

(since 1817), between Norway and Sweden (since 1905), and between China and Nepal (since 1960). More generally — and of central importance in the present context — the Bern Protocol I of 1977 on the Protection of Victims of International Armed Conflicts [UNTS Nr 17512], provides for the creation of demilitarized zones (*cf.* Article LX).

In committing themselves to accepting the Convention on Biological Diversity, the many countries that did so acknowledged, in their preambular statement, the importance of promoting regional and global cooperation among states, at the same time suggesting that, ultimately, the conservation of biological diversity would strengthen friendly relations among states and contribute to peace for Humankind. Thus, one readily-available approach for many contiguous states to initiate or nurture friendly relations, would be to act jointly in the conservation of biodiversity *via* the protection of any high-priority natural habitats that may straddle their common border. It would at the same time facilitate a recognition that notions of absolute state sovereignty must be relaxed somewhat in order to achieve environmental security — and thereby human security.

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\* Now renamed 'BirdLife International.' — Ed.

## GUEST COMMENT

### Ecotechnology and Rural Employment

One of the most formidable challenges faced by countries with large and predominantly young populations, such as India, China, and Bangladesh, is the generation of new opportunities for skilled and productive jobs in rural areas. The need for concurrent attention to on-farm and off-farm employment is becoming more and more urgent as soil degradation, ground-water depletion, pollution, and other environmental problems, are rendering further advances in agricultural production and productivity ever-more difficult.

Disconcertingly slow growth in the diversification of opportunities for gainful and truly productive employment on the land is leading to economic access to food becoming the major food-security challenge at the household level. Particularly acute is the lack of opportunities for skilled jobs in rural areas, resulting in brain-drain from villages to towns and cities. Over 70% of the population of India still live in villages, while this percentage is nearly 80 in China.

Unplanned migration of educated rural youth to towns and cities, besides causing new social problems in urban areas, hampers the upgrading of rural enterprises and makes the blending of brain with brawn difficult in villages whence too many of the best brains have departed. Consequently, a majority of rural families depend on brawn to maintain the primary sector (crop and animal husbandry, fisheries, and forestry) for their livelihood.

As a result of the above, the secondary industrial and agro-industrial sectors and tertiary-services sector tend to remain untapped opportunities. How can we achieve the goal of generating new opportunities for skilled or value-added jobs in rural areas in both farm and non-farm sectors? And especially for women, how can we provide greater opportunities in villages for skilled jobs involving a necessary degree of flexibility in the time, place, and duration, of work to enable them to care for their homes and families? These issues need careful, action-oriented, interdisciplinary and cross-sectoral analysis.

While addressing this issue, it should not be forgotten that rural families put together a living through multifarious activities. The urban concept of employment will have little meaning under such conditions, so every effort has to be made to optimize this strength of diversity of sources of occupation and income in rural day-to-day life.

India and China face the greatest challenges on the rural-livelihood security front, as both countries have predominantly rural populations operating small farms. China's experience through its 'Spark Programme', leading to the growth of rural township enterprises, shows that millions of jobs can be created through a mixture of enterprises — actually nearly 100 millions during the last 10 years.

In a recent address, Premier Li Peng highlighted both the economic strengths and ecological shortcomings of this programme in the following words:

'Township enterprises are a fresh experience for China's rural areas. About 100 million people in rural areas were employed and the peasants' living standards were obviously improved, thanks to the development of such enterprises.

We are of the opinion that it is a road to success. Among township enterprises, those engaged in processing of agricultural produce, garments, handicrafts, electronic products'-assembling, and processing and services, do not cause pollution. But some township enterprises do have pollution and a few even cause serious pollution'.

At the Dialogue,\* the experiences gained in India and China will be reviewed, to learn and disseminate how economically viable employment opportunities can be created without adverse ecological consequences.

#### *Technology-blending: Untapped Opportunities*

The new paradigm of rural development will have to integrate the principles of ecological sustainability, economic viability, and social equity, if it is to lead to *sustainable* advances in the quality of human life. Working towards this end will involve the development and dissemination of ecotechnologies that are supported by appropriate services, including special training and implementation of public policies. For the purpose of our Dialogue\*, rural ecotechnology is defined as *a blend of technologies which can help to link, in a mutually reinforcing manner, the livelihood security of rural families with the ecological security of rural areas*.

An important feature of ecotechnologies is that they lend themselves to decentralized adoption, supported by a few key centralized services. Ecotechnology may involve appropriate combinations of the following three approaches:

- 1) Preserve and popularize traditional technologies such as handicrafts, handlooms, sericulture, and traditional agricultural practices which have ecological, social, and economic, advantages.
- 2) Introduce directly frontier technologies such as remote-sensing and computer-aided drip irrigation which would help to demonstrate the value of new technologies.
- 3) Develop and disseminate new technology blends involving the integration of traditional wisdom and technologies with frontier technologies — particularly in the fields of biotechnology, space technology, informatics, micro-electronics, and management.

#### *Pathways to Achieving Sustainable Advances in Life-quality*

For achieving sustainable advances in the quality of human life, while living within the carrying capacity of the supporting ecosystems and ecocomplexes, the following aims should be kept in view:

- (a) Conserve and enrich the ecological foundations that are essential for sustainable advances in the productivity of terrestrial and aquatic farming-systems;
- (b) Ensure and strengthen nutrition security, *i.e.* economic and physical access to balanced diets and safe drinking-water, at the household level;
- (c) Impart an income- and employment-orientation to rural enterprises; and
- (d) Pay concurrent attention to the technological, training, trade, and public-policy, requirements that are needed to make the programme achieve a self-replicating and self-propelling momentum. China's Spark Programme, for example, has been designed in such a manner that a single 'spark' can start a 'prairie fire'.

#### *Desired Outputs*

The hoped-for outputs from the Dialogue are:

- 1) Operationalize the concept of 'biovillage' in order to achieve, to the maximum extent possible, the substitution of synthetic chemicals and capital with knowledge and farm-grown inputs, and to ensure that the economically- and socially-underprivileged sections of the rural communities derive economic benefit from new technologies. Biovillages should promote the better-than-hitherto use of biomass and foster the growth of a dynamic services' sector.
- 2) Stimulate the more active involvement of financial institutions and insurance companies in promoting rural livelihood security through ecotechnologies.
- 3) Foster convergence and synergy among the efforts of governmental, nongovernmental, commercial, scientific, educational, and financial, institutions, farmers' organizations, and the mass media, in promoting rural employment and agrarian prosperity.
- 4) A publication containing the proceedings and recommendations of the Dialogue.

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\* Planned to take place as part of the dedication ceremonies of the M.S. Swaminathan Research Centre during 12–15 April 1993. The Dialogue was an interactive discussion among invited participants possessing varying professional and disciplinary backgrounds.