

Environment
Agriculture

Unfriendly environ

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ENVIRONMENTAL profile is affected adversely by unfriendly environmental practices. And the increasing deforestation and pollution, depleting biodiversity, desertification, over-exploitation of natural resources, receding glacial phenomena, water scarcity, degrading ecosystems etc are posing a huge challenge to sustainable farming and economic development.

These factors are likely to increase the country's vulnerability to climate change. Severe pressure on meagre resources will adversely impact food production and livelihood of millions.

That climate change will affect water regimes, water reserves, and pattern of rainfall. Their effects on vegetation and crops will be profound both in rain-fed conditions and the tropical zone in the country because of scarce water. In 1999 and 2000, the drought caused sharp decline in water tables and dried up wetlands, severely degrading ecosystems.

The main source of water is the Indus River system, one of the world's largest contiguous irrigation systems having associated ecosystems. This serves as a source of livelihood for millions of people whether forest dependent communities in the north, poor farmers and fishermen in the Indus plains or fishing communities in the Indus delta ecosystem. Changes in water flow will degrade spawning streams.

The gradual glacier recession in the Himalayas is projected to increase flooding within next two to three decades followed

by decreased river flows up to 30 per cent to 40 per cent over a period of five decades. This will dramatically cause fluctuations in irrigation water with increased sedimentation from the upstream.

Increased temperature and decreased precipitation would register severe impacts on water availability for crops with decreased crop productivity and increased handling and combating cost.

Mangroves constitute a significant part of coastal biodiversity but besides continuous loss of mangroves forest, the sea level rise due to global warming and climate change will cause salt water inflows which will tender profound damage to the mangroves and their rich fish breeding habitats. This will have deep repercussions on the associated flora and fauna besides adverse impacts on livelihood of people.

Marine ecosystems would also come under threat of coral bleaching, increased invasive species, and ocean acidification.

Not only livestock sector but agriculture sector would largely suffer from the impacts of climate change.

According to an FAO estimate, agriculture accounts for 24 per cent of world output, and uses 40 per cent of land area (FAO 2003). The cereal crops - rice, wheat and maize make up 85 per cent of world cereal exports, and are thought to be particularly sensitive to climate change (FAO 2003).

Because of water scarcity and heat stress, agriculture is highly exposed to the effects of climate change that will affect farm productivity. There is likelihood that the cotton belt will shrink and shift further north to cooler regions. The changed climatic scenario would affect planting time, crop rotations with focus on new cropping patterns and heat resistant crop varieties. With decrease

in rainfall by six per cent, net irrigation requirements would increase by 29 per cent.

Reports indicate that decline in irrigated wheat yield in semi-arid areas is expected to be in the range of nine to 30 per cent for temperature increases of one to four degree Celsius. Global warming would have an impact on growing season of plants and agriculture crops. There will be shortened growing season length for wheat (wheat-rice, and wheat-cotton, wheat-sugarcane systems).

Dry land areas in arid and semi-arid regions are most vulnerable to climate changes that would put food security at a troubled threshold.

Because of the diversity in topography, soil type, and climatic conditions, Pakistan supports a wide variety of flora. However, due to biotic pressure the natural forests are subjected to agricultural expansion, and other consumptive uses such as fuel wood extraction, fodder collection, grazing of livestock, and timber. Given these parameters of social and economic nature, the climate change would further impact the forest products and services and important tree species such as deodar and fir would suffer great loss.

With increase in temperature and changes in weather, graziers would move towards higher altitude grazing grounds and pastures for grazing of their livestock in summer. This would not only cause depredation of livestock by predators but competition for food would be more among livestock and wildlife species.

In addition reports indicate that global warming has caused shifting of vegetation zones to higher elevations with significant threats to biodiversity and ecosystems. With future global warming, large forest areas in northern mountain areas would shift from

Photo by the writer

Environmental practices

one biome to another. Conifers of cold and temperate zone would show northward shift, pushing against the cold conifer/mixed woodland. Weedy species having ecological tolerance will have an advantage over others. High-elevation tree species such as Fir, Acer, and Betula prevail in cold climates because of their adaptations to chilling winters. Increase in temperature would not only result in competition between such species and new arrivals but will also reduce resilience of natural ecosystems and force migration of species through fragmented habitat.

Flora and fauna having restricted ranges will also face increased threat of survival due to further shrinking of forests and pastures, while changes in precipitation will alter their structure. Climate change would favour some invasive alien species in different geographical zones..

Increased temperature would have large scale effects on productivity, regeneration success, plant growth, plant distribution, photosynthetic rates, decomposition rates, incidence of fires, pest outbreaks, diseases, and rate of mortality.

There is a great need to expand vegetation zone or green belts within the metropolitan cities and towns that would not only help maintain moderation in local or microclimate but it would also help provide green spaces for recreation and relaxation within the closed city environment.

That the climate change is an economic, developmental, and environmental problem, there is a strong need for concerted efforts to adapt strategies to mitigate climate change and overcome environmental problems with a long-term approach.



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