

Land degradation in Pakistan puts countless obstacles in the sustainable production capacity of the agriculture sector. Wind and water erosion, waterlogging and salinity, deforestation and desertification all accelerate the degradation process. In order to combat land degradation, several efforts have been made at the national and regional levels to develop monitoring and data collection methodologies and to formulate appropriate policies, programmes and projects.

## Chapter 4 Land – use and care

Pakistan is a land of diversity. The scenery changes northward from coastal beaches, lagoons and mangrove swamps in the south to sandy deserts, desolate plateaus, fertile plains, dissected upland in the middle and high mountains with beautiful valleys, snow-covered peaks and eternal glaciers in the north. The variety of landscape divides Pakistan into six major regions: the North High Mountainous Region, the Western Low Mountainous Region, the Balochistan Plateau, the Potohar Uplands, the Punjab and the Sindh



Plains. In addition, the country has 7 of the 16 tallest peaks in Asia. The statistics are: 40 of the world's 50 highest mountains are in Pakistan; in Baltistan over 45 peaks touch or cross the 20,000 foot mark; in Gilgit within a radius of 65 miles, there are over two dozen peaks ranging in height between 18,000 to 26,000 feet.

### Pressures

Given the diversity of landscape, Pakistan is not an exception to land degradation and pollution threats.

### Land Pollution

Pakistan generates 47,920 tonnes of solid wastes per day (urban waste: 19,190 tonnes rural: 28,730 tonnes). About 3,600 tonnes of chemical fertilizer is annually produced in the country while 18,000 tonnes of pesticides are imported each year. Collection efficiency of solid wastes is about 54% in the urban centers. A total of 9856 industries surveyed showed that they were generating 21,175 tonnes of waste. These included chemicals, fertilizers, tanneries and textile units. Since none of the city in Pakistan has proper waste collection and disposal system for municipal or hazardous waste, land in urban areas is getting polluted. Excessive use of pesticides has adversely affected biomass of agriculture land. According to NCS report 96% land has low biomass.

### Urbanization

The urbanization rate (4.5% per annum) is quite alarming and leading to expansion of cities and towns. The NCS envisaged that if the current trends were not reversed, our cities will be predominant urban in the second decade of the 21st Century

## **Involuntary Resettlement**

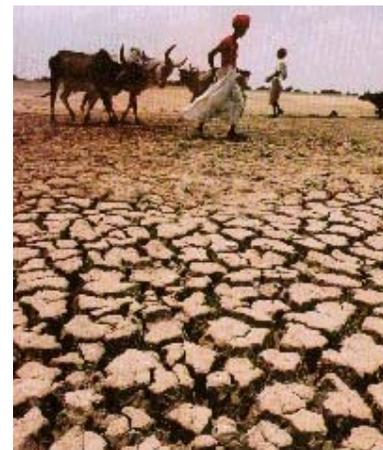
In Pakistan, a number of laws give and protected the proprietary rights, and the rights to access to and use of natural resources. Laws have also been promulgated at different occasions for different purposes including urban and rural development, and for establishment of authorities for implementation of these development programmes that include acquisition of private properties for the development of these programmes. The Land Acquisition Act, 1894 (LLA) has been the most commonly used law for acquisition of land and other properties for development projects. Although it lays down detailed procedures for the acquisition of private properties for public purposes and their compensation, the LAA or any other law of the land, however, does not cover resettlement and rehabilitation of persons in a manner perceived today.

## **Human Settlement**

Pakistan has more than 45000 villages. Only 20% of the villages have more than 2000 people, 61% have between 200 and 2000 inhabitants, 14% are mere hamlets with fewer than 200 residents and 4% are abandoned or seasonally inhabited dwellings. Rural densities vary across the country by a factor of 200, that is, 2 persons per kilometer in arid areas of Balochistan province to 400 person per kilometer in the irrigated districts of Punjab and NWFP provinces. This variation is mainly due to availability of water and to soil quality. Ministry of Population and Welfare has brought down population growth from 3.1% to 2.1% through its effective campaigning. This wide variation in population density has adverse implications for infrastructure development.

## **Drought**

Pakistan is one of the countries affected by the drought conditions prevailing in certain parts of south and central Asia. An estimated number of 42 million people have been affected and the extent of damage has been estimated at over one billion dollars. Worst hit are the 32 districts of the country, which rely on seasonal rains for crop irrigation. The wheat crop in these districts has been damaged by 70 percent and millions of domestic and farm animals have died. Effects of water scarcity in Sindh have not only threatened crop yields, they have even resulted in lowering the supply of drinking water to urban areas including Karachi. Similarly in the case of the Balochistan province, in many cities, including its capital, Quetta, water table has receded by up to 3 m adversely affecting the discharge of bore-wells supplying drinking water to these cities.



## **Urban Slums**

The phenomenon of unplanned urban slum of (Katchi Abadis) has been on an unprecedented rise in Pakistan over the past 3-4 decades. This increase has resulted as a direct consequence of population growth, rural-urban migration and non provision of built houses/serviced plots for the low income. The deterioration of old urban settlement has further aggravated the issue. According to Katchi Abadis Policy 1985, there were 2242 Katchi Abadis with a population of 5.10 million living over an area of 36,022 acres. The estimates for the urban population living in Katchi Abadis and in unserviced plots range from 35-50%. The growth of Katchi Abadis in the past is a direct result of the shortcoming in the housing delivery system and lack of access to affordable tenure by the poor. In metropolitan cities of Karachi, Lahore, Hyderabad, Peshawar and Quetta 40% of the populations are completed to live in Katchi Abadis Housing is one of the basic human needs. According to 1998 census, the estimated housing backlog was 4.30 million housing units.

However, against annual additional requirements of around 570,000 housing units, the annual supply is around 300,000 units. Considering Katchi Abadis as a reality, Government formulated a pragmatic and feasible policy in January 2001 to deal with the issue in a comprehensive manner. Which among others stipulates that the residents of all Katchi Abadis consisting of at least 40 dwellings, who were in occupation upto 23rd March, 1985, were entitled to be granted proprietary rights in those Katchi Abadis, through a process called 'Regularization of Katchi Abadis'. For those Katchi Abadis which have to be relocated due to practical reasons, the residents will be shifted after preparing re-settlement plans for such settlements by the Land Owning Agencies. The government has also made it compulsory for all government housing schemes to include plots for low income people which shall be offered to them at affordable prices. These decisions will help check mushrooming of the slums along with protection against ad hoc evictions of Katchi Abadis.

Distribution of Area, Population and Annual Growth Rate (data after 1998 not available)

|             | Area     |      | Population in thousands |      |         |      | Population Density |      | Annual Growth Rate |
|-------------|----------|------|-------------------------|------|---------|------|--------------------|------|--------------------|
|             | (Sq. Km) | %    | 1981                    | %    | 1998    | %    | 1981               | 1998 |                    |
| Pakistan    | 796,095  | 100  | 84,254                  | 100  | 132,352 | 100  | 106                | 166  | 2.69               |
| Provinces   |          |      |                         |      |         |      |                    |      |                    |
| Punjab      | 205,344  | 25.8 | 47,293                  | 56.1 | 73,621  | 55.6 | 230                | 359  | 2.64               |
| Sindh       | 140,914  | 17.7 | 19,029                  | 22.6 | 30,440  | 23   | 135                | 216  | 2.80               |
| NWFP        | 74,521   | 9.4  | 11,061                  | 13.1 | 17,744  | 13.4 | 148                | 238  | 2.82               |
| Balochistan | 347,190  | 43.6 | 4,332                   | 5.2  | 6,566   | 5    | 12                 | 19   | 2.48               |
| Islamabad   | 906      | 0.1  | 340                     | 0.4  | 805     | 0.6  | 376                | 889  | 5.20               |
| FATA        | 27,220   | 3.4  | 2,199                   | 2.6  | 3,176   | 2.4  | 81                 | 117  | 2.19               |

### Over Grazing

Since independence, growth in the grazing livestock population in Pakistan has been dramatic. This growth has been realized mostly on field borders, between tracks of cultivated land and along riverbanks in intensively managed irrigated lands. Approximately 78% of the total dry matter consumed as livestock fodder is produced within these irrigated areas. Overgrazing in rural areas is very common due to which greenery particularly in arid zones is being affected.

### Degradation of Soil and Land

Salinization is a severe problem on irrigated lands. It is found both in light to moderate degrees, reducing crop yield and in severe degree causing complete abandonment of formerly productive irrigated land. About 3 million hectares of irrigated land is affected by salinity/sodicity ranging from patchy salinity to dense saline sodic soils. It is about 13.5 per cent of total crop area. It severely impacts the productivity of the land.

The major causes of land degradation and low productivity in Pakistan are water and wind erosion, water logging and salinity, flooding and loss of organic matter in soil. Water erosion is quite extensive in northern areas, wind erosion in arid and sandy desert areas; flooding and pounding is mostly in the province of Punjab while water logging and salinity is a problem in all the four provinces. The land degradation includes water erosion 17%, wind erosion 7.6%, and salinity/sodicity 8.6% of total surveyed area. It is estimated that 96% of the arable soil has inadequate organic matter content. The crop yield per acre in Pakistan is far less than majorities of the other countries of the world.

| Land Degradation Process | Area Affected (000 hectares) |
|--------------------------|------------------------------|
| Water erosion            | 11,171.8                     |
| Wind erosion             | 4,760.5                      |
| Salinity and sodicity    | 5,327.7                      |

|   |         |
|---|---------|
| Waterlogging (water table within 1.5 m) | 1,554.3 |
| Flooded                                 | 2,557   |
| Pounding                                | 936     |
| Nutrient degradation                    | 2,218   |

### Urban Growth of Rural Land

With the increase in urban population, cities are expanding horizontally and encroaching upon agricultural land. In the last few years many new housing schemes in Punjab, Sindh and NWFP have come up on fertile land. It is important to protect and conserve good agriculture land from further depletion.

### Economic Costs of Land Degradation

There are different estimates related to economic costs of land degradation based primarily on production loss and replacement cost. Production loss is expressed as a percentage of production from un-degraded soils. For erosion and soil fertility decline the assumption are 5-10 per cent production loss for a light degree of degradation, 20 per cent for moderate and 75 per cent for strong degradation. For salinity the respective losses are 15, 65 and 100 per cent, respectively. Replacement cost is the cost of additional input used by the farmers in order to maintain production levels.

Pakistan falls in medium to severely affected areas of land degradation. It has been reported that resource degradation has led to overall productivity loss by one-third. It means the country is suffering roughly loss of Rs150 to 180 billion per year of agriculture GDP due to degradation process, thus leaving deep negative impact on poverty and environment.

### State

The soil resources inventory reveals that 12.4 million ha of irrigated land has high agricultural potential, and its production can be doubled if soils are managed on proper scientific lines. There is also scope to increase production on 9.0 million ha of land which includes both irrigated and dry farming areas having moderate to low agricultural potential.

Land Utilisation (million hectares)

|     | Area                                 | 2001-02      | 2002-03      | 2003-04      |
|-----|--------------------------------------|--------------|--------------|--------------|
| 1.  | <b>Geographical Area</b>             | <b>79.61</b> | <b>79.61</b> | <b>79.61</b> |
| 2.  | <b>Not available for cultivation</b> | <b>24.30</b> | <b>24.25</b> | <b>24.26</b> |
| 3.  | <b>Agricultural Land</b>             | <b>35.03</b> | <b>35.23</b> | <b>35.21</b> |
| 4.  | <b>Forest Area</b>                   | <b>3.81</b>  | <b>4.04</b>  | <b>4.04</b>  |
| 5.  | <b>Arable Land</b>                   | <b>31.22</b> | <b>31.19</b> | <b>31.17</b> |
| 6.  | <b>Cultivable Waste</b>              | <b>8.95</b>  | <b>8.96</b>  | <b>9.03</b>  |
| 7.  | <b>Total cultivated area</b>         | <b>22.27</b> | <b>22.23</b> | <b>22.14</b> |
| 8.  | <b>Current Fallow</b>                | <b>6.60</b>  | <b>6.62</b>  | <b>6.04</b>  |
| 9.  | <b>Net Area Sown</b>                 | <b>15.67</b> | <b>15.61</b> | <b>16.10</b> |
| 10. | <b>Area Sown More than Once</b>      | <b>6.43</b>  | <b>6.23</b>  | <b>6.33</b>  |

|                               |              |              |              |
|-------------------------------|--------------|--------------|--------------|
| <b>11. Total Cropped Area</b> | <b>22.10</b> | <b>21.84</b> | <b>22.43</b> |
|-------------------------------|--------------|--------------|--------------|

Soil fertility depletion is more widespread than formally realized leading to reduced crop yields and low responses to fertilizers. The calcareous, high pH and low organic matter soils in irrigated plains are under a continuous cropping for over a century. The intensification of agriculture and the HYV varieties has accelerated nutrient mining in the last four decades. This is recouped by the use of mineral fertilizers, the consumption of which has crossed 3 million nutrient tonnes in the country.

Fertilizer use at farm level is imbalanced and inefficient. The emerging secondary and micronutrient deficiencies are not properly addressed. The depleting soil fertility is an insidious process leading to soil degradation and low return. With structural adjustment reforms prices of essential inputs have reduced the profit margins of the farmers and had pushed many small farmers below poverty line. Therefore, for chemical fertilizers incentives should be developed to farmers to increase use efficiency through appropriate application methods, and integration with organic and bio sources.

Wind erosion is estimated at 35 per cent of agricultural land in the dry zone. Although quantitative evidence for definition of its degree of severity is lacking, the deserts of Pakistan and irrigated belt of the Indus system are the affected zones. Wind erosion also occurs along the un-irrigated belts between river systems. Water logging affects some irrigated lands on the alluvial plains and interior basins. About 1.5 million hectares in cultivated areas is affected by water logging. It affects irrigated lands on the alluvial plains specific to landforms. It is on the decrease in the recent past due to drought and excessive mining of ground water. The range land, which covers about 60 per cent of total area of Pakistan, is potential source of livestock development in the country. These lands are under severe degradation due to drought and over-grazing. These resources need immediate attention of evaluation and conservation for proper development. Inappropriate farming practices are also causing soil structure deterioration, compaction, hard pans and surface crusting. Special tillage, cultural practices and irrigation techniques are needed to minimize these problems. The wrong choice of crops not compatible with soils and crop ecological zones is another factor of land degradation.

## **Impact**

Land degradation puts countless obstacles in the sustainable production capacity of the agriculture sector. Wind and water erosion, waterlogging and salinity, deforestation and desertification all accelerate the degradation process.

Food insecurity is yet another important concern in Pakistan and affects the rural areas first. If only the quantity of food available is considered, 60% of rural districts are in deficit. Regarding wheat, which represents 48% of the calorie supply in Pakistan, 60% of the rural districts are again in net deficit. There are also high degrees of inter-provincial and intra-provincial disparities.

The direct and indirect causes of land degradation are linked with population growth and poverty. The limited land resources and increase in rural population results in small farms, low production and increase in landlessness. Consequence of these is poverty. Land shortage and poverty taken together leads to non-sustainable management practices, the direct causes of degradation. This is a vicious cycle of causes and effects of land degradation, low productivity and poverty. The only way to intervene in this nexus is further research and application of new emerging technologies.

## **Response**

In Pakistan 30-50% lives on fragile lands. Improving their livelihood is essential for meeting many of the Millennium Development Goals for coming decades. In addition, given the pace of population growth rate of the country, Pakistan will have to double its cereal production, particularly of wheat, to meet food demand and simultaneously of other crops to stimulate economic growth.

### **Development of Resettlement Policy**

So far there was no specific policy for resettlement and rehabilitation of person and community whose properties are acquired for development purposes. Ministry of Environment, Local Government and Rural Development has formulated a draft policy on involuntary resettlement to safe guard livelihoods of non-titled community living in the project area. The policy is supported by detailed technical guidelines for Planning and Implementation of Resettlement. Based on the draft policy a resettlement of affected person ordinance has also been worked out which will supplement the existing Land Acquisition Act, 1894. The draft policy and the ordinance are in the consultative process with the provincial governments and other stakeholders.

### **Preparation of National Action Programme to Combat Desertification (NAP) in Pakistan**

Agriculture is seen as part of the global warming problem and it is also viewed as part of the solution. More research is needed on the relative contributions made by agriculture and other sources and sinks. Increasing climate fluctuations such as drought and floods, which appear to be associated with global warming, or introducing new risks and uncertainties in the food and the agriculture areas. New and innovative approaches to risk management including new crop varieties, cropping systems should be developed to assist in managing the consequences of climate-induced risks and uncertainties for food security and agriculture. Wheat production during last two seasons has suffered the losses due to rise in temperature and lack of backup research in varieties to cope with it.

For fulfilling its obligations under CCD, Pakistan has prepared a national programme to combat desertification in Pakistan. The final draft of NAP has been prepared after wide consultation of all relevant organizations/individuals. It will be presented to the next meeting of PEPC for its approval. The programme of action aims at:

- Providing a guidelines/framework for sustainable development of the natural resources and preservation of biological diversity in different agro-ecological regions of the country
- Alleviating poverty and improving living standard of the people of arid lands by adopting improved technologies and by having access to extension and support services
- Providing an effective institutional mechanism at various levels of formulating policy and plans and conducting research and development in the arid lands
- Human resource development through capacity building and creating awareness among the masses for identification and tackling area specific problems
- Gender-balanced decision making and effective participation through the recognition of the economic value of women's work
- Preparation of National Country Reports on the Implementation of Convention to Combat Desertification and Drought (CCD) in Pakistan

Pakistan is party to CCD since 1997 and is required to regularly submit reports on the implementation of CCD in Pakistan. First National Report on the implementation of CCD has been prepared and submitted to CCD Secretariat.

### **Checking Kachi Abadis**

The Minister for Environment held series of meetings with the respective provincial governors, chief secretary's and concerned official impressed upon them the need to deal with the issue in totality and initiate necessary measures to implement the decisions of Chief Executive in also held three inter-provincial meetings of all the concerned provincial governments/ Land Owning Agencies at Islamabad to review the progress. Kachi Abadis and efforts made by Provincial Governments / Land Owning Agencies.

In Punjab, according to latest report, there were 913 Katchi Abadis to be regularized. Out of it 595 Katchi Abadis have already been regularized leaving a balance of 318 Katchi Abadis which are at present in the process of regularization. Against 318 Katchi Abadis, NOCs of 143 Katchi Abadis have been received (111 complete and 24 partial). Further more 59 Katchi Abadis have so far been identified by various LOAs for shifting/relocation.



The resettlement plans for these Abadis are being prepared. Moreover, formalities are being completed to grant proprietary rights to 87180 dwelling have been granted by the Chief Executive. The concerned Development Authorities/Local councils are also preparing rough cost estimates for undertaking main development works on felt basis for 178 Katchi Abadis. In Sindh, moreover, Minister for Environment, Local Government and Rural Development had a meeting with the Governor of Sindh and Chief Secretary Sindh May 5, 2001 and various decisions were taken. So far government of Sindh has finalized detailed regularization and re-settlement plans other than Katchi Abadis located on Pak Railway, Civil Aviation Authority and evacuee Trust Property Board lands. Necessary negotiation with these agencies in on-going.

Government of Balochistan has prepared a Model Urban Shelter Project over an area of 100 acres to provide shelter to shelterless especially to the emigrants of the Quetta City. The same will act as model to replicate in other cities later on. Out of 11 Katchi Abadis existing in Islamabad, 5 Abadis are to be removed/relocated owing to their locations in right of way of roads and sensitive areas. CDA has finalized the Model Urban Shelter Project for re-location of Muslim Colony Imam Bari to new site at Farash. The land leveling work is in progress. Moreover, Survey of Katchi Abadis dwellers has also been completed.

Ministry of Railways has identified 196 Katchi Abadis on the Railway lands. Out of this, they have granted NOCs in respect of 18 Katchi Abadis completely and 25 Katchi Abadis partially. In the review meeting chaired by the Minister for Environment, Local Government & Rural Development held on 25th June, 2001, it was observed that there has been some progress with regard to issuance of NOCs by land-owning agencies, verification of beneficiaries, up-gradation work and preparatory work for resettlement of Abadis in dangerous/operational areas.

However, a number of issues have also emerged that require resolution for the smooth implementation of the decisions taken in the January 15, 2001 meeting. The main problem being encountered relates to the responsibility for provision of alternate land for preparing resettlement plans. As a result resettlement plans, as had been decided in the meeting, have not been received by the Ministry as were required to be done by the end of June. The Minister also reviewed the progress in a meeting held on 13-9-2001 and observed that the Punjab and Sindh a substantial work has been done.

Accordingly the Minister for Environment, Local Government and Rural Development requested President of Pakistan to extend 30-06-2001 deadlines for resettlement plans by another three months period from end June onward up to 30th September, 2001. During this period land owing agencies and Provincial Governments will prepare inventories for all the pre-1985 Katchi Abadis as well as preparation of regularization & up-gradation plans. There will be no summary evictions except of commercial buildings. However, this will be done through the committees comprising of land owning agencies, district administration and the representatives of Army Monitoring Team. Moreover re-settlement plans will be prepared by 31st October, 2001 for those Katchi Abadis which are to be re-located /shifted.

---

Chapter References:

- Government of Balochistan and IUCN – The World Conservation Strategy, 2000 – Balochistan Conservation Strategy: An Overview
- Government of NWFP and IUCN – The World Conservation Union, 1996 – Sarhad Provincial Conservation Strategy
- Government of Pakistan, Finance Division, Economic Advisor’s Wing, 2004 – Pakistan Economic Survey 2003-04
- Government of Pakistan, Ministry of Environment, Local Government and Rural Development, 2000 – Renewing Commitment to Action: Report of the Mid-Term Review
- Government of Pakistan, Ministry of Environment, Local Government and Rural Development, 2002 – Pakistan Country Assessment Report
- IUCN – The World Conservation Union, 2004 – Sindh State of Environment & Development
- IUCN – The World Conservation Union, 2004 – Replicable NRM Practices: The Northern Pakistan Experience
- UNIDO, 2000 – Research Paper on Major Environmental Policy Instruments of Pakistan Particularly Those that have the Potential to Offset the Negative Aspects of Industrial Development