

EDITORIAL INTRODUCTION

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The last quarter of the twentieth century witnessed considerable global interest in human environmental security. There is growing concern about the earth's natural resources and how extensively they are being exploited. Fears have been expressed about the possibility of destruction or exhaustion of nonrenewable resources as a result of injudicious and profligate use. More importantly, attention has been called to the manner in which the overall environment — especially air, water, and land — has been despoiled and degraded by the prevailing technologies of production, modes of consumption, and waste disposal. Equally noteworthy has been the rapid increase in the world's population and its changing pattern of distribution: often the developing countries are those with the largest populations and most rapid rates of growth, which have thus exacerbated the existing state of environmental security.

Local environmental security analysis involves: (a) identifying the causal factors that affect the stability of the nature-society relationship within the area; (b) assessing the magnitude of local environmental issues; and (c) determining the potential policy options with which to strengthen environmental security. In formulating the local policy options it is important to evaluate their feasibility, basing this on cost-benefit analysis, effectiveness, and the cooperation required from regional and state levels. Many issues such as population, land use, resource use, and the political economy affect the environment; when these issues drastically threaten livelihood and degrade the environment, they become local environmental security issues. Thus, it is necessary to determine which factors, and in which context, environmental insecurity is produced. Environmental security concerns must be incorporated into local and regional development plans. In order to do this, it is important to establish the commonality of objectives between regional development goals and securing human environmental security objectives.

Building environmental security implies the consideration of the effects of the environment on people's livelihoods, and the effect of those livelihoods on the environment at the local and regional levels. Local landscapes are increasingly being transformed by a variety of forces operating at the local, regional, state, national, and international levels. Shifts in the flow and movement of capital, information, and resources can accelerate or slow existing ecological trends and patterns. This phenomenon of environmental security has been broadly recognized by social scientists, but it remains undertheorized, and very few detailed empirical analyses have been conducted. Most of the articles in this issue of *Regional Development Dialogue (RDD)* focus on the following central questions: to what

extent and in what way do local, regional, and national forces influence the nature and rate of environmental change within locales? How do nonlocal actors and institutions, either separately or in concert with local actors and institutions, influence the character and rate of environmental degradation and restoration in particular areas? Although the role of nonlocal actors and institutions in the environmental change process have grown in influence over time, the development of local coalitions and interest groups has played a significant role in mediating the impact of nonlocal forces. The structures and focuses of these groups are often highly dynamic and flexible in the face of changing societal and environmental conditions.

Environmental changes take place as the result of competition over the environment. The competition takes various forms. The globalization of economic relations and the development of global markets have served to create ideological uniformity in terms of uniform economic goals. This has created more competition between different economic and political interests in the quest to secure their goals. The environment — at both the local and regional levels — has become a heavily contested domain in which different discourses coexist, notably about what constitutes acceptable and “sustainable” development. The effect of globalization has been to transform the environment into a new kind of “battlefield,” in which the responsibility for environmental processes becomes the business of corporations and local communities as well as the central governments.

To achieve greater environmental security in some areas, we need to focus on conflicts over the environment among different interest groups, which demonstrate the value they place on different environmental functions and services. We will need, in effect, to build new “securities” from the building blocks of everyday life in the developing world as much as in the developed countries. Finally, from the standpoint of participatory democratic politics, we also need to consider how people are brought into policy debates about the environment and in the formulation of plans to strengthen environmental security.

A total of eighteen researchers and development professionals working on various facets of the environment or environment-related topics in Asia, Africa, and North America have contributed to this Spring 2002 issue of *RDD* on environmental security. Each contributor and commentator has considerable research experience; the articles and comments provide unique approaches to strengthening environmental security in various parts of the world.

Chris Jaspardo and Eric Shibuya of the Asia-Pacific Center for Security Studies (APCSS) discuss the pattern of local efforts to protect the biodiversity and invasive species control programme in Hawaii, and regional efforts to manage fisheries, a major source of sustenance and income in the Pacific. Their case studies indicate that public support and involvement, partnership, information-sharing, and political leadership are important elements in the success of the two programmes to enhance environmental security.

Edward R. Carr of the University of Kentucky analyses the consequences of deforestation in coastal Ghana. Throughout the dwindling tropical rainforests of West Africa, deforestation is wreaking long-term damage on the region’s tropical ecosystem and creating economic uncertainty and environmental insecurity. Based on field research in coastal Ghana, Carr found a cycle of migration in response to environmental and economic changes. Where lush forests stretched for kilometres in all directions less than a generation ago, plantations and small farms have been carved out to make Ghana one of the world’s

major exporters of cocoa. The coastal rainforest belt, which once covered most of the southern half of Ghana, is a patchwork quilt of woodlands separated by farming areas. Ironically, the plantations that are Ghana's economic mainstay depend on a unique blend of humidity, heat, and shade to produce the rich soil conditions found only in the rainforests they threaten. Cocoa plantations have a twenty- to thirty-year lifespan which leaves the soil devoid of nutrients. Each generation of farmers starts the process again in virgin areas where the natural forest canopy provides shade for the young seedlings and where the soil is rich.

Bashiru Mohamed Koroma of the United Nations Centre for Regional Development (UNCRD) examines the socioeconomic and environmental impacts of underground coal mining in Xuzhou, People's Republic of China (hereinafter, China), on overlying farmland. The physical damage resulting from the surface subsidence and waste coal-dumping, and the social impacts on the farming population of the region are discussed. Koroma concludes that improvements in the reclamation process and the introduction of an intensive eco-farming system can promote environmental security in the areas damaged by underground coal mining. Environmentally-oriented land reclamation and land-use alternatives should have as their goal the reduction of vulnerability for Chinese peasants in these areas, since they face not only the immense difficulties of maintaining their livelihoods but also have to pay the highest costs. The combination of massive sustained growth based on coal as the principal source of energy with simultaneous environmental degradation and social stratification — unintended consequences of the transition from a state-planned socialist economy to a state-interventionist capitalist economy — points to the need to assess changes in environmental management in China.

In economically-advanced countries such as the US, industrial farming is replacing the traditional family farming business. Mary Curran, a research associate at the University of Kentucky, discusses the development of industrial hog farming in Kentucky, a major contributor to greenhouse gases and wastes that constitute a significant danger to human health. Curran examines the role of local organizations such as Kentuckians for the Commonwealth (KFTC) and the Community Farm Alliance (CFA) in working together to arrest the growth of industrial hog farming to enhance environmental security in the region. Any intervention that changes the local ecology, such as new industrial hog farms, brings with it an environmental cost. That cost must be figured into the true cost of the project if future environmental security is to be maintained. Many areas in developed nations are faced with environmental insecurity now and in the foreseeable future. These areas are overwhelmed by poorly conceived development efforts and associated poor environmental quality with inadequate access to clean air and water supplies.

Unryu Suganuma of Hokuriku University, Japan, analyses the environmental issues related to the construction of the new airport on Ishigaki Island. Nowhere else in the country is the concern for environmental security more intense than on the Ryukyus' tiny Ishigaki Island, 1,900 km from Tokyo, called the Galapagos of the East, and for good reason. This tropical island boasts an extensive blue coral reef below sparkling blue seas, a rare sight in a country whose scenic coastlines tend towards oil storage tanks, factories, and concrete erosion barriers. Suganuma discusses how this remote corner of Japan has become a centre of conflict between development and environmental protection since 1979, when the Okinawa Prefectural Government announced plans to build a modern airport with a 2,500-m runway projecting into the sea, on landfill that would cover much

of what appears to be the world's largest stand of rare blue coral. The existing runway does not allow large aircraft to land; the new one would invite tourism, which is considered essential for the economic future of Ishigaki and the surrounding islands. In Japan as well as in many other parts of the world, the challenge is to find a balance between the need for development and the preservation of precious natural resources and the environment, and to design a strategy that would integrate environmental security with development.

M. Ashraf Hossain provides an account of arsenic (hereinafter, *As*) contamination in drinking water, with special reference to Bangladesh where the problem is most acute. More than 10 million wells were sunk in Bangladesh and the Indian state of West Bengal in the 1980s and 1990s so that people could avoid drinking dirty surface water. The cost of digging these wells was around US\$500 million, much of which was provided by the United Nations Children's Fund (UNICEF) and various development banks. Now, however, it transpires that the water in many of these wells has been contaminated by *As* in the surrounding rock. Between 35 million and 77 million people are thought to be drinking this water. The skin lesions that come from prolonged exposure to *As* are already evident on the hands and feet of many villagers. In some places, *As* exposure is fifty times what the World Health Organization (WHO) deems safe. Drilling deeper wells is one option since the ground below 150 m is said to contain far less *As*. To drill a significant number of deeper wells could be very costly. A careful survey might find places where pure water could be drawn from shallow, and therefore cheaper, wells. Other options include the distribution of water filters and making better use of the region's abundant rainfall.

The *As* contamination illustrates a rare case of an environmental issue where research is ahead of implementation. Scientists have offered a solution to the *As*-polluted wells. The major impediment has been the lack of financial resources. The World Bank allocated US\$40 million three years ago towards solving the *As* problem, but there is little progress so far. UNICEF has only a modest "remediation" operation in place in Bangladesh. No money can be expected from Bangladesh itself, one of the world's poorest nations. To achieve environmental security in this area, Bangladesh will require strong political will and must gather resources to tackle the problem.

Syed Ayub Qutub of the Pakistan Institute for Environment-Development Action Research (PIEDAR) and James E. Nickum of Tokyo Jogakkan College discuss the need for institutional and attitudinal changes to empower communities, and the development of horizontal networks and a civil society to establish a more effective water management system in the Indus Basin. Management of the water resources of the Indus River is an important problem for Pakistan. The understanding of water management in the Indus Basin presents difficult problems: only a few observers such as Qutub and Nickum can fathom the complex relationships between soil types, climate, surface and groundwater, crop cycles, land tenure, institutional effects on human ecology, the effects of foreign aid, recent history, provincial politics, and the strategy and style of water management in Pakistan. The interregional disputes on water, especially the old Sindh-Punjab conflict, have a bearing on water management. Another important factor is the relationship between water management and irrigation practices to agricultural production. Saline drainage, tube wells, land and water revenue problems, the conflict between the "best use" and "politically equitable use" of water, and bureaucracies are other factors which influence water management. A model for a community-based water management system is suggested in

this contribution.

Jonathan Solomon Taylor's article discusses the role of local grass-roots movements in securing environmental security in Okinawa. Since the early 1960s, grass-roots movements have been a major force in striving towards the goal of local environmental security in various parts of the world. Rooted in local communities, grass-roots movements have confronted the sociopolitical structure in an effort to preserve local environments and ways of life from pollution and technological hazards. Japanese environmental movements represent an amalgamation of new political energy composed of old conservationists, young ecologists, former socialists, and thousands of local activists and concerned citizens protesting against the ever-increasing number of cases of environmental degradation. Taylor examines the roots and ideological message of the movements, and environmental activism in Okinawa. Japanese environmental grass-roots groups are notably oriented around struggles that deal with control over localities. Contestations over place and local autonomy are an integral part of the grass-roots movements in Okinawa, as Taylor demonstrates in his analysis. Unlike environmental groups in the West, environmental groups in Okinawa are small and focus on single issues and local goals. The impact of these groups has been unique and striking.

The next three articles deal with the important issue of environmental security in cities of the developing world. Contributions from Misato Sakai and Panthip Petchmark deal with the Thai cities of Bangkok and Ayutthaya, respectively. Ni Made Swanendri discusses aspects of Surabaya, Indonesia, which are relevant to environmental security objectives. Cities in the developing world are growing more rapidly than in the developed world. Fast-growing cities place enormous strains on the institutional and natural resources that support them. With rapid population growth, local governments are unable to provide for even the most basic needs of their citizens such as access to clean drinking water and housing. Cities, such as Bangkok and Surabaya, harbour huge populations of urban poor who are shut off from the benefits of economic growth. As discussed in the articles, many people live in slums and *kampung*s (indigenous unplanned settlements which grew up in the interstices between major built-up districts of cities in Java, Indonesia). Low-income residents of these areas in large cities are exposed to both the hazards resulting from economic growth such as industrial emissions, and to the hazards that accompany poverty. Sakai discusses the role of community development loan services in improving the living conditions in low-income areas. Her article demonstrates that the lack of financial resources is a major obstacle in fostering community-based development. However, experiences in Bangkok show that once they are organized, communities can, and will, begin to contribute their own financial resources and will repay loans.

Panthip gives an account of the effort to develop housing for the urban poor in the historic city of Ayutthaya, Thailand. Throughout the cities of the developing world, anywhere from 30 per cent to 60 per cent of a city's population lives in substandard housing. Unable to afford even the lowest-cost housing, many of the urban poor build their own makeshift shelters. These neighbourhoods, which these shelters together produce, lack essential water and sanitation facilities, and pose serious environmental health threats. An important feature of the successful community development programme, as described by Panthip, is the principle of group responsibility and participation.

The article on the evaluation of the Kampung Improvement Program (KIP), and the role of the community development consultant in the implementation of the KIP in Surabaya, provides important case studies of community development activities in unplanned enclaves scattered across large cities in Java. Beginning in 1969-70, as part of Indonesia's *First Five-Year National Development Plan*, the government began upgrading roads and paths, providing water supply, drainage, refuse removal, and community bathing, toilet, and laundry facilities in many unplanned areas, a programme of *kampung* improvement which the colonial government had begun fifty years earlier. In the 1980s, the programme goals expanded to include quality of life for *kampung* residents. *Kampung* improvement began with Jakarta and Surabaya but by 1987, near the end of the fourth five-year plan, it covered small- and medium-size cities, some 200 settlements in all. The KIP has been successful in improving the living conditions of more than 4 million people. In partnership with the local communities, the government identifies priority actions such as water supply networks, which include a standpipe for each twenty-five to thirty-five families. Other improvements include paved footpaths with side drains, sanitary facilities, garbage carts and waste collection stations, and public health centres. Funding comes primarily from the government and donor agencies, although in some cases community members match these investments. The communities themselves are responsible for the operation and maintenance of the facilities. A key element in the KIP is citizen involvement in deciding which problems to tackle and how best to tackle them.

It is most likely that environmental insecurity will remain widespread in the coming decades. Many millions of people will suffer from its debilitating consequences. But it does not have to be so. If we can harness the political will to adopt policies and make investments that will foster environmental security and protect natural resources, then an environmentally-secure world — a world in which each and every person is assured of a healthy and productive life — will be within our reach.