kotri for 8 months of the year and its volume reduces to less than 1,000 cusecs the months March to May each year. This has lead to environmental changes in the whole riverain areas in Sindh. Of the total 1.8 million acres between the levees one third was agriculture land one third forests and balance one third abandoned and active river channels. Since 1973 the post Tarbela era the riverain forests in Sindh have dwindled. The agriculture land which was flooded one a year for preserved moisture cultivation is no longer getting moisture and cannot be cultivated, except by tube-wells, which are very costly and are always prone to be flooded by periodic high flood coming once in a decade. The natural vegetation on which animal husbandry had survived is no longer available in quantities as before, hitting this industry very badly. The riverain area had no wind erosion problems, which now have multiplied. Riverain fisheries have been totally lost. The natural fauna of the Indus river have been reduced in population. In the coastal areas, where sea and river waters met and these brackish water were taken by sea waves and estuaries some 25 to 40 kms inland and were responsible for supporting 1.0 million acres of mangroves, as well as making these vast forest as breeding ground or shrimp, lobster and hilsa or Indus palla are effected badly and the catch has reduced considerably. The mangroves which provided fruit as food for populance, feed for cattle, crustaceans hilsa and other fishes, timber and fuel wood for urban use, are dying.

Because of very low slopes of the ground , the tides travel some 80 km as upstream the levees, causing decay of a large number of settlements like; Ghorahari, Keti Bandar, Shah Bandar and many others, because water not only within the river levees, but also out-side has turned brackish and human ant cattle can not survive on such water. This desertification occurred in last 20 years.

The agricultural and forests land in the riverain areas employed about one person per acre in terms of fuel, timber, fruits, vegetable, cattle, feed and fisheries. An estimated 1.6 million people have become un-employed due to environmental degradation.

### **Solution**

The climate of Sindh is comparable to that of Baja California, and Hermosillo in Mexico and Souther-California of USA and Is most suitable for raising fruit crops as is being done in areas mentioned above. In order to reduce carbon dioxide in the atmosphere, it will be worth while raising forests and tree fruit crops in place of field crops and this should reduce carbon dioxide in the bio-sphere.

Again in order to reduce production of carbon dioxide it is essential that all measures should be taken to increase thermal efficiency of wood, coal, gas and petroleum products used in the industry and kitchens. The low thermal efficiency of boilers, steam turbines, gas-turbines, automotive equipment, automobiles ant etc, as of today can almost be doubled by enforcing strict measures, for example by raising the price of gas the industry would be compel to use more efficient boilers, by enforcing anti-pollution measures and the public transport would improve engine efficiency by timely over-hauls. In the same way the thermal efficiency of the kitchen heating equipment can be improve. All above measures would lead to increase in thermal efficiency, reduction carbondioxite formation and tree-crops, converting carbon dioxite in to useful products like; fruits, feed, fodder, timber ant etc.

### **Plan for execution**

In no longer possible to raise forest in the riverain areas without some kind of irrigation, it is suggest that tube-wells may be install in the riverain areas for supplying irrigation water about once a month between April and June. During the rest of the months water table is high enough that trees will get their water requirement form the ground water. Fruit tree crops could be encourage in the irrigated areas. There are fruit trees suiting all the climatic zones of Sindh.

### **FUTURE PLANS.**

- Developing and agro-silvo-pastoral land use system adopted to local needs, where all measures preventing desertification and securing sustained yield should be combined.
- Local peasant population to be involved in tree plantation project as the part of self-help program.
- Increasing environment protection awareness.
- Increasing the production of gum, arabic, fodder,, food and wood.
- Improve efficiency of the forestry service.
- Benefits - both non consumptive (tree for environmental stabilization enclosure, soil regeneration) and consumptive (i.e., wood for fuel and construction material) - that users derive from renewable resources.
- Instituting policies and programs that encourage the use of alternative energy sources such as biogas and solar heat.
- Conserving existing fuel wood sources.
- Test planting the best native fuel woods.
- Test planting selected exotic species.

In Pakistan forest cover only 3.7% of total land area, which is too small in quantity to meet national requirement, so the future plan must be based on;

- Planning and coordination development of the forest resources.
- Mountain forest must be preserved.
- Development of fast growing tree species especially on the farms and urban areas on the road sides.
- Forest harvesting techniques improved, and reduced the wastage from unplanned and inefficient cutting of forests.
- Controlling deforestation and save soil erosion, resulting in to rapidly silting up the Mangla ant Tarbela Dam reservoirs by adding silt load of 42,000 and 100,000 ft annually.
- Protection of watershed areas through more efficient plant cover and restricted deforestation.

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