"Summary of article by J.F. Richards: World Environmental History and Economic Development" in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 33-36

Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being

"Summary of article by J.F. Richards: World Environmental History and Economic Development"

Over the past 300 years the earth's biota has undergone massive changes, natural environments have been removed or fundamentally altered, and the world's land and sea animal populations have been sharply reduced in number and range. At the same time, human control over the natural environment has risen to the point that it is virtually an anthropogenic system. Most historians dealing with the vastly complex social, economic and political transition to modernity have neglected the human specie's changing relationship to the environment, treating this relationship as a constant that can be safely ignored rather than as a significant variable. The great task for environmental historians is to record and to analyze the effects of humanity's recent encroachment upon and control of the natural world over the course of the last three to five centuries. Environmental history must proceed from a global perspective because of the integrated global nature of the world's economic and ecological systems

.

Improving our understanding of environmental change in the early-modern and modern worlds has a singular urgency. The cumulative effects of human activity upon water, soils and vegetation throughout the world have drastically accelerated, setting in motion physical processes of change that may be irreversible. In addition, it is important to consider the extent to which the development of the modern economy has relied upon the consumption of nonrenewable natural resources. Analysis of the implications of this exploitation of resources may suggest issues and questions for future human development.

Expansion of World Arable Land

In every region of the world, the expansion of arable land has proceeded at a startling pace. The conversion of "wild" lands to regular cropping has been as vigorous in the lands of the old world as in the new. It was not until the 1920s that research and investments in agricultural productivity shifted from extending cropped areas to intensifying production on existing arable land through improved biological inputs (e.g., fertilizers, high yielding varieties, etc.). The FAO estimates that globally there were around 1.5 billion hectares (ha) of land under cultivation in 1980, and much of that land was brought under cultivation relatively recently. Indeed, it has been estimated that 852 million ha - over half of the present total - were brought under cultivation between 1860 and the present. This phenomenon cannot be adequately explained by citing population pressures alone. Instead, it is the transition from peasant agriculture to mass commodity production for the expanding world market that is the primary cause.

One of the immediate consequences of this expansion of cropped land is the profound impact it has had upon soils. Estimates show that water-induced soil erosion has increased to 91 billion tons of soil each year, a rate twice that of 1860, and a five-fold increase compared to the pre-agricultural past. Moreover, it is the pressing need for agricultural land, as well as land to meet other demands of modernity (e.g. urbanization, transportation systems) that has fostered the encroachment of civilization upon forest, wetlands and drylands.

Deforestation

Depending on scale and definition, there could be more than 100 major forests world-wide that no longer truly exist in recognizable form. Getting a historical measure of this deforestation can be an immensely difficult task, as neglect of the natural environment by traditional historians leaves us with no reliable inventory of the missing forests. We do know that the patterns of deforestation have directly followed patterns of economic development, and there are some areas for which we can produce a picture of the process, including:

1) **European USSR**: 67 million ha of forest was lost between 1700 and 1917, with deforestation continuing apace after the revolution.
2) **Coastal Brazil**: In 1500, it was estimated that 500,000 square kilometers of thick forest blanketed the coast, but by 1900 most of this forest had disappeared.
3) **Burma**: It is estimated that there were 4 million ha of forest in lower Burma in 1850, but by 1914 only several hundred thousand hectares remained.

Completion of a global inventory of this type would be an invaluable first step in better defining the recent forest history of the world, and more precise, better documented data on the extent and rate of forest depletion would do much to correct our perspectives on the global process.

Land Reclamation: The Drainage of Wetlands

In the last decades of the 19th century the pace and scale of land reclamation through drainage of wetlands increased dramatically. Improved technology and increasing demand for agricultural land combined with the growing intervention of the state to foster this trend. One of the largest of these efforts occurred in the United States. It is estimated that 42.6 million ha were under drainage in 1978. Similar efforts in Australia (1.7 million ha), Europe (21 million ha), Africa, Asia and Latin America testify to the brisk pace at which the world's swamps, bogs and marshes have been cleared over the past century. Economic pressures suggest that this drive into the wetlands will continue apace into the future.

Land reclamation by drainage has had significant environmental and social effects, including the release of stored carbon into the atmosphere, altered water tables affecting local watersheds, and disappearance of plant and animal species. A preliminary inventory of worldwide land reclamation through wetlands drainage is an essential first step for environmental history. Economic development may make it desirable to encroach even further on the world's wetlands. If so, an historical perspective on the impact of disappearing wetlands will allow for more informed decisions in this area.

Land Reclamation: Irrigation of Arid and Near-Arid Lands

Irrigation is a much more visible and appealing form of land reclamation. Making the deserts bloom draws upon our deepest aesthetic and cultural instincts. The best known and one of the largest social investments in irrigation has been in the American west, with up to 17.7 million ha under irrigation. Globally over 200 million ha of land are irrigated, and that figure is expected to reach 300 million ha by the year 2000. The more than 13,000 large capacity reservoirs in use have a capacity equal to 12% of the entire annual runoff of the world's rivers.

The physical changes wrought by irrigation are substantial. Water logging and increased salinity and/or alkalinity are long recognized problems. Other threats include the destruction of species adapted to minimal soil moisture, coupled with the enlargement of animal and plant populations and diseases previously held in check by water shortages. The magnitude of world irrigation developments over the past two centuries provides strong justification for systematic, intensive historical review.

Grazing Lands, Large Grazing Animals, and Man

Grazing lands throughout the world are of crucial importance to the global economy. Domestic livestock and wild herbivores provide an important source of nourishment and a vital economic resource. Since 1700 there has been a steady reduction in the extent of the world's grazing lands as many of the great grasslands have come under the plow. In spite of a countervailing trend, as forest clearing creates new grazing lands, the overall trend has been a net loss of grasslands. Another significant factor has been the intensifying human intervention in and control of world grazing lands, and the concomitant decline in wild animals. This, in turn, is part of a conscious effort to depose the wild herbivores in favor of domesticated animals, which has lead to significant problems of overgrazing in many areas.

Conclusion

These enormous changes in man's habitat since 1700 have forced new adaptations in culture and institutions upon human society. It does not appear as though these trends will be slowed or reversed in the near future. The great task for environmental historians is to record and analyze the pace and impacts of these transformations. What is needed is a long-term global comparative historical perspective that treats the environment as a significant variable. More and better data are essential both for understanding the impact of these environmental changes on our past, and for enabling us to understand problems and prospects for the future.