The State of Forests in Pakistan through a Pressure-State-Response Framework

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Acronyms

ADB	Asian Development Bank
BCS	Balochisatn Conservation Strategy
CBOs	Community Based Organisations
CRCP	Consumer Rights Commission of Pakistan
FAO	Food and Agriculture Organisation
FD	Forest Department
FSC	Forestry Steering Committee
FSMP	Forestry Sector Master Plan
FSP	Forestry Sector Project
GoNWFP	Government of North West Frontier Province
GoP	Government of Pakistan
ITC	Institutional Transformation Cell
JFMC	Joint Forest Management Committee
JFM	Joint Forest Management
KIDP	Kalam Integrated Development Project
NCS	National Conservation Strategy
NGOs	Non-Governmental Organisations
NWFP	North West Frontier Province
OECD	Organisation for Economic Co-operation & Development
PFRI	Provincial Forest Resource Inventory
PFSDP	Punjab Forest Sector Development Project
PSR	Pressure State Response
RWEDP	Regional Wood Energy Development Programme
SDPI	Sustainable Development Policy Institute
SFDP	Sind Forestry Development Project
SFDP	Siran Forest Development Project
SFMDP	Social Forestry Project in Malakand & Dir
SoE	State of Environment
SPCS	Sarhad Provincial Conservation Strategy
UNCED	United Nations Conference on Environment & Development

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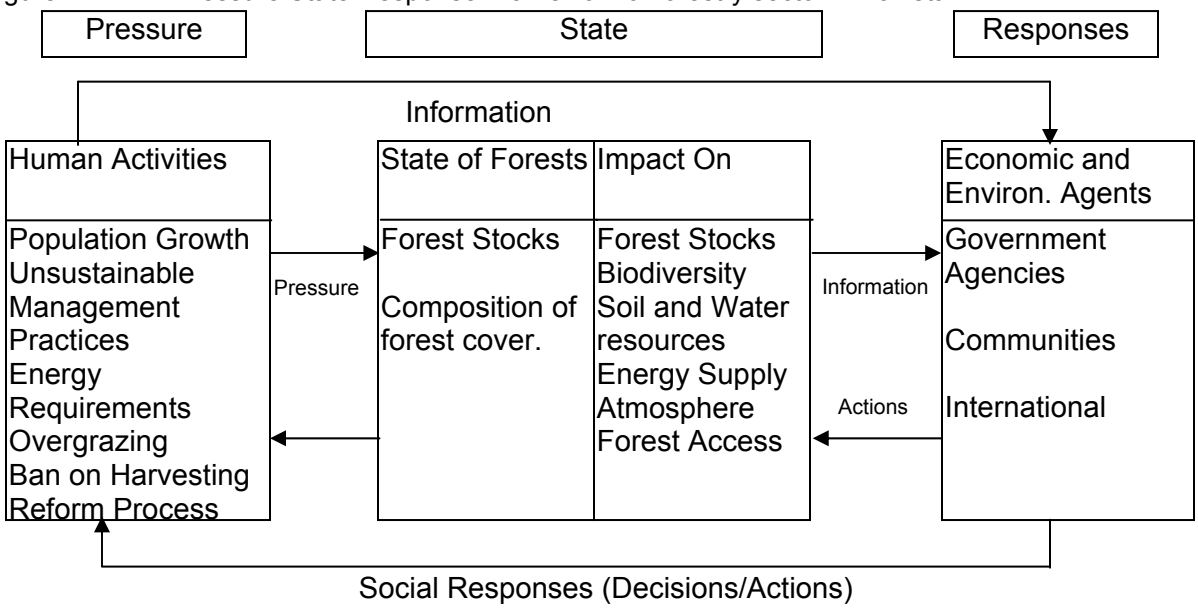
Abstract

The objective of this paper is to discuss the state of forests in Pakistan using the Pressure-State Response framework (PSR). This framework links pressures on the forestry sector-as a result of human activities-, with changes in the state (condition) of the forests. In this connection different pressures and their impacts on forestry sector are discussed. The responses of society to mitigate the pressure or to improve the conditions of forestry sector by instituting environmental and economic programmes and policies are analysed. The main finding is that the present responses are insufficient as well as poorly implemented. Legal/institutional/ and policy reforms alone are not the answer to the pressure being faced by our forestry sector today. Good laws and policies are useless without a political and administrative will to break the status quo. Further it should be realised that community participation is a must for sustainable forest management. It would make forestry an instrument of the policy rather than its objective, thus leading to achieve the sustainable livelihood and reducing the pressure on forestry sector.

1. Introduction

The Pressure-State-Response (PSR) is a convenient representation of the linkages among the pressures exerted on the environment by human activities (pressure box), the change in state of stocks or quality of the natural resource (state box), and the response to these changes as society attempts to release the pressure by instituting environmental and economic programs and policies (response box) (OECD, 1993). The interchanges among these form a continuous feed-back mechanism that may be monitored and used for analyzing the success or failure of the process. The OECD PSR framework has been slightly modified to assess the state of forests in Pakistan.

Figure 1: Pressure State Response Framework of forestry sector in Pakistan.



2. Pressure

2.1 Population Growth

An important factor contributing to diminishing forest resources is population growth. The population of Pakistan was estimated to be 145.96 million in 2002 and continues to grow at an annual rate of 2.6% (GOP Population Census, 1998). Due to this increased population the pressure on forests and forest products is increasing. This is evident in the fact that despite a heavy rate of deforestation, 300,000 tons of wood, pulp, paper, and other by-products were imported in the year 2000-01 (CRCP, 2001). Using relevant growth parameters of demand and supply developments and excluding inaccessible areas (25% of the total forest cover), total forest stocks would be completely consumed sometime between the year 2015 and 2025 (PFRI, 2000).

2.2 Unsustainable forest management practices

During both the colonial and post independence periods, entrepreneurs took over and commercially exploited large forest tracts to satisfy the demands of a growing rural and urban population. Also, with onset of canal irrigation, thousands of hectares of riverine, scrub, and forest land in the Indus plains were cleared for agriculture. The deforestation process was underpinned by a complex system of ownership and land tenure which led to unsustainable forest management practices and to rising tensions between landowners and right-holders and the forest departments. This is especially so in the case of guzara[1] forests in Hazara, where the affected stakeholders feel that the Hazara Forests Act, 1936, has led to the "bureaucratization" of private forests. The act was designed by the British to centralize the management of forest resources in Hazara, one of the most densely forested areas of the NWFP. The underlying premise was that the villagers could not be trusted to look after the forests themselves, and that Government supervision was necessary. Conversely,

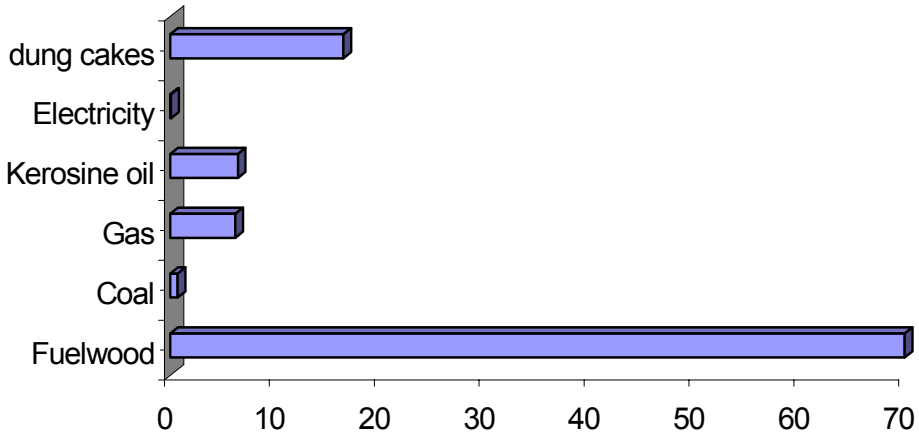
1 Guzara literally means "subsistence". When forests were reserved for government ownership and management in Hazara at the time of first settlement of land ownership in 1872, sizeable patches of wooded lands close to habitations were set aside to meet the bona fide domestic needs (timber for house construction, fuelwood, fodder) of the local communities. Such forests were designated as guzara forests.

owners and right holders objected to the red tape and delays involved in obtaining permits to cut trees and disbursements of their shares of sale proceeds of timber. An additional source of resentment was the actual or perceived discrimination in recognizing their rights, which was attributed to an alliance between the Forest Department and the large forest tract owners.

2.3 Energy Requirements

Energy requirements of the growing population exert increasing pressure on forests. Annually, forests provide 3.5 million cubic meters of wood, which is one-third of national energy requirements (GOP, 2001). More than 75 percent of all households in Pakistan rely upon wood for cooking and heating (RWEDP, 2000), with the dependence reaching 90 percent in rural areas

Figure 2: Different sources of fuel for cooking purposes.



Source: GOP, 1997

2.4 Over Grazing

Much of the forest area is used as grazing land for livestock, whose numbers have been increasing over the years (Table-1). The pressure of livestock on forests varies with the geographical region. In particular, productive forests of the NWFP are the most exposed to over-grazing by cattle, sheep, and goats (see Table-2 for the growth in numbers). In the northern divisions of the NWFP, 82% of forest area is affected by over grazing and 43% of the grazing is taking place within forest stands on very steep to even precipitous slopes (PFRI 2000)

Table-1: Livestock population in Pakistan (000 heads)

Livestock	1992-93	1994-95	1996-97	1998-99	1999-00	2000-01	2001-02
Cattle	17779	17848	20802	21592	22004	22400	22800
Sheep	27668	29065	23668	23938	24084	24200	24400
Goats	40225	43764	42650	45775	47426	49200	50900

Source: GOP, 2000

Table-2: Change in livestock population of NWFP over 1986-1996 (000 heads)

Livestock	1986	1996	Change %
Cattle	3285	4237	29
Sheep	1599	2821	76
Goats	2899	6776	134

Source: GOP, 2000

2.5 Timber Harvesting and Royalties

The ban on commercial timber harvesting, which was imposed after the floods of 1992, remained in place for nine years. Ironically, the ban aggravated the problem of illegal cutting. One of the reasons for this was discontinuation of demarcations and work-plans by the forest department, in effect, making the ban a carte blanche for unregulated harvesting. There were reports from 1995 onward of large-scale illegal timber harvesting in almost all regions of NWFP, including Malakand and Upper Swat. Also, lorry-loads of timber, illegally cut in northern Pakistan, were sent to Afghanistan to reappear in Pakistan but now declared as Afghanistan out-sourced.

Box-1: Timber Mafia

> The duplicity of the timber mafia can be assessed from an incident that occurred in 1998. On April 28, 1998, the government of the NWFP called upon the Prime Minister to lift the ban on commercial timber harvesting. At the same time - arguing that forestry is a provincial subject – it ordered the NWFP Forest Department to relax the ban from October 1998 to end of February 1999 to allow the removal of "illicitly cut timber" in the Indus Kohistan region. During the relaxation period about 1.4 million cubic feet timber was transported from Kohistan and Hazara under the guise of removing the windfall and dried trees. In actual fact, a survey by the forest department reported a lower figure -- 0.8 million cubic feet windfall and dried timber. Thus, about 0.6 million cubic feet standing trees were cut and smuggled down-country (The Nation, November 1999).

The royalty payments to the local right-holders stopped too as a result of the timber harvesting ban, although illegal cutting continued apace. In addition, royalty payments are still due for timber cut in the pre-ban period. Frustrated local communities reacted by adding to the depredations of the mafia. Also, due to delayed disbursements, many right-holders agreed to sell their royalty rights to the contractors/local elites for far less value than the assessed royalties. This contributed to diluting “community ownership” of forest resources which was substituted instead by predatory behaviour.

3. State

There is considerable debate over the precise area under forests in Pakistan (UNCED, 1992). Partly, the problem is a definitional one, represented by a less than perfect correspondence between legally demarcated forest under the administrative control of the provincial forest departments (FD) and the situation on the ground, as it relates to both tree cover and its condition. In other words, officially designated “forest areas” may be devoid of trees, while substantial tree cover may be found on lands classified differently.

Partly, forest statistics differ. Land use data including forest areas reported by the Forestry Sector Master Plan (FSMP) Project, 1993, with the help of satellite imagery and covering the whole of Pakistan, shows that Pakistan has 4.2 million ha covered by forests and trees, which represents 4.8 percent of the of the total land area. The Pakistan Forest Resource Institute (PFRI, 2000) questions this figure on methodological grounds. Economic Survey of Pakistan (2001-02) show that forest area has increased over the time, from 3.46 million

ha in 1990 to 3.79 million ha in 2001-02. In contrast, according to the recently released FAO report, State of Forests, 2001," the total forest area of Pakistan (sum of natural forests plus forest plantation) decreased from 2.75 million ha in 1990 to 2.36 million ha in 2000. This translates into an annual rate of deforestation of 1.5% over the last ten years. Similarly, the Asian Development Bank claims that forest cover dropped from 3.6% of the total land in 1990 to 3.2% of the total land in 1999.

An even more overriding concern is the condition of the remaining forests in Pakistan. The PFRI (2000) study, covering four northern divisions[2] and 21 Districts of the NWFP (which comprises 52.9 percent of the whole NWFP/FATA area), assesses the state of productive forests in the NWFP[3]. It indicates that only a relatively small area of 21 percent has adequate crown coverage of more than 50 percent. Further, only 28 percent (191,672 ha) of the total PFRI forest area is located on sites below the 2000m-altitude level, of which only 18 percent (36,135 ha) is in a fairly good condition. The forests are subject to a continuous process of degradation. The percentage of areas with deep soil is decreasing with declining crown coverage. Simultaneously, the proportion of areas where only rocks are found are increasing. Most of the mature trees, with large diameters and timber volumes tended to be found in higher altitudes (over 2000m).

Table-3: Forest Resources in Pakistan 2000

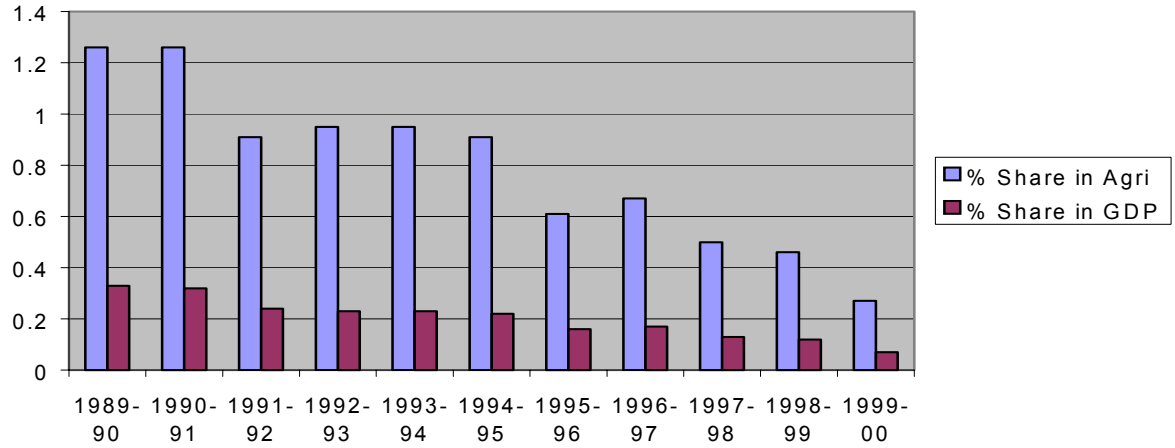
Land Area[4] (000, ha)	Total Forest (000, ha) (natural forests + forest plantation)	Percentage of land area (%)	Wood volume[5] in forests (m^3/ha)	Wood biomass[6] in forests (t/ha)
77087	2361	3.1	22	27

Source: State of forests 2001, FAO

In terms of its contribution to GDP, forest sector contributions have declined from 0.33 percent in 1989-90 to 0.07 percent in 1999-00 (Figure-3). Forest depletion has emerged as one of the key environmental issues for Pakistan and the source of problems like landslides, soil erosion, floods, soil degradation, and displacement of people. Conservation of the forest resources is not only important to protect other resources such as water, soil, flora and fauna, but also to ensure the sustainable livelihoods of people who depend, directly or indirectly, on it through agriculture, animal husbandry, and logging.

2 The four divisions include Malakand, Hazara, Mardan and Peshawar.
3 Of the country's four provinces NWFP has the largest area of productive forests.
4 The land area figure refers to the total area of a country, excluding areas under inland water bodies.
5 Wood volume refers to total volume over bark of living trees above 10 cm diameter at breast height.
6 Biomass refers to above-ground mass of the woody part (stem, bark, branches, twigs) of trees (alive or dead).

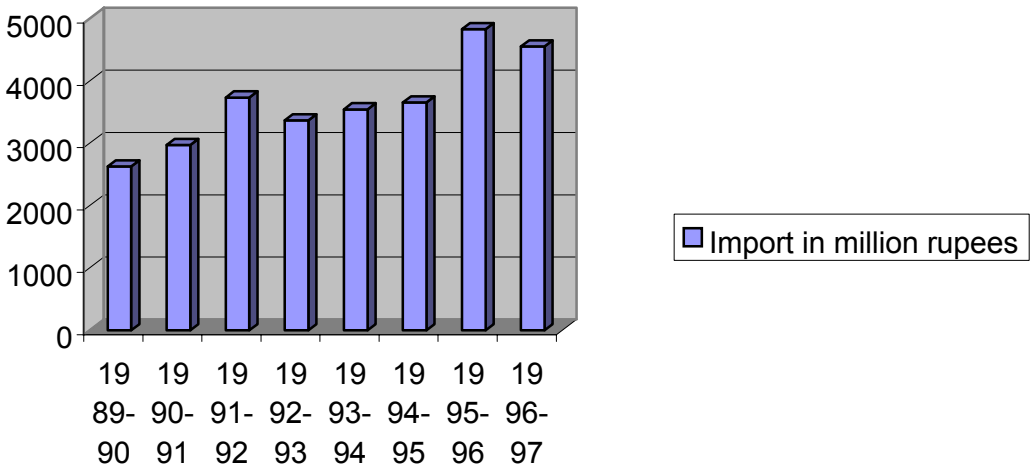
Figure-3: Share of forestry in value added of agriculture sector (Base= 1980-81)



Source: GOP, 2000.

Deforestation also affects the quantum of fuelwood in the national energy balance. Fuelwood continues to be the major source of household energy in Pakistan. Ninety percent of the rural population and 60 percent of the urban population uses fuelwood for its household needs. The trees on 29 million ha of rangelands and the 330 million trees on 19.3 million ha of farmlands contribute greatly to meeting the fuelwood demand in Pakistan (RWEDP, 2000). However, these are insufficient to meet the wood and wood product demands, forcing recourse to imports. The value of such imports increased from Rs.2.63 billion in 1989-90 to 4.55 billion in 1996-97 (Figure-4).

Figure-4: Import of wood and wood product from 1989-90 to 1996-97



Source: Government of Pakistan, 1998

Table-4: Production, trade and consumption of forest products, 1998

Fuelwood			Industrial roundwood			Sawnwood			Wood-based panels			Pulp for paper			Paper and paper board		
000m^3			000m^3			000m^3			000m^3			000 tonnes			000 tonnes		
P	I	C	P	I	C	P	I	C	P	I	C	P	I	C	P	I	C
30715	0	30715	2329	135	2462	1051	53	1104	109	18	127	199	36	235	513	135	648

Source: FAO State of Forests 2001
Key P = Production, I = import, C = Consumption

4. Impacts

4.1 Sustainable Use

The forests in Pakistan have three important functions: protection of the natural environment, regulation of atmospheric conditions, and production of goods. All three can be ensured by maintaining a balance between sustainable production and sustainable consumption of the forests. The present trend of indiscriminate consumption of forest resources is unsustainable. According to the PFRI report, the use of wood to meet firewood consumption exceeded sustainable supplies by about 4 million m^3 annually. If the harvesting continued unabated at the rate assessed in 1995, wood stocks would get completely consumed between the year 2015 and 2025 (PFRI, 2000). An SDPI study conducted for the ADB quite recently observed that, in most cases, trees with smaller diameters were harvested because of ease in transportation. This caused an abnormal age class distribution within the stands. Directly, it led to bole damage and indirectly promotes the spread of diseases. The ongoing trend of deforestation is having a negative impact not only on production and protection functions of the forest but also on the sustainable livelihood of those who live in and around the forests.

4.2 Impact on biodiversity

Another conspicuous impact of deforestation is on the flora and fauna. Deforestation leads to loss in habitat, breeding places, and food sources of different animals. It also adversely impacts on ecosystem diversity, resulting into loss of genetic diversity and species diversity. Various plant species (four monotypic genera and 400 species) are endemic in Pakistan (SOE, forthcoming). Several more are considered threatened as a result of deforestation and increasing pressure on their use. The deforestation is not only a threat for flora, but fauna is also being adversely affected. Loss of pastures results in reduction in population of rodents, rabbits, and other herbivores (grazing animals), thus eventually the population of carnivores (meat eaters) who use herbivores as their food source is decreased. Out of 188 mammal species found in Pakistan, 6 are endemic, 51 species are threatened. Similarly, reduction in mangrove forests adversely impact the aquatic species such as green turtle, various species of fish, and preying birds. Out of 174 listed species of reptiles found in Pakistan 15 species of reptiles are endemic, 10 species are threatened. Moreover out of 16 species of amphibians found in Pakistan 2 species are endemic (WWF, 2002). The same trend is true for birds and arthropods.

4.3. Soil and water usage

The negative consequences of uncontrolled forest exploitation are self-evident. They include soil erosion and sedimentation, desertification of once-productive upland areas and the silting up of waterways in the plains (making them more prone to flooding). A thin canopy of trees with virtually no regeneration, severe erosion, and low organic matter content of soil, characterize most of the degraded forest of NWFP and northern areas of Pakistan. The occurrence of floods and landslides as a result of deforestation has affected not only the degradation of land but also human lives and property. Damage to irrigation networks, crops, and transportation and communication systems and utilities due to floods are a recurring phenomenon. The decline

in tree cover has already resulted in a large reduction in watershed and reservoir efficiency. Except for a small headpond with daily storage capacity, Pakistan's important Warsak Reservoir - built in 1960 - is now completely silted up. Efforts at watershed management should lengthen the life of more recent projects, such as the Mangla and Tarbela reservoirs; yet reports indicate that, even in these cases sedimentation is occurring at a rate which could render them inoperative in as little as thirty five years.

4.4 Energy supply impacts

The above mentioned processes have major implications for the availability of water for irrigation and power generation. Indeed, some experts predict large energy deficits in the future, with considerable impact on agriculture and the economy. According to the World Bank, while less than 10 percent of Pakistan's hydroelectric potential has actually been exploited, further development is heavily constrained by silting (Imran et al, 1990).

4.5. Atmospheric effects

Fuelwood combustion has changed the local atmosphere, particularly in rural areas of the country where fuelwood is the main source of cooking and heating. While increasing CO_2 concentration add to the greenhouse effect, this is not a significant impact given Pakistan's low per capita emissions; primarily, the increase in radiant energy has warmed the local climate. In addition, fuelwood burning also releases other pollutants into the atmosphere, such as TSP, HC, NO_2, and SO_2.

4.6. Forest access

As a result of deforestation, the distance travelled by rural people to reach the forest has increased considerably. In order to meet their fuelwood requirements and to graze their cattle, people living around forests in NWFP and northern areas of Pakistan are forced to travel to remote and very steep areas, where most of the remaining well-stocked forests are to be found.

5. Responses

5.1 Forest Sector Legislation

Pakistan's forest policies are tied to its British colonial past. At the time of independence, the policies, procedures, and structures that administered the nation's forests were left largely intact. For decades, the only reference point for dealing with new problems was the 1927 Forest Act, despite all the new or modified legislation enacted since then -- and the list is long, as can be seen in Annex-1. Over the past half century, the population of Pakistan has nearly quadrupled. Demands on the nation's forest resources are expanding rapidly, with almost 2.6 percent population growth and 4.2 percent industrial expansion. It is now recognized that there is a large group of stakeholders that needs to be involved in forest policy development and management.

5.2 Strategic Plans and Policies

In response to the increasing pressure on forest resources, the government has put in place many strategic plans and policies, both at the national as well as provincial levels. These address forest resource development and management both directly and indirectly:

- The Pakistan National Conservation Strategy (NCS), approved in 1992, recognizes the need for the Provincial Forest Departments to associate local people in the protection and management of forests.

- The Sarhad Provincial Conservation Strategy (SPCS) and the Balochistan Conservation Strategy (BCS) strongly recommend community-based management of forests (GONWFP, 1996)
- The Forestry Sector Master Plan (FSMP) (1992 – 2017) calls for greater participation of local people at every level of planning, as well as an extended role for the private sector. It also recommends that the existing Forest Act 1927 be updated and revised to make it less prohibitive and punitive, and more participatory. It proposes that new provincial legislation be enacted to encourage people's participation in policy formulation and management of forest rangelands and watersheds (GOP, 1993)
- The Perspective Plan 2001-2011 adopts community participation through decentralization as one of the overriding principles governing the proposed strategy to tackle problems of deforestation and damaged ecosystems. The plan reaffirms Government's commitment to continued implementation of the FSMP, and mentions forests as one of the areas on which conservation efforts will be focused.
- The National Environmental Action Plan, approved by the Pakistan Environmental Protection Council in 2001 also provides for participation of the private sector, NGOs and citizens groups in execution of projects at the local level.
- The draft National Forest Policy mentions improved livelihoods of the people as its fundamental goal. The policy calls for involvement of local communities in implementation of projects, management of forests and protected areas, protection and sustainable management of mangrove and riverine forests, and implementation of social forestry programmes.
- The Punjab Forest Policy Statement 1999 states the Provincial Government's intention to involve stakeholders in management of forests and watersheds and to encourage private sector investment in forests through joint forest management, joint ventures, long-term leases and suitable incentives.
- The NWFP Forest Policy 2001 includes the participation of local communities and promotion of private sector investment among its cardinal principles. The policy also recommends revision of forestry legislation to provide for joint forest management.

5.3 Institutional Reforms

The NWFP Forestry Sector Project (FSP) represents an important attempt to institutionalize participatory and sustainable natural resource management. The FSP together with the Institutional Transformation Cell (ITC), a joint Dutch-Swiss-assisted project, devised a set-up to improve decision making and foster ownership of the forestry resource management process. The key thrusts were: a) reorganization of the provincial forestry department; b) capacity building within the department; c) formalizing the role of civil society and women in forest management (Hussain and Khan, 2000)

5.4 Major Community Forestry Initiatives

The NWFP is the foci for a range of innovative projects presenting alternative approaches for sustainable forest management (Some of the important initiatives in forestry sector are listed in Annex-2). These project experiences have become the basis for recent policy measures, especially those concerned with social forestry (Ahmed and Masood, 1998).

5.5 Forestry Projects implemented by provincial forest departments

To ease out pressure on Pakistan forestry sector, quite a few projects were initiated mainly with the help of Asian Development Bank as well as The World Bank. Some of the important projects include NWFP Forestry Sector Project (FSP), Punjab Forest Sector Development Project (PFSDP), Sindh Forestry Development Project (SFDP). Brief introduction of these projects is provided in Annex-2.

5.6 Pakistan's signature on international conventions and treaties

Pakistan has signed various international conventions and treaties related to the conservation of forests and biodiversity. These are detailed in Annex 3.

6. Analysis/Gaps

The societal responses of Pakistan to mitigate the impacts of different pressure factors on forestry sector cannot be underestimated. However, if good strategies, plans and policies alone were the criteria for success, the forestry sector in Pakistan would have developed by leaps and bounds. One has to admit that it is the effective implementation of the recommendations contained in these strategies, plans and policies that has been lacking in the past, and it is this aspect, which the Federal and Provincial Governments must address in future.

6.1 Existing Forestry Laws and Regulations

The Forests Act 1927 has effectively served its primary purpose of protecting and conserving government forests. However, along with the NWFP Hazara Forest Act 1936 it is punitive in nature and does not provide any incentives for compliance with its provisions. Moreover non-involvement of stakeholders in management has fostered apathy, even dissatisfaction. Feelings are even stronger among owners and right-holders in guzara forests, who dislike what they consider to be excessive "bureaucratic" controls. The things have not changed in the recently promulgated NWFP Forest Ordinance which is as punitive in nature as the previous laws are. Moreover, provision of existing laws relating to resource access and tenure, particularly the reserved/protected/guzara/ forest system and recognition and exercise of private rights in such forests, have been retained. In view of the importance of the issues involved, it is strongly recommended that detailed evaluation studies be conducted on the efficacy of existing forest land tenure system as well as on impact of the moratorium on timber harvesting.

6.2 Lack of credible data on Forests in Pakistan

On planning front our government agencies still look at FSMP as a reference point. Here it must be kept in mind that FSMP presumption was very much for increasing government capacity. It is not an operational planning document. PFRI study that was conducted with improved ground resolution satellite images and an intensive terrestrial inventory, have already challenged the accuracy of data and statistics provided in the earlier studies about forestry resources in NWFP. There is a sheer need to reassess the area under forest cover in Pakistan utilising the latest technology and accompanied with intensive terrestrial inventory. Otherwise any future planning based on the Government of Pakistan's current claim that forest cover in Pakistan is increasing would not be successful.

6.3 Forestry Sector Reforms

As indicated, most forestry sector reforms pertain to the NWFP. They attempt to redefine the rules of the game regarding use and management of forest resources. The concept of community participation was introduced in forestry laws for the first time in 1996 through the Hazara Community Participation Rules, which provide for Joint Forest Management (JFM) of protected forests. Similar rules for reserved forests were prescribed in 1997.

The reforms have a number of components. One plank was to establish fora where stakeholders could interact and discuss the reforms. However, the consensus is that the planning process for these reforms was non-consultative, excluding an important set of stakeholders, namely the communities themselves. This has had negative spin-offs on other initiatives. Thus, it was recommended to create a Forest Commission, supported by forestry round-tables, with a view to ensuring an interface between key stakeholders in the forest sector. The Government of the NWFP constituted a high level Forestry Steering Committee (FSC) to oversee this process. However, the non-participatory nature of the sessions convened by the FSC (NGOs are given observer status) are a forewarning that the Forestry Commission and roundtables will degenerate into mere rubber stamps.

Moreover, NWFP forest department has conveniently avoided in forging an effective linkage between the Devolution of power plan and the Sectoral Reform Process that was underway much before the inception of the Devolution plan of current government itself. One was expecting that FD would take a lead in bringing in the learning of the reform process into the devolution itself through the platform of FSP. Rather than being proactive unfortunately the FD by choice remained reactive to date for obvious reasons of protecting their power base to the maximum possible extent. They have been successful in remaining at the Provincial level and decentralizing the most impotent functions to the district level. With a departmental mindset that is opposed to any kind of collaborative management principles, it would be naive to expect from the Forestry Department to live the reform process in true spirit.

6.4 Forestry Projects

Delays in implementation are a generic concern in most forestry projects. With regard to the FSP, an overall physical progress of 20 percent has been achieved against the elapsed loan period of 76% (ADB review mission of March 2001). Final results of the PFSDP are also not very encouraging and most of the stakeholders are dissatisfied with the project interventions (Punjab Economic Research Institute, 2001, Impact Evaluation of Punjab Forest Sector Development Project). Similarly in SFDP, the most innovative element of the project- provision of credit on a pilot basis for private sector participation in development of reserved forests- was dropped at the time of mid term review of the project in 1996.

Reforestation is the major focus of many projects and plantation is considered as the success criteria of reforestation campaigns. Most of the times the target achievement is assessed on the basis of number of saplings planted in a particular year and no consideration is given to the post plantation survival rate (say one year after plantation).

Ultimately, community based forestry projects lack post project sustainability. Participatory and integrated approaches to forest management tend not to be sustainable in the absence of an enabling institutional environment. In general, federal, provincial and local level institutions are not sensitised to community concerns, both at the policy and implementation levels. At the very outset, forest officials are reluctant to concede their powers which refers to their capacity to influence the outcome of social processes. They lack confidence in the ability of "untrained locals" to manage their resources. The attempts to safeguard department prerogatives also preclude integrated approaches to conservation and the culture of corruption and collusion- which is antithetical to conservation- has become deeply ingrained.

6.5 International Conventions

On international level, Pakistan is signatory to many treaties and conventions related to the conservation of forests and biodiversity. However, most of the time our negotiators ratify the treaties without understanding their implications and very little efforts are made at official level to implement those treaties in true spirit.

7. Conclusion

The analysis of situation presented in previous sections has made it easy to assess the impact of societal responses to different pressures on forestry sector in Pakistan. Table-5, reflects that most of the responses are either insufficient or not implemented properly and the state of forests in Pakistan is continuously deteriorating. So much so, that the reform process initiated in NWFP itself is exerting the pressure on forestry resources as independent studies have shown that this project is accruing its benefits to the notables and privileged among the community members thus forcing the marginalized and poor sections to exploit the forest resources unsustainably. Hence one can conclude that different legal/institutional/ and policy reforms taken from time to time, alone are not the answer to the pressures being faced by our forestry sector today. "Good" laws and policies would enable the action to be taken, but political and administrative will to take requisite action is a must. The will would be created by an attitudinal change- perhaps even a change of mind-set- in the officials who are the actual implementers of forest policies and laws. To help strengthen political will, it is also necessary to motivate people to cooperate in realizing the objectives of forestry sector plans, policies and laws. This in turn can be achieved through adopting a participatory bottom-to top approach which would enhance involvement of all sections of society in sustainable forest management. There is a need to generate large-scale employment in the forestry sector through involving people in forest management, protection, plantation, harvesting, and transportation. Concomitantly, supplementary incomes can be generated for rural farm families through community, leasehold, and private forestry. In this context, it should be realized that generation of income and employment are more important than government revenue alone and forestry should be an instrument of sustainable forest management policy rather than its objective otherwise the pressure of human activities on Pakistan forest sector would keep on building and according to PFRI estimates one would find that between year 2015-2025 there would be no forests left in Pakistan.

Table-5: An assessment of societal responses to different pressure factors on Pakistan forestry sector.

Pressure	Response	Result	Recommendations
Population Growth	Different policies and planning	None of the policy initiative was successful in checking the rapid depletion of forest resources	Policies are designed on a false assumption that forest cover is increasing. There is a need to reassess the area under forest cover. On top of it one need to break the status quo in implementing agencies.
Unsustainable management practices	Laws	None of the laws were able to address the problems of forest land-tenure system or issues of royalties for a sustainable management of forestry resources.	To address this issue in new legislation.
Energy Requirements	Different laws and policies	Fuelwood is still the major fuel used for cooking and heating purposes	Promotion of cheap and easily available alternative fuels and sources of energy. Promotion of farm forestry.
Overgrazing	Laws and policies	No improvement	Sustainable management of rangelands. Promotion of farm forestry.
Ban on Harvesting	Laws	Increase in illegal logging	Impact assessment of this policy.
Reform Process	Policies and planning, laws	Stakeholders are not satisfied, benefits are not equally distributed	Enhance transparency by promoting participation and consultative in the process.

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Annex 1

Forest Sector Legislation

A. Statutes[7]

1. Balochistan Forest Regulation 1890
2. Balochistan Wildlife Protection Act 1974
3. Cattle Trespass Act 1871
4. Cutting of Trees (Prohibition) Act 1975
5. Forest Act 1927
6. Islamabad (Preservation of Landscape) Ordinance 1966
7. Kohat Mazri Control Act 1953
8. Land Reforms Act 1977
9. NWFP (Conservation and Exploitation of Certain Forests in Hazara Division) Ordinance 1980
10. NWFP (Sale and Sawing of Timber) Act 1996
11. NWFP Forest Development Corporation Ordinance 1980
12. NWFP Forestry Commission Act 1999
13. NWFP Hazara Forest Act 1936
14. NWFP Protection of Trees and Brushwood Act 1949
15. NWFP Wildlife (Protection, Preservation, Conservation and Management) Act 1975
16. Pakistan Environmental Protection Act 1997
17. Punjab Development of Damaged Areas Act 1952
18. Punjab Forest (Sale of Timber) Act 1913
19. Punjab Wildlife (Protection, Preservation, Conservation and Management) Act 1974
20. Sindh Wildlife Protection Ordinance 1972
21. West Pakistan Firewood and Charcoal (Restriction) Act 1964
22. West Pakistan Goats (Restriction) Ordinance 1959
23. NWFP Forest Ordinance 2002
24. Draft Punjab Forest Act
25. Draft Balochistan Forest Act
26. Draft Azad Jammu and Kashmir Forestry Act

B. Rules[8]

1. Hazara Management of Waste-lands (Guzara) Rules 1950
2. Hazara Protected Forests (Community Participation) Rules 1996
3. Hazara Reserved Forests (Community Participation) Rules 1997
4. NWFP Forest Produce River Transport Rules
5. NWFP Forest Produce Transport Rules 1975
6. Draft NWFP Forests Management (Community Participation) Rules
7. Draft NWFP Protected Forests Management Rules
8. Draft NWFP Management of Wasteland (Guzara) Rules
9. Draft NWFP Forest Produce Transport Rules
10. Draft NWFP Forest Produce River Transport Rules.

7 Statutes: A law expressly enacted by Federal Government.
8 Under the provision of an act/ordinance, rules are made for the elaboration of that specific act/ordinance.

Annex 2

Major Forestry Projects

a) Community Forestry Initiatives

Kalam Integrated Development Project (KIDP)

KIDP was started in 1981 with Swiss assistance, and its fourth phase came to an end in 1998. The main aim of the project was to "improve the socio-economic conditions of the population in the project area (Kalam and Bahrain) through people's participation in forestry, agriculture and village development, taking into consideration the ecological, social, economic and institutional sustainability of all means and activities at all levels". This project developed a new approach to timber harvesting in protected forests by training local people to work as small contractor crews for the FD. As a result, not only better timber output and less forest damage, but also improved local income generation was expected. In addition, KIDP promoted afforestation in protected forests. A key part of the project was the formation of community-based organizations (CBOs), thus helping the communities to organize themselves for collective action. The effectiveness of "people's check-posts" established by communities to check illegal extraction of timber under KIDP gave the communities a sense of ownership in natural resource management and a confidence that collaborative approach works. Due to the timber ban, however, the small contractor system had to be stopped

The Malakand and Dir Social Forestry Project (SFPMD)

SFPMD was started in 1987 with Dutch assistance and terminated in 1997. The project sought to reforest the denuded hillside and marginal farm lands, raise the standard of living of local communities, and build the extension capacity of the local forestry agency. The activity focused primarily on private and communal property. A key part of the project was the village land-use planning process (VLUP), involving step-by-step approach for preparing an action plan. Project planners focused on participatory planning and community consensus building. It is widely accepted that the project has fostered great capacity and confidence among the provincial forest department staff to implement social forestry strategies (Poffenberger, 2000).

The Siran Forest Development Project (SFDP)

GTZ initiated this social forestry project for natural resource management (NRM) on self-help promotion in NWFP in 1992. The project aimed at the participation of local communities, along with FD officials and social forestry project staff to form joint forest management committees (JFMCs), to ensure forest protection and regeneration. The JFMCs comprised user groups, interest groups, and forest department officials. The SFDP is the first project in Pakistan to implement joint forest management (JFM) in Pakistan. The local people in the vicinity of state-owned forests are involved in the management of these forests. This is backed by legal rules. The FD shares powers with local people who are granted access to state forests to harvest specified forest products (firewood, timber, fodder, and medicinal plants). Before preparing joint management plans, needs of the people are assessed and responsibilities divided among the community and the FD through an agreement. It was the success of the SFDP, that encouraged the government to introduce Hazara Protected Forest Rules, 1996. The project was closed by the donors because the Government was not willing to make the required governance and institutional changes which were required to achieve the real participation of local communities at grassroots level.

b) Forestry Projects implemented by provincial forest departments

NWFP Forestry Sector Project (FSP)

The FSP commenced in 1996 with the help of a loan from ADB while the Government of Netherlands provided a grant for consultancy, capacity building and farm forestry. The NWFP government also contributed. Various FSP components address the institutional capacity of the DFFW, legal reforms for social forestry, resource mapping and management planning, physical development work including afforestation/reforestation, rehabilitation of rangelands, and farm forestry. The project also aims to provide/upgrade physical office facilities and community infrastructure schemes.

Punjab Forest Sector Development Project (PFSDP)

The Punjab Forest Sector Development Project was initiated in 1995 with assistance of the World Bank. The project included expansion of farm forestry throughout the Punjab, rehabilitation and improved management of existing forest resources including scrub forests and range-lands of the Pothwar and Thal areas; and transfer of forest nurseries to the private sector and elimination of seedling subsidies

Sindh Forestry Development Project (SFDP)

The ADB sanctioned the Sindh Forestry Development Project in 1992 with the objectives of: increasing output of fuelwood and small timber resources; strengthening existing institutions through training and research and; rehabilitating degraded forests and intensifying management of forest resources. The project placed strong emphasis on social forestry, providing assistance to selected rural communities and farmers in the form of seed and seedlings, technical advice, and training for raising nurseries. The project also envisaged that the feasibility would be explored for: leasing out selected state forest lands (riverine or irrigated plantations) to farmers and; joint ventures between the Forest Department and private sector companies, particularly industrial wood-based industries

Reforestation

Reforestation remains a national priority in the new forest policy initiatives. During spring and monsoon seasons of 2000, 149.9 million saplings were planted against the target of 196 million saplings (GOP 2001). The shortfall of 46.1 million saplings has been attributed to reduced allocation of funds, removal of subsidy on planting stock in Punjab, lack of adequate nursery stock and adverse climatic factors.

Annex 3

International Conventions and Treaties Related to the Conservation of Forests and Biodiversity

Convention	Major Objectives	Major Obligations
Convention on Biological Diversity	Ensure conservation and sustainable use of biological resources	Prepare and implement national strategies for the conservation of biodiversity.
The Framework Convention on Climatic Change	Stabilising greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system	The Convention is based on sharing the burdens of coping with climate change.
Convention to Combat Desertification	Combat desertification	Prepare national action plan and implement programmes for poverty alleviation.
Convention on the International Trade in Endangered Species of Wild Fauna and Flora	Protect and regulate the trade in wild fauna and flora and their products	Protect all species threatened legally and regulate trade.
Convention on Wetlands of International Importance especially Waterfowl Habitat	Prevent the loss of wetlands	Conservation and sustainable use of migratory stocks of wildfowl.
World Heritage Convention	Protection of world heritage	Conserve and protect the places declared as world heritage.