

benefited more had Gurung constructed a composite index of HRD with such variables as per capita income, literacy, infant mortality, and doctor-population ratio for the Asia-Pacific countries. This could have been different from the index formulated by the UNDP but meaningful at the same time.

All the papers included in the book are quite well-documented and informative. Although only four countries have been studied, the conclusions and the generalized recommendations of these studies can be extended to almost all the countries of Asia, except perhaps Malaysia and Singapore where the problem of shortage of labour seems to be very acute now. The major issues in HRD of Asian countries are starkly similar: low income per capita, low quality of human life, sectoral imbalance in manpower supply and demand, low rate of human capital formation but high rate of growth of labour force and so on. Given these parameters, what is required is a total balanced approach to the qualitative and quantitative development of human resources. This truth has been well-focused by this volume.

The book is a welcome addition to the stock of literature on the subject of human resources development. It should be highly useful to the students and teachers of demography, economists, planners and those who determine public policy, especially policies for HRD. It is indeed a treasure trove of valuable data on the population dynamics of South Asian regions.

B.N. GHOSH

*School of Social Sciences
University Sains Malaysia*

Burning Question: Environmental Limits to Energy Growth in Asian-Pacific Countries during the 1990s. Edited by K.V. Ramani, Peter Hills and Grace George. Kuala Lumpur: Asian-Pacific Development Centre, 1992. Pp. xiii, 375.

Energy Policy Implications of the Climatic Effects of Fossil Fuel Use in the Asia-Pacific Region. By

United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). Bangkok: UNESCAP, 1991. Pp. v, 242.

The first book published by APDC addresses a wide range of energy and environmental issues, both in the form of technical analyses and from the standpoint of national governments in the region. The book is divided into two parts. The first part deals with the issues of energy and environment. In this part, topics such as energy development and the environment: trade-offs and options, conventional environmental effects of energy systems, global climate change effects of energy systems, environmental impact assessment, and environmental considerations in energy policy and planning are discussed. The second part of the volume examines energy-environment interactions in China, Japan, the Republic of Korea, Malaysia, Nepal, Pakistan, Thailand, Vietnam and the island countries of the South Pacific.

In addition to the discussions of these issues, an executive summary of the books on energy supply development, energy demand management and energy-environment integration has also been provided in the book. The summary is excellent and provides the understanding of the main environmental effects and developmental constraints of energy supply, need for end-use oriented planning, sectoral strategies, policies relating to national, local and regional effects, preferred general actions and constraints especially for the Asia-Pacific region.

The second book, published by UNESCAP, after a scenario overview provides country specific and regionally aggregated pictures of likely patterns of fossil fuel utilization and the effects on greenhouse gas emissions. The three scenarios developed are "business as usual" (S1), "moderate intervention" (S2) and "maximum feasible intervention" (S3). S1 is the base case and in S2 it is assumed that countries of the region try to tackle the greenhouse gas issue through improvements in end-use energy efficiency in all sectors. The intervention will be complemented by afforestation and reduction of deforestation programmes. A

more ambitious emission control scenario is S3 which explores the maximum feasible intervention in the countries to reduce greenhouse gas emissions. Results of the scenario study are discussed and the feasibility of emission reduction is examined. Institutional considerations and criteria for selecting policy implementation measures are also discussed in this part.

Policy options on energy conservation and strategy available for the promotion of emission sink (like the reduction of deforestation and improvement in afforestation) are then discussed in the book.

The desirable international response strategy for a longer-term strategic concept for stabilizing greenhouse gas emissions announced by the Japanese Government, called the "New Earth 21", is also discussed in this section. The strategy calls for a world energy conservation programme, CFCs phase-out, accelerated introduction of clean energy, development of environment-friendly technology, enhancing CO₂ sinks, and development of future technology. The plan is visualized for the twenty-first century. However, the realization of the plan will depend greatly on the willingness of the country to improve environmental technology and financial aid extended by the developed countries to the developing countries in the medium and long term.

Country studies are provided for China, Hong Kong, Indonesia, Iran, Malaysia, Philippines, South Korea, Thailand, and Japan. Contributions from international organizations are also incorporated in the volume. The study also provides some overall recommendations for action by countries and highlights areas where some follow-up studies are required for more information on the issues of greenhouse gas related energy problems.

Both publications are timely. The Asia-Pacific region, having the highest potential for economic growth, is expected to be the main source for global energy and oil demand.

Rapidly rising demand for energy, especially fossil fuel, in the region is of major concern to the global community for environmental reasons. Pollutants like lead, sulfur oxides, carbon monoxides, and greenhouse gases which are the major causes

of air pollution, regional problems like acid rain, and the global climate change, all are growing rapidly in the region. For example, if the present trend of energy consumption continues, developing countries of the Asia-Pacific region are expected to increase their carbon dioxide (increase in concentration of which threatens to change the climate through global warming) emissions by 500 per cent whereas the global emission is expected to increase by only 140 per cent during the next 40 years.

The aspirations for higher living standards will not allow the countries to lower their energy consumption. However, because of international concerns, countries of the region will be forced to use various policy options to reduce the environmental impact of energy use. Policy options discussed in these books include improving efficiency in energy production and use, shifting the fuel mix, reducing the rate of deforestation and increasing afforestation, developing and using alternative energy sources, and introducing carbon tax or tradable emission permits.

It is not easy to implement the policy options. There are constraints in each strategy. Political, economic, financial and institutional problems may inhibit the rapid change in the pattern of energy development and use. The policy options on their own will not be effective.

Both volumes tend to agree that given the difficulties in each of the policy options, countries depending upon their resources and the state of development should develop their own strategy for sustainable development. The scope for the improvement of the environment is substantial. However, to have an effective and accelerated transfer of energy efficient technology and to prevent deforestation, developing countries need considerable assistance from the industrialized countries. Only an increasing international co-operation can help to smoothen this process.

There are a few shortcomings in the books. For example, among the number of policy options available to reduce greenhouse gases, improvement in energy efficiency and conservation play critical roles. Both books have failed to indicate specific sectors where, and by how much, the

energy savings can be improved especially in the developing countries. Constraints to increase energy efficiency were discussed but the details given are not adequate. Similarly, how and where incentive-based approaches can be utilized and where regulations should be preferred to incentives and how the regulations can be made more effective, which are some of the concerns of developing countries, are not discussed sufficiently. The books would have been even more useful and

more self-contained if these issues were discussed in a greater depth.

The above points notwithstanding, the books are valuable additions to the literature on energy and environment in general and the issues of the Asia-Pacific region in particular. They provide excellent, broader understanding of energy-related environmental issues of the Asia-Pacific region.

SHANKAR SHARMA

Fellow, Institute of Southeast Asian Studies