

Ecological Fallout of Development in a Green Revolution Region: The Case of Punjab

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Economic development is a complex process. As an economy moves from lower to higher stages of development, there occurs a shift from simpler to more modern and complicated techniques of production on one hand and ecological fallouts on the other. International evidence is indicative of the fact that agriculture centered development of a region generates the much needed food security but at the same time raises the alarming ecological signals. The review of literature on the topic is indicative of the fact that worldwide the ground water quantity and the quality is the first victim of the agricultural revolution and next are the health and the existence of species. Indiscriminate use of chemicals and pesticides in agriculture has created serious health and environmental problems in many developing countries.

Punjab, the northern state of Indian Union, followed the agriculture-centric model of development. Growth of agriculture output in Punjab has led to higher per-capita income and better standards of living. Ecological fallouts have started cropping up. The paper is an attempt to analyze the ecological fallout of the development model followed by the state. Based on secondary data, it covers the period of last 40 years of economic development. The spatial and temporal dynamics of this ecological crisis of economic development has been analyzed in the time domain of its past, present and future.

Broad conclusions are as follows. Falling water table and groundwater overdraft has become a serious problem in the Malwa region of the state. Punjab is the topper state in consumption of chemical fertilizers and pesticides per hectare. Presently the Punjab, with only 1.57 percent of the geographical area is consuming 15 percent of the pesticides and more than 8 percent of chemical fertilizers of India. The health ailments are alarmingly on the rise and are closely identified with indiscriminate chemical use in agriculture. Temporal analysis of the system shows that the repercussions have started to show up in the form of depleted ground water, wide spread salinity, deteriorating water quality and specific kind of disease pattern in human beings. The higher income

levels coupled with lack of knowledge are acting as catalysts in this deterioration process.

On the policy plane, if the region has to continue as food grain capital of India, modern agricultural practices will have to take into account the reality of the water situation and create a feasible long run plan for a sustainable future. There is a need to develop a strategy to: (a) maintain an optimum ground water balance; (b) regulate the chemical use; and (c) address the health issues. The conclusions and action oriented policy implications of this work will be useful for the economic planners and policy makers.

Key words: *Development, Ecological Fallout, Agriculture*