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STRANDED ON DRYLAND

FUTURE OF SOUTH ASIA

Changing weather patterns are accelerating and intensifying the desertification process which could result in forced migration and conflicts

The growing threat of desertification and land degradation in South Asia will have long-term impacts on the enormous population that calls the region home. Desertification received global attention after severe droughts in the Sahel region in Africa between 1968 and 1973 that caused famine and dislocation on a massive scale. Since then, several international efforts have tackled desertification, leading to the adoption of the United Nations Convention to Combat Desertification (*UNCCD*) in 1994. Under the Convention, desertification is defined as, "land degradation in arid, semi-arid and dry sub-humid areas resulting from multiple factors, including climatic variations and human activities". Changing weather patterns, in addition to unsustainable development practices, are accelerating and intensifying the desertification process and could result in forced migration and conflicts.

STATUS OF DESERTIFICATION

The spread of land degradation and desertification is no longer limited to the arid regions of a country. Increasingly, more cultivable land is being affected or is at risk of land degradation and desertification, causing severe distress to the agrarian population. Between 25 percent and 32 percent of India's total geographical area is affected by some form of desertification and land degradation respectively. Additionally, degradation of drylands, which accounts for roughly 69 percent of the country's land area, could have severe implications on the livelihood and food security of millions, especially the poor. States such as Rajasthan, Kashmir, Gujarat and Maharashtra are prone to desertification at present.

Similarly, Bangladesh and Nepal are threatened by desertification, though both countries have abundant water resources. Around 43 percent of Bangladesh's total geographical area is subjected to various forms of land degradation. Land degradation is more pronounced in the North Western region of the country, which includes densely populated areas such as Rajshahi, Pabna, Bogra and other adjoining areas. In Nepal, around a third of the total area in the Himalayan region has little to no vegetation, making it a threatened ecosystem, which demonstrates the characteristics of cold desert. It has been estimated that approximately 10,000 hectares of highland areas in the Western part of Nepal are slowly showing signs of desertification.

SHIFTS IN CLIMATE

The South Asian region is extremely susceptible to drought, variability in monsoons, floods and other extreme weather events. Thus, cultivation of land and water availability, are extremely vulnerable to climatic shifts, especially in the densely populated areas of the region. Soil erosion due to water and wind erosion has resulted in large tracts of land being classified as semi-arid to arid in the region. In India, soil erosion contributes to over 71 percent of the land degradation. Wind erosion, which is more dominant in the Western region of India, has led to loss of topsoil, resulting in degradation of over 5 percent of total geographical area of the country.

The most prevalent form of degradation in South Asia is caused by water and occurs widely in all agro climatic zones of the region. According to Nepal's National Action Programme on Land Degradation and Desertification, erosion due to water was responsible for 50 percent of desertification across the country in 2004. During the monsoon season, large areas along river banks erode, creating acute socio-economic problems. Between 1973 and 1996, approximately 70,000 hectares of land along the banks of the Brahmaputra-Jamuna were lost to erosion in Bangla-

desh. The process of soil erosion due to water is likely to intensify over the next few decades, as the impacts of climate change become increasingly intense and visible.

Conversely, scarce water resources triggered by scanty rainfall and high evaporation in dryland areas of the region increase stress on land due to the rising demand for agriculture and fodder production for livestock. In addition, the problem of salinity has also resulted in degradation of fertile land. Roughly 6.73 million hectares of land area is affected by salinity in India. Around 30–80 percent of groundwater in North Western states of the country is either saline or brackish and is unfit for irrigation. Large scale cultivation of prawns using sea water in the coastal belts of India and Bangladesh has also degraded water and land resources. In Bangladesh, the groundwater table fluctuates between 8.95m to 18.56m during the dry season due to over-extraction of water, resulting in acute water shortages.

ANTHROPOGENIC FACTORS

Anthropogenic causes include expansion of agricultural activities and unsustainable agricultural practices such as intensive cultivation, use of pesticides, poor irrigation practices, and overgrazing. Given that the region's primary occupations include agriculture and animal husbandry, intense pressure on the land has caused land degradation and desertification. India has livestock population of about 485 million, burdening the limited land resources for fodder. More importantly, the growing population pressure on land, expanding urban areas and poor resource management have resulted in land degradation. In Bangladesh, mining of sand from several agricultural lands for construction purposes, such as from the Northern Piedmont areas and greater Dinajpur and Rangpur districts, has increased the area of fallow lands.

Land degradation in India, Bangladesh and Nepal has been exacerbated by the expansion of rain-fed cultivation onto marginal lands, deforestation, overgrazing, groundwater extraction and uncontrolled harvesting of biomass. Moreover, deforestation in the Terai region in Nepal, in an effort to bring more land under cultivation, has increased the rate of erosion. Between 1990 and 2000, Nepal has lost an average of 917 sq. km of forest per year. This constitutes a vicious cycle linking deteriorating natural resources to deteriorating livelihoods as people need to encroach further on fragile soils, sparse vegetation and limited water resources to meet their basic needs.

FOOD SECURITY

As harmful climatic processes such as erratic monsoons and droughts occur more often in the future, the South Asian region is likely to face considerable food security challenges. Recurring droughts and continued desertification will hamper agricultural production in the region as fertile tracts of land become unproductive. Loss of cultivable land will result in reduction of the vegetation cover and could eventually alter the livestock population of the region. The 1999 drought in India distressed the lives of nearly 100 million people and 60 million livestock mostly in the states of Rajasthan, Gujarat, Andhra Pradesh and Madhya Pradesh. The overall loss in food grain production in the country was 15 percent, while states such as Rajasthan and Madhya Pradesh incurred a loss of 10-30 percent in food grain production. Continuous desertification and land degradation in the region could result in loss of livelihood and exacerbate poverty levels in the future.

Approximately, 75 percent of Nepal's total workforce and over 50 percent of India and Bangladesh's workforce are engaged in the farm sector. Estimates suggest that the ratio of cultivable land to the population i.e. amount of acre held by a person, is decreasing at a rapid pace in the region. The land-man ratio in the North Western parts of Bangladesh has decreased significantly to 23.2 percent as compared to the ratio of 17.2 percent in the whole country, primarily due to desertification. Moreover, it has been calculated that the loss of crops due to reduced production in drought prone lands and the cost incurred as a result of additional agricultural input to maintain soil nutrients exceeds two billion USD every year in Bangladesh. The process of land degradation and desertification further adds to the social costs through displacement of human settlements and causing famine-like conditions. Meanwhile, droughts across Nepal, arising from the long dry spells during winter, are likely to aggravate desertification in the next two decades. The land degradation, especially in the flat lands of the country, is worsening due to sand deposition as large rivers in Nepal change their course. The Koshi River has destroyed approximately 1300 square kilometres of land through sand deposition. In addition, many watersheds in the country are threatened by desertification as a result of physical and biological factors, with reports suggesting that 0.4 percent, 1.5 percent and 11.7 percent of the watersheds are in very poor, poor and fair condition respectively. All these factors will threaten the food security of the country in the coming years.

MIGRATION

Desertification coupled with water and food scarcity will lead to forced displacement and migration of millions of people in the region. Nepal, India and Bangladesh are not only geographically connected but also share important rivers such as the Ganges and Brahmaputra; therefore, the impacts of desertification in one country are likely to spill over to other countries in the future. As a result, there could be a rise in conflicts in the region, especially over resources.

While it is difficult to quantify the precise impact of desertification in these countries, it is apparent that desertification will lead to loss of food grain production and livelihood opportunities. Degradation of the land, as in the Terai region in Nepal, will reduce economic opportunities for people — a trend which could become increasingly prevalent in the future, forcing people to migrate. Research studies reveal that seasonal migration is an important livelihood strategy, especially among the poor in the region. In the North Western region of Bangladesh, while around 19 percent of households across all wealth groups migrate during the lean agricultural season, about 25 percent of chronically poor households migrate during the same period. This region of Bangladesh will further witness an increasing propensity for droughts and as rainfall becomes more unpredictable and groundwater levels decline, people will be forced to migrate in order to secure their livelihoods.

Given that more than half of India's cropped area is still dependent on the monsoon rains and agriculture supports half of India's working population, the resultant impact of variable precipitation and droughts could see rural farmers from the Northern agricultural areas moving away to other parts of the country. Western Rajasthan, which is highly prone to droughts and land degradation, has witnessed large scale migration of people towards other states such as Gujarat, Haryana, Punjab and Uttar Pradesh in search of food, livelihood and water. Regular occurrences of such scenarios are likely to lead to the rise in permanent displacement of environmental migrants, as they seek greater economic and social security. In the next decade or two, desertification-induced migration not only will lead to large influx of rural population to urban areas but will also lead to an increased and sustained movement of people across borders. This will prompt a wide range of security issues for the South Asia region.

THE WAY FORWARD

Thus far the approach to deal with problems resulting from droughts and desertification has been to provide relief measures to the affected people and finance for livestock. The governments in the South Asian region have largely invested in improving the situation through the development of irrigation facilities, which has further depleted the water resources in the region. As climate change increases the frequency of droughts and erratic rainfall, the impact on the land will continue to be felt, thus offsetting the government's intervention.

In order to combat desertification in the South Asian region, the focus should be to implement long-term measures for soil conservation, afforestation and reforestation, protection and sustainable use of ecological areas. In addition, preservation of grasslands and development of sustainable agricultural practices will definitely help in combating desertification in the region. Implementation of long-term measures in an integrated manner, aimed at preventing degradation of land and improving productivity of land through rehabilitation, conservation and sustainable management of land and water resources should seek participation at the community level. This, in concert with inter-regional cooperation between the countries in the South Asian region, will help tackle the problem resulting from recurrent droughts and continued desertification in the region. GID

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