

H-3 Study of the Processes and Impact of Land-Use Change in China

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Total Budget for FY 1998-FY2000 77,529,000Yen (FY2000: 22,610,000Yen)

Key words China, Land-use Change, Land-cover Change, Digital Map, Impact

The second phase of the LU/GEC project, entitled Study on the Processes and Impacts of Land-use Change in China, has 4 sub-themes:

- (1) Geographically Explicit Long-term Projection of Land-use Change in China
- (2) Analysis of Land-use Change in the Lower Yangtze River Basin due to Industrialization and Urbanization
- (3) Environmental Degradation in Northern and Northeastern China due to Land-use Change
- (4) Digital Database for Diagnostic Analysis of the Environment in Northern and Northeastern China.

More than 20 Japanese scientists and researchers have joined this project. Three Chinese researchers have also joined the study as Eco-Frontier fellows. They have played important roles in sub-themes (2) to (4) above. The major questions for the second phase are:

- (1) How long will land productivity in China continue to increase?
- (2) Does sufficient land area in China remain for crop production?
- (3) What are the main environmental concerns resulting from (the policy of) increases in crop production?

During the last decade, the population in China continued to increase, but the self-supply of food was maintained, indicating that total crop production increased during this period although the area of arable land slightly decreased. This increase in crop production has been attributed to an increase in overall land productivity in China. We simulated future changes in the area of 4 land-use types for given scenario of future arable land area by the Chinese Government. According to the simulation results, increase in arable land area will not be so large that grassland will not be converted so much into new arable land. However, the given arable land scenario assumes continuous increases in land productivity. There is some room for discussion in this assumption. Thus, we raised the first two questions above. Sub-themes (1) and (4) are related to these questions.

We are studying the potential negative impacts resulting from the scenario, i.e.:

- (1) Decrease in productive cropland areas due to industrialization and urbanization.
- (2) Increase in demand for food due to population increase and adoption of western life styles
- (3) National policies of forest conservation and self-sufficiency of food
- (4) Cultivation of grassland and due to the need to develop new cropland
- (5) Well and canal irrigation and their selfish and excessive use
- (6) Loss of groundwater resources and land salinization and decrease in good grassland.

Sub-themes (2) and (3) are related to these issues.