



“Summary of article by Thomas F. Homer-Dixon, Jeffrey H. Boutwell and George W. Rathjens: Environmental Change and Violent Conflict” in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 320-323

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Over the next fifty years, growth of both population and world output will result in a sharp increase in the scarcity of renewable resources and a degradation of natural and environmental resources. The University of Toronto and the American Academy of Arts and Sciences commissioned studies to collect data on the impact of environmental problems on civil, social and international strife. The studies suggest that scarcities of renewable resources are already contributing to violent conflicts, and this trend will probably increase further in the coming decades.

Environmental problems can affect social stability both indirectly and directly. Resource scarcity can contribute to social strife by altering the politics and economics governing resource use. In the face of scarcity, powerful actors may appropriate an inequitable share of resources. In addition, when environmental degradation is irreversible, even enlightened social change that removes the original political, economic and cultural causes of degradation may not help. Irreversible environmental degradation may thus be an independent variable contributing to social strife.

Some claim that conflicts arising out of resource scarcity are nothing new, as they have been occurring throughout history. However, the pace, complexity and magnitude of renewable resource scarcities in the next several decades will be unprecedented. In addition, because of the complex, interdependent relationships and linkages of renewable resources within ecosystems, sudden and unexpected problems can occur when they are rapidly over-exploited.

There are three principal ways in which human action can bring about scarcity of renewable resources: 1) by using up natural resources at a rate faster than they renew; 2) through population growth; and 3) through an inequitable distribution of resources within a society, resulting in scarcity for the many. Specific cases are described below in which these three factors - singly or in combination - have resulted in environmental scarcity and social strife.

SPECIFIC CASES

Bangladesh and India

Population growth in Bangladesh has caused social strife in some adjoining states of India, and it will continue to do so. The United Nations estimates that by the year 2025 the population of

Bangladesh will nearly double to 235 million people. At present, the population density is 785 people per square kilometer, a number much higher than that in the adjoining Indian state of Assam. The tremendous pressure on land in Bangladesh has caused large migrations of people into Assam, changing the distribution of land and economic and political power between different religious and ethnic groups in Assam. These changes have generated serious social tensions in the state of Assam, including the violent massacre of 1,700 Bengalis in one five-hour period. Similar tensions are felt in the Indian state of Tripura. While religion and politics have contributed to the tension and violence, a shortage of land due to the increasing population is at the root of the problems.

Senegal and Mauritania

The underlying causes of a conflict between Senegal and Mauritania can be traced to increases in population and reductions in the quantity and quality of renewable resources. These factors led to a large-scale development project that changed patterns of access to resources for the rich and poor, thus causing social tension. Senegal has relatively abundant agricultural land, but its quality has declined due to wind erosion, over-irrigation and intensification of agriculture. Mauritania is primarily arid or semi-arid except for the Senegal River Valley (on the border with Senegal), which is suitable for agriculture. The UN Food and Agricultural Organization has projected that neither nation will be able to meet its population's food needs without large increases in agricultural inputs. The Manantali Dam project was designed to increase the agricultural and energy outputs in Senegal and Mauritania. In anticipation of the project, land values increased along the river, and the elite white Moors in Mauritania rewrote legislation to strip black Africans of the right to farm, herd or fish along the Mauritanian riverbank. This struggle for resources resulted in tension between Senegal and Mauritania, culminating in loss of life, destruction of property, and deportations based on ethnic and racial considerations (blacks were deported from Mauritania).

Philippines and Similar Cases

In the Philippines, unequal access to resources combined with population growth has caused environmental degradation. Insurgency and rebellion have arisen due to economic deprivation caused by the environmental degradation. While improved agricultural techniques have increased the demand for labor, they have not kept up with population growth. There has been downward pressure on agricultural wages and increasing rural unemployment, resulting in mass migrations to urban centers, as well as ecologically detrimental movement onto the hillsides. The lack of resources for an increasing number of people has fueled a communist-led insurgency and increased violence. This marginalization of the poor is not unique to the Philippines; it can be seen all over the globe, including the Himalayas, the Sahel, Indonesia, Brazil and Costa Rica. Similar circumstances were responsible for the "Soccer War" between Honduras and El Salvador, and the decade-long civil war in El Salvador.

China

The loss of renewable resources can make increasing numbers of people dependent on government assistance, thereby overwhelming the administrative capacities of the Chinese state.

Violent challenges to the state may result as different factions seek to protect their interests and jockey for power. Vaclav Smil suggests that environmental problems have had detrimental effects on productivity in many sectors. Crop yields are falling due to the degradation of water, soil and air that has been caused by erosion, construction and deforestation. Smil estimates the current losses to be 15% of China's gross domestic product, and predicts that they will rise further. He expects mass migrations from the northern and interior regions due to scarcity of water, fuelwood and land. All of these factors could lead to conflicts between different regions as they compete for scarce resources, thus weakening the state.¹

The Middle East

Political instability as a result of water shortages is imminent in the Middle East. Israel depends on aquifers in the West Bank to meet a substantial part of its water needs. To protect this source, the Israelis have limited the use of water on the West Bank. Israeli control of Arab water use, as well as the general water scarcity in the region, contributes to tensions there.

CONCLUSION

Some analysts have argued that problems arising due to environmental scarcities can be avoided if proper incentive structures and the necessary means are provided to alleviate them. They contend that it is not environmental problems per se that are important, but the responses to them. The research presented in this paper neither supports nor opposes this viewpoint. The research does, however, point to a strong link between scarcities of renewable resources and violence.

Notes

1. See Vaclav Smil, *China's Environmental Crisis: An Inquiry into the Limits of National Development* (M.E. Sharpe, 1993).