First National Seminar on
Food Security and Sustainability in India

Souvenir

(November 7-8, 2009)

GAD Institute of Development Studies

Under the aegis of Guru Arjan Dev Institute of Development Studies Society
(Registered under the Societies Registration Act XXI of 1860)

14-Preet Avenue, Majitha Road, PO Naushera, Amritsar - 143008

November 2009

CIMOD

OR MOUNTAINS AND PEOPLE

GPO Box 3226, Khumaltar,
Lalitpur, Kathmandu, Nepal

TEL +977-1-5003222
FAX +977-1-5003299
EMAIL info@icimod.org
WEB www.icimod.com

MESSAGE

Food is fundamental to human existence and to the life of all other living organisms. India made impressive records in agriculture and food production using green revolution technologies. Food grain production increased from 51 million tons in 1950–51, to about 200 million tons in the late 1990s. With this steady growth, it became a food self-sufficient country in the 1990s, a giant leap for what was once a food shortage country. This impressive growth has been lost recently, however. Growing evidence shows that India's yield growth of the major foodgrains has slowed down and even declined for some crops. Food production failed to keep pace with the country's population growth. This has raised serious concern about food security, farmers' income, poverty, and livelihood, as agriculture is the prime source of livelihood for the majority of the rural people in India. The primary basis of agriculture is land, water, weather, climate, biodiversity, and other environmental and ecosystem resources. Although green revolution technologies have increased agricultural production remarkably and contributed to enhancing food security, ıas affected the land, water, and the environment, as well as reduced the diversity and resilience of the agricultural ıtem, which is essential for long-term sustainability. India has to feed one-sixth or 1.1 billion of the world's ɔulation with only two percent of the world's land area. Degradation of the resource base combined with ɛeased stress and uncertainties arising from global warming, increased melting of ice and snow which are .dary sources of water for irrigation during the dry season, has posed a serious development and environmental ıllenge to India and other countries of South Asia. These countries have to confront the challenge: how to grow ɔugh food and fiber to meet the ever increasing demand for burgeoning population without degrading the natural ource base and the environment.

Although Indian agriculture presently faces difficult challenges, it, however, offers promising opportunities in ersifying production and marketing of high-value products such as fruits, vegetables, fishery, and livestock. To these opportunities requires new thinking, new ways of looking at agriculture, new approaches and strategies, as ll as new technologies and innovations. Food production in India is not an issue for India alone; it has regional and bal significance. Shortage of food grains in India affects the global food demand and supply situation due to its ge population and vast economy. In this context, this symposium organized by the GAD Institute of Development dies is very appropriate and timely and has regional and global significance. I believe this symposium will vide an opportunity to share innovative ideas and stimulate dialogue and discussion that will help the world gain insight and thought on how to address this huge challenge. I congratulate the organizers and wish all the success is great endeavor.

Andreas Schild
Director General

Food Security and Agricultural Sustainability in South Asia: A Mountain Perspective

Golam Rasul and Andreas Schild
Head, Economic Analysis Division and Director General
International Centre for Integrated Mountain Development (ICIMOD)
Kathmandu, Nepal

Although South Asian countries made impressive progress in food production during 1960s, 1970s, and 1980s, the ynamism in the agricultural sector has, however, lost recently. Productivity of major food grains has slowed and even eclined for some crops and food production failing to keep pace with population growth. Therefore, food security has emained a major concern in South Asian countries. The linkage between food production and the Himalayan Mountains is oorly understood though the Himalayan Mountains are the major source of dry season water for irrigated rice and wheat in ıdia, Pakistan, Nepal, Bangladesh, and Bhutan, which are the major food in South Asia. In view of that this paper briefly examines the role of the Himalayan Mountain systems in food production and agricultural sustainability in South Asian countries looking at the emerging challenges posed by the increasing water stress and climate change.

The analysis suggests that the common challenge has been facing by all South Asian countries, for increased food oduction to meet the demand for burgeoning population, is the growing stress of water as the rice and wheat, the staple food South Asia, require huge amounts of water. Moreover, the increased food production in South Asia has to come from the me amount of land, by increasing productivity through bringing additional land under irrigation, as the frontier for pansion of agricultural land has almost been exhausted. The availability of irrigation water is, therefore, critical for creased food production and agricultural sustainability in entire South Asia. Climate change introduces a new challenge to riculture and food security in South Asia. Recent studies suggest that the impact of climate on cereal production in South ia could be negative and that may be as high as from 18.2 to 22.1 percent.

Our analysis reveals that the Hindu Kush-Himalayan mountain systems play a significant role in agriculture and food curity in South Asia through water supply, climate and wind regulation, groundwater recharge, and in sustaining wetland osystems. It is the major source of dry season water for several large river systems, such as the Indus, the Ganges, and the ahmaputra from the snow and glacier melt of the Himalayas, which provide the main basis for surface and ground water igation. These three rivers form the largest river basins (Indo-Ganga- Brahmaputra) which are the major source of rice and eat in South Asia. Besides surface water, the contribution of mountain discharge to groundwater is also significant, which es it an important resource for agriculture and food security in South Asia. In addition to providing surface and undwater, the Himalayan mountain system provides huge inputs to agriculture through regulating micro-climates as well wind and monsoon circulation, and by supporting river and wetland ecosystems in South Asia. It is estimated that the nges river ecosystem alone supports 25,000 or more species, ranging from micro-organisms to mammals, which support ricultural sustainability and provides livelihoods for millions of people.

This paper concludes that the long-term agricultural sustainability and food security of South Asia is heavily depend on water and other ecosystems services receives from the Himalayan ecosystems. Attention therefore must be paid to conserve Himalayan ecosystems in order to ensure sustain flow of ecosystem services required for agriculture, food production, and rall well-being of Himalayan and downstream population. Options and opportunities for enhancing the agricultural tainability and food security by sustainable utilization of Himalayan resources and ecosystem services are briefly analyzed l suggestions are made.