

Rapid degradation of land mass worldwide is a looming threat to food security; desertification and land degradation have afflicted almost 30 percent of land area of the world and one-sixth of the world's population.

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Land is a primary resource for growing grains. Rapid degradation of land mass worldwide is a looming threat to food security. According to United Nations Environment Programme about 70 percent of dry land used for agriculture worldwide has been degraded. Desertification and land degradation have afflicted almost 30 percent of land area of the world and one-sixth of the world's population. The impact is more severe in Asia—home to almost 60 percent of global population—where about 22 percent of dry land is affected by desertification and land degradation. The continent has 1.34 billion hectares of agriculturally-productive dry land, which amounts to 70 percent of total dry land area of the world.

Globally, more than 100 countries, including Pakistan, are affected by desertification; prone to loss of soil fertility and biodiversity and faltering land productivity.

The UN intervened in 1994 by introducing the Unit-

ed Nations Convention to Combat Desertification to arrest the pace of land degradation. The convention aims to mitigate the impact of land degradation and protect land to secure food, water, shelter and economic opportunities for the present generation as well as posterity. Pakistan signed the convention in 1994 and ratified it in 1997. It is a legally binding framework to address desertification and its effects.

Pakistan is among the countries most severely affected by desertification and land degradation: 80 percent of its land area is arid or semi-arid; two-thirds of its spiralling population depends on dry land for their livelihood, mainly through agriculture and livestock. Pakistan developed its first National Action Programme to combat desertification in 2002; the latest was developed almost a decade ago. According to the NAP, more than 71 percent of the land in Pakistan falls in two categories: Class VII and Class VIII, representing poor forests/ rangeland soils and soils unfit for agriculture, respectively. This poses a serious challenge for the needs of a burgeoning population.

Major causes of land degradation in Pakistan include soil erosion by wind and water, water logging

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and salinity, soil contamination due to excessive use of petrochemicals in the agriculture sector, deforestation, drought, inadequate freshwater flows to delta and urban land conversion.

According to official data, wind erosion has affected some 3-5 million hectares; and its intensity is increasing at an alarming pace. Erosion by water is an even bigger menace. Indus watershed mountains, some 40-50 million years old, are geologically young formations. Torrential flows descending from the mountains cause extensive abrasions. Estimates suggest that about 11 million hectares are affected by water erosion. Water erosion also has negative consequences for dams and canals. Unavoidable silting means dams have short lives. Sedimentation of canals restricts water and land use efficiency.

Before the advent of modern irrigation in the late 19th Century in the Indus Basin, some 400 million tonnes of sediments would reach the Indus delta every year. This has now decreased to about 30-40 million tonnes. A large quantity of sediment now gets trapped in reservoirs, canal network and farms. Rapid deforestation in watershed areas triggers devastating floods in valleys and exposes more soil to erosion.

The twin menace of water-logging and salinity has emerged as a serious threat to productivity and sustainability of farmland. A report of the Pakistan Council of Research in Water Resources claims that approximately 3.3 million hectares of irrigated land is severely affected by surface salinity. Another recent report of the Food and Agriculture Organisation says that 6.67 million hectares of agricultural land in Pakistan has been affected by soil salinity and sodicity.

Pakistan has a scant forest cover of only 3-5 per-

cent—among the lowest in Asia. The country also has an alarming rate of deforestation: the forest cover is shrinking by 3 percent and woody biomass declining by 5 percent annually. According to the Global Forest Watch, in 2020, Pakistan had 1.4 million hectares of natural forest, extending over 2 percent of its land area. Between 2001 and 2024, Pakistan lost 8 percent of its tree cover. Khyber Pakhtunkhwa, including the merged tribal districts, had the highest tree cover loss of 9,100 hectares during the period.

Conversion of green land to urban built-up areas is another perilous practice. Annual growth rate of the urban population in Pakistan is approximately 2.4 percent as of 2023-2024. This puts enormous stress on agriculture and forest land in the vicinity of urban centres. Islamabad is a pertinent example of this. According to a study conducted by researchers of the Karakoram International University, Gilgit, built-up area of Islamabad has increased five-fold in four decades from 10.7 percent in 1979 to 52.4 percent in 2019. During the same period, forest land shrunk to almost half. Between 2009 and 2019, the city witnessed a sharp increase in its population from 0.77 million to 1.1 million.

Pakistan is currently setting land degradation neutrality targets for 2030. After developing a robust policy framework, the country is now setting ambitious action-oriented targets focused on effective land governance to monitor and reverse land degradation. An important dimension of the programme is its focus on gender-responsive land-use planning. Rural women's close relationship with land merits their leadership role in stewardship of land and its products. From planning to execution, empowered women leadership has the potential to halt and reverse unbridled land degradation in Pakistan.

# FOR THE FUTURE